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Maritime Interdiction in the War on Drugs in Colombia: Practices, Technologies and Technological Innovation

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Abstract

Since the early 1990s, maritime routes have been considered to be the main method used by Colombian smugglers to transport illicit drugs to consumer or transhipment countries. Smugglers purchase off the shelf solutions to transport illicit drugs, such as *go-fast* boats and communication equipment, but also invest in developing their own artefacts, such as makeshift submersible and semisubmersible artefacts, *narcosubmarines*. The Colombian Navy has adopted several strategies and adapted several technologies in their attempt to control the flows of illicit drugs.

In this research I present an overview of the 'co-evolution' of drug trafficking technologies and the techniques and technologies used by the Colombian Navy to counter the activities of drug smugglers, emphasizing the process of self-building artefacts by smugglers and local responses by the Navy personnel. The diversity of smugglers artefacts are analysed as a result of local knowledge and dispersed peer-innovation. Novel uses of old technologies and practices of interdiction arise as the result of different forms of learning, among them a local form of knowledge *'malicia indigena'* (local cunning). The procurement and use of interdiction boats and operational strategies by the Navy are shaped by interaction of two arenas: the arena of practice - the knowledge and experience of local commanders and their perceptions of interdiction events; and, the arena of command, which focuses on producing tangible results in order to reassert the Navy as a capable counterdrug agency.

This thesis offers insights from Science and Technology Studies to the understanding of the 'War on Drugs, and in particular the *Biography of Artefacts and Practices*, perspective that combines historical and to ethnographic methods to engage different moments and locales. Special attention was given to the uneven access to information between different settings and the consequences of this asymmetry both for the research and also for the actors involved in the process. The empirical findings and

theoretical insights contribute to understanding drug smuggling and military organisations and Enforcement Agencies in ways that can inform public policies regarding illicit drug control.

Declaration of Originality of Submitted Work

In conformance to the regulations of the University of Edinburgh, I hereby declare that the present thesis: '**Maritime Interdiction in the War on Drugs in Colombia: Practices, Technologies and Technological Innovation**', has been composed by me, and that the work is my own. The thesis has not been submitted for any other degree or professional qualification, neither has it been published in whole or in part. I have read and understood The University of Edinburgh guidelines on plagiarism and declare that this thesis is all my own work except where I indicate otherwise by proper use of quotes and references.

Signed:

Date: 5th of May 2017

To Zu and Vico,
The lights of my life

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Abbreviations

CICAD – Inter-American Drug Abuse Control Commission

Cotecmar – Corporación de Ciencia y Tecnología para el Desarrollo de la Industrial Naval, Marítima y Fluvial

DEA – Drug Enforcement Administration

DNP – Dirección Nacional de Planeación (National Office of Planning)

LEAs – Law Enforcement Agencies

LPV – Low Profile Vessel

MIO – Maritime Interdiction Operation

NCO – Non-Commisioned Officer

NIDA – The National Institute on Drug Abuse

NNICC – Department of Justice and National Narcotics Intelligence Consumers Committee

NTO – Narcoterrorist Organisations

OAS – The Organisation of American States

ONDCP – The Office of National Drug Control Policy

SIMCI – Sistema Integrado de Monitorio de Cultivos Ilícitos *(*Integrated Illicit Crops Monitoring System)

UNODC – United Nations Office on Drugs and Crime

WDR – World Drug Report

WoD – War on Drugs

Contents

List of Figures

List of Maps

Introduction

The captain is sure, this time they will capture a narcosub, the crew, and their cargo because they are receiving reliable information about the building and imminent sailing of a vessel. This is 2008 - the heyday of the narcosubs, or at least of the increasing number of their captures. Coast Guard personnel has already recognized the difficulties of capturing narcosubs in the open sea, thus they have put most of their resources toward an effort to obtain information. Previous operations have ended in disappointment: they had gone out to capture what they had thought was a narcosub, but it turned out to be something different. This time they have been receiving a constant stream of information, and have monitored the movement of people to an unsettled mangrove area. Finally, they manage to monitor the movement of the narcosub in real time, and now, with the high tide, they can track it leaving the mangrove and moving into the open sea. The captain, who is also commander of the base, consulting with the regional commander, gives an order to capture the narcosub. The team has been prepared in advance, but without knowing when or why they were on alert. A frigate from the surface fleet has been summoned to fulfil backup duties, but the bulk of the operation falls on two minor units and a helicopter.

Even with information that is so detailed, finding the narcosub is a difficult task; the usual clues are not present, no wake, and a weak heat signature. The vessel is camouflaged against the waves. From afar, a member of one of the Coast Guard boats sees a couple of human silhouettes walking on the water. The Coast Guard boats get near. It is the narcosub. The captain orders the crew to approach and search the vessel. When they get close, the four crew members of the narcosub are already waiting on the deck. A lieutenant, a NCO, and two marines approach. They board the narcosub and request to search the vessel. They find nothing but a strong diesel smell. When they enquire about the cocaine, the answer is: 'What cocaine? We are using this vessel just for fun. Sailing a submarine is not a criminal offence, thus the Coast Guard personnel have no other choice but to issue some worthless warnings and let the crew

of the vessel go. Later they find out that the vessel was on a trial run. Its builders wanted to confirm that the vessel was secure enough to make a trip to a point higher up on the coastal area of Central America than it had been made before.

Since the early 1980s, interdiction efforts (increasing direct military presence, intelligence-based operations, and military operations) have been some of the main strategies for the control of illicit drugs. At the same time smugglers have been using different strategies to diminish the risk of being captured, and increase their chances of success. The label War on Drugs (WoD) has been used to describe the efforts of the U.S. Government, since Richard Nixon´s presidency, to wage war against drug trafficking. In 1971 a new strategy regarding the prohibition of illicit drugs based on the militarisation of the fight against traffickers was declared. This strategy reached a new level of intensity during the presidency of Ronald Reagan, by continuing the efforts to prevent production, distribution, and consumption of illicit drugs that had begun in the early 20th century.

Several metaphors have been used to explain the dynamics of interdiction/evasion and the mobility of illicit drug markets and drug smugglers in general, from references to a cat and mouse games to the balloon effect, the arms race, and competitive games. As such, these analogies imply a linear cause/effect narrative, as a way to explain the dynamics of the actions on one or the other side, and assume that actions are either taken initiated by the state or that taken by smugglers. The same narrative can be observed when we analyse the fictional descriptions of drug trafficking, academic interpretations on the topic, and policy documents. In these narratives, it is common to encounter a powerful drug baron or cartel that can change and adapt at will or groups of people organised as networks. In both cases, the interpretations of the organisational arrangements of drug traffickers explain their resilience. When the concepts of cartels dominated the academic discussion, hierarchical organisations were deemed powerful precisely because of these characteristics. More recent explanations of drug trafficking

organisations as networks place their advantages on the distributed, horizontal arrangements.

The illicit drug market has been extensively studied by economists, historians, criminologists, political science scholars, and increasingly by anthropologists. These studies have emphasized the economic or social impact of the drug market on the legal economy at different levels of the state and society. They have included attempts to measure and quantify the illicit activities, as well as to evaluate the results of state actions. Few scholars have studied *the practices* of smugglers and/or Law Enforcement Agencies (LEAs) and the military in the WoD. This omission is interesting, taking into account that the WoD is being waged every day, for example, in airports and ports where detection systems are put in place to prevent smuggling, urban centres where consumption is penalized, and isolated areas where farming of illicit crops is prosecuted. Key to this research is the open sea and coastal areas, where the Colombian Navy pursues go-fast boats, narcosubs, trawlers, fishing boats, and small cargo boats to seize any amount of illicit drugs, whether it be a few kilos or several tonnes. Similar stories to the one narrated at the beginning of this thesis are a common occurrence, that is to say, the WoD, far from a traditional war, is instead a serious ongoing struggle with mundane and prosaic artefacts, and that resembles policing activities.

The main contributions I want to make in this thesis are: 1.) To provide evidence that traditional accounts based upon co-evolutionary explanations of the technologies used by smugglers and LEAs/the military fall short in explaining antagonistic relationships when actors are confronted with a high degree of uncertainty regarding the results of their actions, and face barriers to innovations such as the illegality of their actions; 2.) To provide evidence that traditional accounts regarding drug trafficking, which attribute smugglers' success to smugglers´ structural organisations fall foul of what I call the *fallacy of flexibility* - a result of an asymmetrical view of the phenomena; 3.) That a turn to the study of the practices of the military rather than just analysing the technical capacities of their technologies provides a more accurate picture of the

antagonistic relationships that exists; and 4.) To propose that the outcome should not be analysed regarding the technical properties of the artefacts deployed by both sides but in the dispersed character of their innovation activities.

As pointed out earlier, there has been plenty of work examining the illicit drug market. My aim is to go beyond prevalent quantitative studies and work that presents an asymmetrical view of the phenomena. The literature on the mobility and changes in the drug market are often the result of an incomplete interpretation of the seizure of illicit drugs, and often portray a unified view of the actions of smugglers, the LEAs and the military. My aim is to have a closer and more accomplished understanding of the dynamics of the binary interdiction/evasion and to incorporate the perceptions of the people in the field who are responsible for carrying out strategies that may have been designed elsewhere. I introduce the idea of the interdiction/evasion as a binary, as phenomenon composed of two elements. One side of the binary is made up of the practices, artefacts, plans, and actions of the LEAs working to stop the flow of illicit drugs, while on the other side the smugglers' plans, devices, actions, and strategies oriented towards evading state control. Nevertheless, as a way to achieve a critical account, I integrate a different view of the technologies and practices used by smugglers and the perceptions and technologies utilised by Navy personnel. This view signals that the idea of binary foregrounds a set of dispersed, contingent and unbounded encounters between the two sides that do not reproduce the binary opposition as a way to conceptualise actions.

These considerations were the starting point in the formulation of the research questions that guided the data collection and analytical phases of this study. These questions arose from an understanding of the symbiotic relationships between drug smugglers and the strategies of control put into place by the state. They were also shaped by the specific forms of access I was able to secure in undertaking fieldwork (see Chapter 2). With some notable exceptions (Decker & Townsend Chapman, 2008; Kenney, 2007a) when discussing Colombian drug traffic, little research have been

done with smugglers. While I attempt to gain access to retired drug smugglers, the empirical data related practices of the smugglers are the result of the reading of LEAs, both in their interviews and documents. I avoid interpretations that fall into the rhetoric of control, such as affirming that particular developments in the smugglers' practice side are the result of a pattern of 'response-counter-response.'

As Andreas (2003) has noted, the military approach to defence has traditionally centred around border concerns; nevertheless, many states have had to reconfigure their military apparatuses to prioritise policing. Since the early 1990s, the Colombian Navy has played an increasingly important role in strategies to control the smuggling of illicit drugs centred on the interdiction of the flows of cocaine. The militarisation of the efforts in the WoD is materialised in the interdiction approach, based on the idea that the seizure of illicit drugs and the capture of transporters will make traffickers give up their intention to smuggle their cargo and thus lead them to abandon the drug business altogether. This approach focuses on the assertion that interdiction is the most cost-effective of all forms of control. Transport costs for illicit smuggling, are calculated to be up to 40% of the total costs of the drug business and, therefore, accumulates most (of the) revenue (Echeverry, 2004; Kawell, 2001; Mejía & Restrepo, 2008; Thoumi, 2005b). Nonetheless, to carry out interdiction operations, the military and the LEAs make claims about the need to constantly update surveillance infrastructure. Despite the use of different eradication and interdiction approaches and the steady militarisation of the WoD that started in the early 1980s, illicit drugs are still produced, and smugglers continue to move their illicit cargo.

The creation of the Coast Guard Unit, as a response to perceptions of increased maritime drug traffic, implies that a traditional *blue waters* Navy increasingly oriented their resources to police *brown waters*, and to establish an intelligence based target-oriented action. Maritime Interdiction Operations (MIOs) have become a central aspect of their operational and strategic aims. MIOs require coordination between different units and personnel, who have distinct levels of knowledge, skills, and

decision-making rights. Navy personnel are also bound by a series of legal and traditional constraints, such as different levels of authorisation for the use of force and for shipwreck rescue, which smugglers use in their favour. Smugglers may be bound by a different set of kinship relationships, family, and friendship, among others. Images of the enemy's capacities play a significant role in the way local actors make decisions and negotiate personal goals with institutional requirements.

The main role of the Colombian Navy is to stop drug smugglers departing from coastal areas or to capture them before they leave Colombian maritime borders. Borderlands on the northern Caribbean and Pacific Coasts with historical traditions of goods smuggling and poverty are exploited by drug traffickers to recruit locals with knowledge about native conditions. Locals are attracted to this work due to expectations of high revenues. There is a continuous interplay between the role of the Navy and the aims of drug traffickers. This symbiotic relationship is often expressed in very personal dilemmas, such as one policeman´s concerns about the need to perform his duty while at the same time not drawing the attention of drug traffickers to himself, thus putting his life at risk. Enforcement actions are paradoxical in the sense that by removing some players the conditions for others to exploit are created.

Science and Technology Studies (STS) and Innovation Studies have explored the process of innovation in traditional spaces, firms, sectors, among others. There is also a substantial body of literature in STS regarding the process of innovation in the military, with a focus on the traditional role of the military. In this thesis, I explore the role of a military institution, the Colombian Navy, in what have been called *asymmetric wars*, regarding the disparate capacities between the two sides. Andreas and Nadelman (2006) and Astorga (1999) have pointed out the importance of the technological transformation of the military to fight smuggling wars. However, to the best of my knowledge, there are no studies of the practices of the military in the WoD.

Central to the metaphors explaining change and mobility of the drug markets is the idea that smugglers and criminal groups have the capacities, abilities, knowledge, that allow them always to be ahead of enforcement agencies and military organisations, and that the latter are seen as bureaucratic, inflexible organisations. Clearly, military organisations do possess a set of fixed procedures and are restricted by budget constraints, role expectations, hierarchies, and decision-making problems, yet it would be naive to forget that criminal groups are also bound by concerns of a similar nature. Assuming that military organisations are *a step behind* or are inflexible overshadows several important issues regarding the involvement of the military in policing duties, specifically their capacity to learn and adapt quickly. This view also assumes an almost monolithic version of drug smuggling control, where all decisions flow from the upper echelons to the people in the field.

As John Urry (2000) reminds us, metaphors are a central task of the social sciences. STS is no stranger to metaphors, and as noted above, the WoD is full of metaphors. In this thesis, I propose that the change and mobility in the WoD can be helpfully interpreted using the ´Red Queen´ metaphor. In such a scenario, derived from Lewis Carroll's 'Through the Looking-Glass, and What Alice Found There,' both sides need to run as fast as they can, while they never seem to get anywhere.

Since the full involvement of the Navy in the WoD, the Colombian Navy has implemented several plans and strategies to combat drug trafficking. The agreement between the Colombian Government and the U.S. Government to control maritime drug trafficking, signed in 1997, was instrumental in the professionalisation of Navy personnel. They received training and established direct contact with the U.S. Navy. The Plan Colombia, established in 1999, allowed the growth of the Navy regarding their budget. Although the existence of the Navy does not depend on their success in eliminating maritime drug traffic, it has clearly benefited from it at an institutional level, with their budget continuously increased since the late 1990s. Additionally, the seizure of illicit drugs and smuggler's artefacts is now an active element of both

institutional and individual prestige. The Colombian Navy makes a constant presentation of metrics as a result of their involvement in the WoD, and it makes symbolic displays of their results in the forms of exhibitions and 'museums' of smugglers´ artefacts. I use the concept of arenas (Jorgensen & Sorensen, 1999) to describe the various places in which Navy technologies and practices are shaped. The arena concerns to the knowledge and experience of local commanders and their perceptions of interdiction events and the arena of command, with a focus on producing tangible results to reassert the Navy as an able counterdrug agency. I use the bureaucratic politics model (Allison & Morton, 1972; MacKenzie & Spinardi, 1988; MacKenzie, 1989; Spinardi, 1994), to illustrate how the development of strategies and technologies to stop the illicit flows of drugs are often the 'inconsistent resultant of organisational routines and the conflict and compromise among political actors' (MacKenzie, 1989, p. 164). This concept implies that decisions are not the result of a single rational strategy but instead they are the outcome of different players' choices based on their conceptions, organisational, domestic, and personal interests (Allison & Morton, 1972).

The *evolution* of smuggler technologies and practices has been presented by other authors (e.g. Group on Maritime Narcotrafficking, 2003; Ramirez & Bunker, 2014) as a process of progressive change or improvement, and as a direct response to the LEAs and the military's efforts. In these versions, drug trafficking organisations are also presented as capable of producing quick responses, and most importantly, they are unveiled as unitary decision-making bodies. In this thesis, I propose that what is seen as a process of constant evolution, is rather the result of dispersed and uncoordinated actors, applying local solutions to the problems of drug transportation. Additionally, while several groups adopt traditional methods of transport, some are able to gather different forms of knowledge and produce complex artefacts. To sustain this claim, I use the concept of dispersed peer innovation (Hyysalo & Usenyuk, 2015).

I use the terms smugglers and drug traffickers instead of drug smuggling networks or drug trafficking organisations, or the like. In so doing I attempt to avoid the conceptual and empirical issues that these definitions carry. With this approach, I follow recent descriptions of drug traffic that portray, despite many allusions to formal organisational structures, ties between individuals in drug smuggling ventures as mostly of short-lived, bounded by the continuation of the transaction and without any commitment or permanence to a larger organisation (Decker & Townsend Chapman, 2008). I do not discuss either the illicitness of these drugs or indeed the matter of border crossing (Abraham & van Schendel, 2005). In this research, the Colombian Navy and specifically the Coast Guard Unit are the main actors. I mention the Coast Guard Unit when I am dealing with affairs that are specific to that unit, such as boats, Bases, practices, technologies. The Coast Guard Unit is part of the Navy, and officers and NCOs are moved to it from different branches.

Theoretical and Policy Context

As an aspiring STS scholar, I framed my discussion in the academic literature on co-evolution of technology and specifically on the role of users in the process of innovation. Nevertheless, in undertaking this research, I modelled my concerns taking into account the broader policy context, that is to say, the WoD.

I argue that the current literature on co-evolution does not capture the set of antagonist relationships, neither a set of dispersed, contingent and unbounded encounters between the two sides composing the interdiction/evasion binary. I argue that the concept of co-evolution may be helpful to understand the broader dynamics of reciprocity between the two sides, but does not fully capture the nature of the innovation on each side. However, this research also aims to contribute to the growing literature from Innovation Studies and STS on the role users play in the process of innovation. I have specifically attempted to expand on the recent work from Hyysalo and Usenyuk

(2015), demonstrating the capacity of users to create complex technologies and master all aspects of those machines. My research contributes to the literature on unruly users and outlaw innovation. My research also inquiries about the nature of military innovation and the importance of antagonistic relationships in driving technological change (Dolnik, 2007; Jordan & Taylor, 1998; Taylor, 1999).

There are two broad policy discussions to which my research has a connection. First, the deployment of military forces to counter non-traditional threats and, second, current discussions about the logics of enforcement-based policies to control the production and consumption of illicit drugs. Debates about the results of the militarisation of the WoD have signalled the unintended consequences of this process expressed in the mobility of drug smugglers, and the effect it has had on the price of illicit drugs. Nevertheless, few studies have focused on the transformation of the military when it has been designated to participate in policing duties, specifically in the WoD. Alternatively, as illustrated in this research, most of the policy evaluations are framed in terms of the economic consequences of the different strategies for the control of narcotics. With my research, I expect to expand the discussion and to include in the debate the perceptions of those responsible for implementing those policies.

Finally, with the results provided in this thesis, I aspire to shed light on the importance of local knowledge, and specifically a particular kind of local knowledge, *Malicia Indigena*, i.e. the importance of situated experiences and knowledge about the particular artefacts (interceptor boats) and the sea. Moreover, I wish to accentuate the importance of challenging the widespread interpretations of the phenomenon of the illicit drug business and production, in relation with how success is interpreted.

Outline of the Thesis

In the first chapter, I present a literature review. I offer an overview of definitions of organised crime and criminal networks. I argue that those interpretations are the result of an asymmetric view of the phenomena. I present an overview of the STS literature regarding military innovation and discuss the gap concerning the practice of military organisations in asymmetrical wars, such as the WoD. I also introduce an overview of the user innovation literature and claim that the use of dispersed peer innovation is useful for understanding the process of innovation in outlaw contexts. Finally, I unveil the analytical framework utilised in this thesis to answer the research questions, i.e. a co-evolutionary interpretation of the dynamic interdiction/evasion, though I argue that traditional interpretations of co-evolutionary relationships are incomplete.

In the second chapter, I present the data collection methods and the methodology followed in my research. I outline the background of this research and explain the theoretical and policy concerns that underpin this thesis. I also explain the main choices made and provide explanations of such choices. I provide an account of the research design and analysis; finally, I explore the main difficulties and practical limitations of this thesis.

In the third chapter, I discuss the context of this thesis. I begin by presenting an overview of the history of prohibition of certain drugs. I delved into the involvement of Colombia in the WoD. In this chapter, I present a critique of the efforts to quantify the drug market; finally, I present some data regarding the cost of the WoD for the Colombian Government, focusing on the Navy's budget.

Chapter four presents an account of the transport of illicit drugs. I provide an overview of the history of those methods, and specifically on the maritime transport methods,

and I examine the forms of knowing and learning of the Coast Guard personnel in the field. Thus, I continue to stress the importance that a highly contextualised form of knowing, *malicia indigena*, plays in the day to day practices of Coast Guard personnel. Chapter five delves into the topic of narcosubs. I argue that despite traditional views about the continuous evolution of smugglers´ technologies, the narcosubs are a good example of how non-coordinated players can produce a complex technology. Therefore, the diversity of smugglers´ artefacts cannot be explained as resulting from a process of continuous innovation, but as a result of different approaches to solving the same problem, as undertaken by diverse groups producing different *bricolages*.

Chapter six focuses on the institutional responses to the question, how to patrol the sea? That is the plans, strategies, and operational concepts promoted by the upper echelons of the Navy as solutions to the problem of the illicit flows. Chapter seven is devoted to the Coast Guard Unit, and specifically to the history of patrol boats. In that chapter I show that, during the period from 1995 to 2013, members of the Coast Guard actively explored alternative ways to intercept smugglers, developing their plans for designing and building their boats or using captured smugglers boats. The story of the Coast Guard patrol boats follows a similar pattern, i.e. early impressions of effectiveness in matching smugglers capacities, followed by detecting problems both with the artefact and their capacities to match smuggler vessels and, finally, discarding or repurposing of those vessels.

The Maritime Interdiction Operations is the focus of chapter eight. In this chapter I show the importance of the day to day practices of the military in order to understand the symbiotic relationships between the two sides of the binary interdiction/evasion. I present evidence to back my claim that the interpretations of the military as inflexible and traffickers as flexible are misleading. The ninth chapter brings together the analysis of the different chapters. In this summative chapter I carry forward the idea of revising the binary interdiction/evasion and argue for a more nuanced interpretation of dynamics and changes in the drug market.

The final chapter, or conclusions, brings together the main findings of my thesis. I suggest several empirical findings in relationship with the history of the Colombian Navy in the WoD and specifically with the practices of Coast Guard personnel in their day-to-day activities. I indicate my contributions to knowledge and implications for practice, and conclude by considering the main limitations of this study and questions for further research.

Chapter 1. Literature Review

In short the questions this thesis aims to address to are: Are drug smugglers a step ahead from Law Enforcement Agencies (LEAs) as portrayed in journalists' accounts, and most importantly as concluded from academic literature on drug trafficking, organised crime, and transitional organised crime?. Is there a different way to characterise the dynamics of the binary interdiction/evasion? Several disciplines have produced an impressive body of literature on organised crime and drug trafficking enterprises, placing an emphasis on the economic aspect of the drug business and their organisational arrangements. Science and Technology Studies have produced several concepts that have helped to conceptualize dynamics in which change is produced as a result of pressures and influences from one entity over the other. The concepts of programs and anti-programs of actions can be suggestive (Latour, 1992), co-evolutionary explanations can also be used to explain adaptation and change in scenarios in which two entities have a causal influence on each other (Mitleton-Kelly & Davy, 2013).

The examination of the existent literature on drug trafficking and technological innovation in conjunction with the empirical findings of the fieldwork of this research reveals several pitfalls in these approaches. I argue that organisational learning perspectives and the focus on the advantages of the networked structural organisation of traffickers, have been useful to understand the smugglers' side. In doing so, however, this body of literature perpetuates the asymmetric view in which agency has been placed on one side of the binary interdiction/evasion. Flat, horizontal relationships with few decision making levels are seen as characteristics that allow traffickers to produce quick and sudden change, forcing enforcement agencies to constantly adapt. An interpretation of the process as the result of program and anti-program on the other hand, implies that there is an episodic relationship in which a

particular episode is determined by the outcome of a previous one (Czarniawska, 2004). In short, that players are able to formulate responses in the face of known results. In this sense, such interpretation disregards the existence of a context where players act amid uncertainty. I situate the broad interpretation of the dynamics under the umbrella of co-evolutionary processes. This approach is helpful to characterise the wider process, but it does not completely capture the nature of the dynamics of the binary interdiction/evasion. I argue that theoretical lenses provided by innovation studies and the role of users in the process of innovation, and a focus on player's practices facilitate a more nuanced interpretation of the interplay between the two sides of the binary.

In this chapter I review the academic literature upon which I built my critique and my empirical and theoretical contributions. I begin exploring the academic literature on organised crime and specifically the study of drug networks, pointing out the advantages and shortcomings of these interpretations. I then turn to explore the contributions of STS to the study of military technologies. In the following section I explore academic contributions to the role of users and the concept of outlaw innovation. In the final section I propose the Red Queen metaphor as a plausible strategy to interpret the dynamics in the binary interdiction/evasion and the contributions of the Biography of the Artefacts and Practices (BOAP) approach and their significance to analyse the practices studied in this thesis.

Organised Crime and Organisational Structure of Drug Traffickers

Academic interest in researching Organised Crime has consistently grown in the last years. A quick search in any database will show that the number of articles, book chapters, and conferences on the topic has increased in recent years. Organised Crime is perceived as a main threat to security in a world post 9/11. In this new security environment dangerous criminal organisations are said to be strengthened by their

flexibility and capacity to move across borders creating constant challenges to enforcement, and they thus constitute the dark side of globalization.

The adjective ‘transnational’ is often used, and when discussing organised crime a degree of border crossing is often implied. It is a global phenomenon both in the sense of being a by-product of globalisation and in being part of the shaping of global flows and movements. Organised crime groups and activities move from local and regional settings to the global, forming powerful networks that permeate boundaries. Traditionally, drug trafficking has been considered a key activity for organised crime groups.

Some scholars (e.g. Camacho Guizado & López Restrepo, 2000) have argued that there is an imbalance in drug traffic studies. While most of these studies deal with the ‘impact’ of the drug trade, just a few deal with the production. According to Vellinga (2004) studies of drugs have concentrated on: 1.) Policy analysis on the macro level; 2.) The study of supply processes on the regional and sub regional levels; 3.) The impact on economy and politics of drug traffic, 4.) The linkages with transnationally operational organised crime; and 5.) The effects of the various strategies designed to control the supply of drugs. On the other hand, Reuter (2004) notes the growing literature on ethnographic studies on retail and street markets, while there are few similar studies on the production side.

Academic and policy analysis of drug trafficking organisations have moved from economic-bureaucratic descriptions about the cartels, to exploring the notion of social networks (Zaitch, 2004). The concept 'cartel' has been widely used in reference to drug trafficking organisations. This concept suggests a centralised and hierarchical organisations, in which a powerful boss, a ‘drug baron’, and his/her associates are able to control and overview all the stages of the production and distribution of drugs. To some authors these characteristics have been exploited by LEAs in order to disrupt

major groups. For example Bagley (2011, 2012, 2013) attributes success over the Cali and Medellin 'cartels' to the fact that they were hierarchically structured, while asserting than that their replacements, the criminal networks, are far more difficult to track down and dismantle.

The concept of the cartel has been widely criticised, and most academic literature suggests a shift from a cartel era to networks as a strategical adaptation promoted by smugglers. Recent descriptions claim that drug trafficker groups are rarely hierarchical organisations as the 'cartel' concept suggests (Kenney, 2007a; McIntosh & Lawrence, 2011; Morselli, Giguère, & Petit, 2007; Paoli, 2008; Vellinga, 2004b; Williams, 2001). As researchers interested in the social structure of drug trafficking organisations increasingly turn to the concept of network to describe those organisations, this in turn means that a growing number of scholars are using Social Network Analysis (SNA) as a method to describe the nature of these relationships (Bouchard & Amirault, 2013; Hobbs & Antonopoulos, 2014), and organisational theory in order to explain smugglers' actions (Benson & Decker, 2010).

Some authors have noted the limitations of the notion of social network in relationship with the study of criminal enterprises. According to Zaitch (2002, 2004), there is a tendency in these studies to present such networks as aesthetical devices, to present criminal networks as synonyms of criminal groups or organisations, sidelining the existence of different forms of organisation and how members assign meaning to their actions, focusing on isolated criminal relationships. Hobbs and Antonopoulos (2014) note the limitations of SNA studies of criminal activities. They recognize the limitations in the collection of information from individuals involved. They also point out the limitations of SNA approaches in capturing the chaos and fluidity of criminal groups. As most studies using SNA are based on the result of the actions of state agencies, relying solely on these descriptions will end up providing an image based on the a priori understandings of the phenomena from the perspective of state agencies,

which usually suggest stability rather than fluidity, and would eventually mirror the bureaucratic concerns of those agencies.

Nevertheless, understanding trafficking groups from the perspective of the concept of networks has allowed organised crime scholars to delve into the strategies used by smugglers in order to minimize the vulnerabilities of drug trafficking (Benson & Decker, 2010; Galeotti, 2004; Paoli, 2008) and to stress the flexibility and speed with which these organisations are said to change in order to out-fox enforcement strategies. According to these descriptions less hierarchical organisations, where information flows through few channels, allow greater levels of adaptability in order to respond to market changes or improvements in strategies and technologies developed by LEAs (Kenney, 2003, 2007b). In this analysis of the 'arms race' between traffickers and LEAs, the latter have much more technical expertise but are bureaucratically inflexible, while the former possess less expertise but greater opportunity for local innovations. In short, studies of drug smugglers affirm that these networks show a flexibility and inventiveness that surpasses most attempts of control made by the central state.

The characterization of criminal groups as networks is also present when describing terrorist groups. In this field some work have explored how organisational arrangements together with technology play a role in their success, for example Arquila, Ronfeldt, and Zanini (2001, p. 77) affirm that ‘Terrorists will continue moving from hierarchical toward information-age network designs’ and are ‘likely to increasingly use advanced information technologies for offensive and defensive purposes’. Several studies of how terrorist and smugglers are organised have stressed the importance of researching the principal characteristics of these organisations and the consequences for technology adoption and innovation (Cragin et al, 2007; Jackson et al., 2005).

As highlighted, literature on criminal networks and organised crime have put emphasis on the flexibility and adaptability of the criminal side, often pointing out this advantage when they face state control. To Gottschalk (2010), Morselli (2010) and Beittel (2012) criminal organisations are shape for flexibility, and are loosely structure, flexible, decentralized in ways that allows them to quickly adjust to enforcement actions. Thoumi (2004) signals the criminal networks as capable of continuously seeking new transport routes, sources of chemicals used to produce cocaine and new ways to influence politicians. Mejía and Posada (2008) point out that profit seeking conditions the smat ways in which smugglers respond to enforcement. Vellinga (2004b), Kenney points out their flexibility and their capacity of respond immediately to changes in demand or enforcement, and poses flexibility as a characteristic that smugglers seek when organizing their activities. Friesendorf (2005) and Dietz (2010) affirm that criminal networks are much more flexible than governments. To Kenney (2007b) such flexibility represents a clear challenge to enforcement strategies based on head-hunting. In the same line as Kenney, López Restrepo and Camacho Guizado, (2007) stress, the resilience of the 'new' and flexible organisations to state actions. To Garzón (2008) even traditional hierarchical organisations have shifted to a network like structure as a strategy to evade state control. For the Report of the High Level Panel on Threats Challenges and Changes of the UNODC (2004, p. 53; 2010, p. 27) Organised crime is 'increasingly operating through fluid networks rather than more formal hierarchies. This form of organisation provides criminals with diversity, flexibility, low visibility, and longevity.'

Within the academic literature on organised crime or criminal networks, there are, nevertheless, few works discussing transport methods used by drug smugglers or discussing technological innovation in the WoD in general. While Thoumi (2004) mentions 'important technological advances' by growers and in laboratories he does not specify which ones. Reuter (2004) when describing transport methods used by smugglers affirms that while during the 1980s drugs were smuggled using dedicated small vessels and small aircrafts, in the 1990s smugglers used commercial vessels. His reading of these patterns are derived from seizures. Kenney (2007) mentions the ease

with which smugglers could procure technology and the move to ‘exotic’ smuggling transport methods.

The work of Caulkins, Burnett, and Leslie (2009) and the book by Decker and Towsend (2008) are important first hand empirical insights into the descriptions of the methods used by smugglers to transport illicit drugs to consumer countries. Decker and Towsend describe the methods and structure of specialized groups ‘selling’ smuggling services to Colombian ‘cartels’ for wholesome transport. In this model the transporters do not own the drugs and receive payment when shipment is delivered. Caulkins, Burnett, and Leslie describe two different models. One in which individuals receive payment per journey and the other in which transporters also own the drugs. In this respect the work of Decker and Towsend is more relevant in terms of their focus. Decker and Towsend interviewed mostly Colombian drug smugglers transporting drugs to the U.S. via maritime routes, and they present an overview of their decision making and risk making strategies. Nevertheless, they do not delve into the theoretical implications of their results.

When dealing with smugglers’ artefacts, the literature focuses on the technical aspects of these artefact or on the strategic goals of smugglers. In a piece for *Homeland Security Affairs*, Lichtenwald, Mara, and Perri (2012) made a characterization of the different submarine artefacts used by Colombian drug smugglers using open sources and focusing on the possible terrorist uses of the narcosubs. They concluded that the nature of smuggling organisations indicates little risk for those uses and stressing the *leap ahead* that the use of these artefacts represent for drug trafficking organisations. Bunker and Ramirez (2014) compiled a series of essays in relationship with the building and use of narcosubmarines focusing on the technical *evolution* of these artefacts.

Scholars on organised crime and drug networks recognize the complex relationships between smugglers and state agencies. Thoumi (1997) and Bibes (2001) point out the existence of parasitic, symbiotic, or predatory relationships between state and drug traffickers. These authors only focus on relationships in which state agents directly benefit from establishing direct or covert contact with smugglers in order to receive monetary benefits, as well as the overlaps between drug traffickers and right wing paramilitary groups or left wing guerrillas. Reuter (2004) points out the interactions between drug smugglers and LEAs, specifically in relationship with routes and transport methods. Krebs, Costelloe, and Jenks (2003, p. 151) explore those relationships from a game theory approach and conclude that 'a major reason that drug smuggling persists in the face of intense interdiction and prohibition efforts is that those who choose to indulge in such behaviour respond to anti-drug strategies with equally intense and innovative tactics'.

I agree with Zaitch (2004) in his consideration of the merits of approaching the study of criminal groups and activities from the networks approach. In a sense than this approach helps to capture the flexibility and dynamic nature of illegal enterprises, especially on the micro-level. Nevertheless, I argue, that in focusing on these characteristics, that body of literature has neglected some important issues. First, even if recognizing the complex environment, change is often interpreted as response and counter response pattern. Second, the literature has often stereotyped versions of enforcement agencies. Third, it has not theorized the character of smugglers innovation.

Science and Technology Studies and the Military

Science and Technology Studies have explored the relationship between knowledge and military technology. Several scholars have explored the processes of innovation in the construction and procurement of military technologies; recently researchers

from this framework have approached the study of surveillance technologies (Lyon, 2003; Rappert & Croft, 2007), weapons of mass destruction and issues of security, and security governance in a broader sense (Rappert, 2007), stressing the role of military and technology in security (Rappert, et al, 2008).

Seminal work by MacKenzie and Spinardi (1998, 1993, 1988) explores issues of missile accuracy and nuclear weapons and shows that despite the overwhelming sophistication and the socio-technical complexity of the systems in which they are embedded, the development is always surrounded by uncertainty. They demonstrate how political interest and bureaucratic factors helped to shape inter-continental ballistic missile guidance systems. Collins & Pinch (1998), on the other hand, studied how definitions of 'effective' and 'useful' were negotiated in the case of the U.S. Patriot missiles during the first Gulf War.

Salient issues showed by STS studies on the military is that military innovation is the result of a complex process affected by political decisions and one that should be analysed in the context of the political function of military forces (Greenwood, 1990). The process of innovation can be affected by issues of competition and collaboration within and between different branches of the military (Grissom, 2006), and the coevolving characteristics of military technology (Constant, 2000).

Constant (2000) points to the co-evolving nature of military innovation and notes that military organisations are considered to possess strong institutional memory, which ought to be guided by the best technological choices. However, he also points out that 'the military is not noticeably better at choosing technology or predicting its consequences than any other institution' (2000, p. 297). Regarding the co-evolutionary character of military technology Constant notes, 'Almost all discrete innovation in military technology require corresponding systematic adaptations in other elements of military technology, with which they coevolve over time' (2000, p. 288).

Surveillance Studies have stressed ‘the interplay of contemporary security cultures and surveillance infrastructures’ (Monahan, 2010b). Surveillance technologies can be addressed not as the result of necessary and inevitable technological choices but as embedded in a set of values that societies privilege over others (Lyon, 2003; Monahan, 2010b). Surveillance Studies have shown how issues of security are actively constructed, and while states deploy surveillance as a ‘symbol of national’ security (Monahan, 2010a), military technologies are the results of particular sets of relations and are bound to the particularities in which they are developed. The WoD and the War on Terror (WoT) offer new sets of conditions on which military technologies are shaped, making it integral to understand both the transformation of the military and the processes of military innovation.

I found in MacKenzie’s critic of neoclassic economics theory (1996), two interesting ideas that I have used to interpret the actions of the Colombian Navy in the WoD. The first is the idea of uncertainty as a result of technological change. The second is the contrast between satisfying and maximizing. The first points towards a critique of the traditional view of the capacity of economics to be able to accurately quantify risks, and stresses the creation of uncertainty as a result of technological change. As mentioned earlier, the military is not necessarily superior to other organisations at predicting the outcomes of their choices (Constant, 2000). While neo-classical economics use the notion of profit maximization as rationale for actors, MacKenzie (1996, p. 51), points out that constant profit maximization activities are not practical and that instead:

> Actors follow routines, recipes, and rules of thumb while monitoring a small number of feedback variables. As long as the values of these variables are satisfactory ("satisfying" is Simon's famous replacement for "maximizing"), the routines continue to be followed. Only if they become unsatisfactory will they be reviewed.

Furthermore, Mackenzie argues that within a firm different *heuristics of search* may exist, and as a result 'the actual behaviour of a firm may represent a compromise between different and potentially contending courses of action' (1996, p. 53). This interpretation can be expanded using the bureaucratic politics model.

Spinardi (1994) lays out three theoretical models for the development of military technology. A first strand was inspired by ideas akin to Technological Determinism in which weapons develop as a result of their own logic. A second view puts rational decision making of politicians and the military to the fore, which coincides with 'realist' studies in International Relations theory in which the process of procurement of technology is the result of a rational assessments of the threats and solutions. Last Spinardi discusses an approach that considers that weapon development is the result of competing factions of interest within a state, the bureaucratic politics' model. In this thesis, I use the concept of arenas (Jorgensen & Sorensen, 1999) to describe the various factions within the Navy, the arena of practice and the arena of command.

Jorgensen and Sorensen introduce the concept of arena of development to characterise 'the cognitive space that can contain these processes analytically as well as enable change management' (1999, p. 409-10). One interesting element of the concept of arena of development in the work of Jorgensen and Sorensen is their claims with regards to 'references to objects and situations having a locality and a material reference' (1999, p. 410). In their definition arenas are open ended spaces, that include 'both the static elements of locations, knowledge and artefacts, while it also frames a space for continuous action (1999, p. 411). In the arenas, different political, social, and technical performances related to a technological problem take place. Important for my research is the characterization of the arena as a multi-staged scenario, where several 'shows are going at the same time' and in doing neither the space or the activities performed can be settled, an arena is a moving and 'the ground is thus eternally reshaped' (1999, 412). As showed in this research, the movement on both sides of the binary interdiction/evasion are non-linear, with opposition and continuum

coexisting. As such, the concept of arenas and its invocation to flux and changes in morphology, capture these dynamics.

STS offers a series of concepts and explanations of military technologies, exposing their contingency and, as expressed by Constant, 'there is no reason to believe, and virtually no evidence to suggest, that the underlying process of technological evolution for military technology are in any way different from those for any other technology' (2000, p. 298). While on the other hand, Surveillance Studies offers concepts such as security culture, is particularly important if the aim is to understand current responses to threats and risks (Monahan, 2010b). This is in close relation with the concept of Surveillance infrastructures define by Monahan as 'the many technological systems used to mitigate risks and regulate populations' (2010b, p. 4).

Understanding the challenges faced by the armed forces in fighting the WoT and the WoD offers an invaluable entry point to explicate the process of technological innovation which avoids the shortcomings of the traditional explanations. Fighting this new type of war demand changes in military organisation, i.e. classic strategies of warfare cannot be easily deployed against drug and terrorist networks (Desouza, Koh, & Ouksel, 2007; Desouza & Wang, 2007). Social researchers have the chance to analyse how the process of technological innovation is affected in this complex cycle of 'competition'. If during the Cold War, technological competition fulfilled a symbolic function, in the WoD and WoT the need to forecast adversary's action increases (Franck & Pierce, 2006). Due to their form of organisation and the aims that they pursue, they can remain almost invisible, and they aim to do so. Drug smugglers and terrorists try to minimize their exposure by improving technologies, while LEAs and the military try to seize the highest amount of drugs possible so that smugglers give up on their enterprise, and they try to stop terrorists before they carry out their purpose, all while they remain accountable for achieving these tasks.

In short, much of what has been analysed concerning military innovation, both from a STS perspective and from other disciplines, has been developed in what can be called the traditional role of the military. There is a growing concern about the role of the military in the WoT, pointing out the transformation of the military in order to face asymmetrical enemies, while still focusing on the technical capacities of the military. On the other hand, there has been a tendency to privilege the artefactual and technical components of military technologies, and to analyse the technologies as separate from their context and practices. The privileging of the artefact and technical aspects of these maybe the result of both lack of access to and lack of theoretical lenses to analyse the less durable aspects of the technology. As a result only the most visible and durable aspects of technology are described, if described at all, in the words of Fleck and Howells, 'This tendency is aggravated by most observers and users of artefacts being outside the organisation and location where the "soft" components of a technology exist' (Fleck & Howells, 2001, p. 526).

Users, Outlaw Innovation, and Dispersed Peer Innovation

Science and Technology Studies (STS), Innovation Studies (IS), and Innovation Management (IM) have stressed the importance of users in developing an understanding the process of technological innovation (Bogers, Afuah, & Bastian, 2010). These disciplines have emphasized 'the creative capacity of users to shape technological development in all phases of technological innovation' (Oudshoorn & Pinch, 2008, p. 554). These different fields have stressed particular aspects or perspectives of user involvement with technology (Flowers & Hendwood, 2010), developing different conceptual vocabularies (Oudshoorn & Pinch, 2003b). Due to the complexity of such processes, complementarity between different perspectives can help to reach a better understanding (Flowers & Hendwood, 2010).

Evidence on the importance of users in the process of technological innovation were firstly described in the 1960s (Bogers et al., 2010). Nevertheless, traditional approaches, have stressed the linearity of the process of user involvement, locating the need for information from the user's side and for solutions on the producers. This allows some cross boundary of information on behalf of improving existing products or developing new ones (Bogers et al., 2010). This neglects the importance of users, and user-led R&D policies (Flowers, 2011).

Innovation studies have focused on the study of technological innovation by product manufacturers (Oudshoorn & Pinch, 2008). Nevertheless, an important strand of the literature within IS has deeply researched the role of users in the process of technological innovation; the pioneer of this strand of inquiry was Eric Von Hippel. These studies have 'focused on verifying the extent of invention by users, identifying the users that are likely to innovate, why and where users innovate and the composition of user-innovation communities' (Hyysalo, 2009, p. 248). In the early stages these studies were concerned with how users' innovation presented challenges to manufacturers (Voss, 2010), and more recently have moved to scenario in which firms can harness the developments made by users (Flowers & Hendwood, 2010). These studies have introduced an array of concepts and data collection methods, such as, innovation user, user/self-manufacturer, or user-as-innovator (Bogers et al., 2010; Oudshoorn & Pinch, 2008; Voss, 2010).

Scholars within Science and Technology Studies (STS), and especially approaches related with Social Construction and Social Shaping of Technology (SST) have stressed the active role of user in shaping and re-shaping particular artefacts, moving from manufacturer centric perspectives to a more user-centric approach of the role of users in the process of innovation and the diffusion of technologies (Flowers & Hendwood, 2010; Kline & Pinch, 1996; Russell & Williams, 2002). The relationship between users and technologies and technological change within STS was first exposed by the Social Construction of Technology (SCOT) perspective, and since then

the active role of users has become one of the key concepts for the SCOT approach. SCOT scholars rightly criticize the passive role of users in the linear model of innovation (Pinch & Bijker, 1987).

According to the SST users actively shape, appropriate, and configure technologies in different settings and domains according to their needs and individual styles (Rammert, 2002; Stewart Russell & Williams, 2002). Within STS various approaches can be differentiated regarding the role of users in shaping technologies: Social Construction of Technology (SCOT), Feminist approaches, Semiotic approaches and, Cultural and Media Studies (Oudshoorn & Pinch, 2003b).

Feminist approaches to technology have reflected on the conceptualization of the role of users as passive recipients of science and technology, and particularly on the consequences of these explanations for women. Within semiotic approaches there are two distinguishable strands. In the first one the concept of 'configuration of user' is central. This approach has been criticized for stressing the process of the shaping of users as the result of a one-way process, in which designers have the capacity to shape users. This approach does not take into account questions of who is doing the configuration work. In the second strand the concept of 'script' plays a central role in explaining user-technology relationships. According to this approach users have an active role in shaping and re-shaping technologies. They develop their own agenda 'anti-program' usually conflicting with the designer's pre-established 'script' (Flowers & Hendwood, 2010; Oudshoorn & Pinch, 2003a). Cultural and media studies approach to the role of users differs from the later approaches, at least in two senses. The first is that they stress the necessity of studying users from the very beginning, and that rather than focusing on technologies they have chosen to research *users* and *consumers.* The domestication framework attempts to explain the integration of technology into the *moral economy* of the household (Silverstone, Hirsch, & Morley, 1992).

Studies on users have focused on studying how manufacturers commercialise user-driven innovations that users freely share. Some literature has dealt with user innovation amid illegal activities, or spaces where innovations and knowledge is not freely shared, or at least not as in the traditional settings, such as in pornography (Coopersmith, 1998, 2006; Voss, 2007).

Hackers' activities have been researched by scholars from Innovation Studies (Choi & Perez, 2007; Flowers, 2008) and from approaches close to STS perspectives (Jordan & Taylor, 1998; Söderberg, 2010; Taylor, 1999). While IS focuses on the possibilities of *harnessing* knowledge produced by hackers and on the consequences for establishing business models, STS have paid attention to the process of co-construction of the identities of participants. Studies on outdoor sports show how user innovations have been successfully commercialized. STS have studied how the actions of 'unruly users', the hackers, underpin collective imagination, the process of labelling activities as *deviant*, and the configuration of their intra group identities. These studies have shown that identities within these groups are extremely heterogeneous and fluid, such as their relationships with enforcement agencies and security personnel. They have also shown the importance of antagonistic relations in driving technological change. That is to say, the competitive relationship between hackers and the security industry, They have recognized the potential contribution of studying the process of innovation in analysing both 'lay expertise' and outlaw innovation (Jordan & Taylor, 1998; Söderberg, 2010; Taylor, 1999).

The role or users in the process of technological innovation in outdoor sports have received attention from technology studies. Especially IS studies have focus on equipment in extreme sports (Lüthje, 2004; Lüthje, Herstatt, & von Hippel, 2005; Shah, 2006; Voss, 2010), but also scholars closer to the SST perspective (Hyysalo, 2009). Despite the different methodologies and emphases of each of those fields, both highlight the capacity of users in outdoor sports in shaping habits, technologies, organisations, cultural values, regulations, the behaviour of other practitioners, as well

as modifying the initial purpose of the equipment. Innovative users in extreme sports are often members of 'communities of practice' (Bogers et al., 2010; Voss, 2010).

The concept of outlaw innovation was developed for scholars from the Innovation Studies perspective to describe innovation in hacking activities and online piracy and their relations with Intellectual Property Rights (Schulz & Wagner, 2008). This concept is highly influenced by the idea of 'harnessing' these types of user innovators to firms, and the economic consequences of such. However, it has also drawn on concepts from the STS perspective in order to explicate outlaw innovation, particularly the concept of 'user resistance' as a key element in the process of technological innovation (Flowers, 2008). Flowers defines outlaw users as 'users who, either individually or as part of a group, actively oppose or ignore the limitations imposed on them by proposed or established technical standards, products, systems or legal frameworks" (Flowers, 2008, p. 180). Case studies on outlaw innovation utilizing the innovation studies perspective have recognized the existence of an 'outlaw community', defined as 'groups of users, who create and disseminate innovations that not only conflict with manufacturers' intentions of the usage of the original product but also violate firms' IPR' (Schulz & Wagner, 2008, p. 402), composed of both, innovative outlaw users and those who adopt those innovations. A thorough characterization of outlaw innovation is still pending.

Finally, an important development in the involvement of users in the process of technological innovation is the recent work by Hyysalo and Usenyuk (2015). In their study of the Karakat, they propose the concept of dispersed peer innovation as a way to understand how non-coordinated actors without the presence of arenas of interaction can produce complex pieces of technology. They demonstrate the capacity of users to create complex technologies and to dominate all aspects of the machines, despite attempts by manufactures to take over (Hyysalo & Usenyuk, 2015).

A Co-evolutionary Analysis Approach

> 'A co-evolutionary process is at work here, simultaneously blind and seeing, wanting to foresee the consequences and yet having to accept the unforeseeable'. (Nowotny, 2008)

As highlighted in the introduction of this chapter, I place the broad interpretation of the phenomena under study under the umbrella of co-evolution. Specifically, the understanding that there is a reciprocal influence between the two sides of the binary interdiction/evasion, and that the change in the Navy's and smugglers' practices can be interpreted as the result of an interweaved, symbiotic relationship. As a result of this it can be said that both socio-technical systems co-evolve. As Ziman (2000) points out, it is possible to describe mutualistic relationships as an *ecological systems* of *coevolving* artefacts.

Frank Geels (2005) has stressed the co-evolutionary relationship between markets, users practices, regulations, culture, and science. STS have explored several dimensions of the co-evolutionary process, among them the relationships between technology and users, between science and technology, between technologies and markets, between technology, industry, and policy, between technology and culture, between technology and society (Geels, 2005b; Rip & Kemp, 1998), and between technology and organisational styles (Fairtlough, 2000). Geels acknowledges the contribution of co-evolutionary analysis between three different levels: the level of emerging innovations, the level of *established* socio-technical configurations, and a macro level. The multilevel perspective championed by Geels, argues for an understanding of transitions of technology as a result of the dynamics at niche, regime, and landscape levels. Geels points out that 'although the different regimes are linked and co-evolve, they also have internal dynamics' (Geels, 2005b, p. 87).

As noted earlier the concept of co-evolution has been adapted to different fields to explain interdependent relationships between elements. In the words of Geels co-evolution is often used as 'a reminder to disciplinary scholars that more aspects are important than they actually study' (Geels, 2005b, p. 61). The co-evolutionary dynamics have been extended from evolutionary biology to the social sciences as a metaphor, as an interpretative frame or broad characterization of co-developed or mutual shaping relationships (Eve Mitleton-Kelly & Davy, 2013; Rip, 2002). According to Shove (2003) co-evolution has been used to describe: 1.) Relationships between technologies and social relations and practices, 2.) Relationships between specific technologies and complex socio-technical systems, and 3.) And the relationships between sociotechnical systems or landscapes, on the one hand, and social arrangements, practices, and expectations on the other. Constant (2000, p. 288) recognizes co-evolution when, 'Two species (or technologies) constitute a paramount feature of each other's environment, that is, when they are strongly interdependent, and when they evolve vis à vis the rest of their ecology virtually as a linked unit'.

McKelvey (2002) distinguishes between six types of co-evolution relationships and provides examples of these relationships in the social world. As noted by Jablonka and Ziman (2000) some of these forms of co-evolution may imply antagonistic interactions or cooperative interactions. Antagonist interactions often lead to a dynamic *arms race* in which all the sides have to keep evolving in relation to their natural enemy, invoking what is known as the Red Queen Hypothesis. Characteristic of those antagonist prey/predator types of interaction is the death/replacement process (Andriani, 2003).

As flagged in the introduction, several metaphors have been used to explain mobility and change in the illicit drug market, I argue that the Red Queen Hypothesis serves as a better metaphor to explain complex evolutionary interplays between smugglers and LEAs. The Red Queen Hypothesis has been explored by several authors in relationship to innovation at firms and competition between firms (Barnett, 2008; Barnett & Hansen, 1996; Baumol, 2004). In summary this literature stresses the potential

benefits, and the possibility of harnessing the effect of the Red Queen competition, in the sense that competition is seen as a main driver of innovation.

The Red Queen Hypothesis assumes co-evolution and a general tendency for microevolution to speed up competitive advantage results from being able to speed up microevolution (Kauffman, 1995). In such conditions different sides need to speed up co-evolution in order to stand still, to stay in competition. Taken from Lewis Carroll's Through the Looking-Glass, and What Alice Found There the hypothesis claims that it takes all the running you can do to keep in the same place, describing a situation in which the success of different players is based on the premise that in order to match or exceed the other, all participants have to constantly move in a continuous arms races of defence and counter-defence (Barnett & Hansen, 1996; Baumol, 2004). This in turn implies a constant change to the ecosystem as a result of the evolution of the entities (Kauffman, 1995; Kauffman & Macready, 1995).

‘Now, *here*, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that! Reminds the Red Queen to Alice in 'Through the Looking-Glass.' (Carroll, 1872, p. 145). This story, which gave the name to the ‘Red Queen effect’ or ‘Red Queen Hypothesis’ serves as a metaphor for the understanding of certain behaviours. The Biologist Leigh Van Valen was the first to use the metaphor to describe and analyse the way species adapt to their environment by constantly evolving to face their competitors, which are also in constant evolution (Durrani & Forbes, 2010). According to the Red Queen effect, the choice is simple, to do nothing and be overtaken or struggle to remain alive.

Following examples from biological entities is it possible to find similar behaviours in the way organizations behave in competitive environments. I use the metaphor to describe, situations in which rivals deal with the need to continuously change their strategies as a way to maintaining their place in the game. In the WoD environment

rivals are different smugglers groups competing both with each other and LEAs and military and in some cases rivalry between the various LEAs and military. Although, I focus my attention on the competition between smugglers and state players. Smugglers must, in this case, create strategies to maintain their position in the business, while at the same time the implementation of those strategies does not guarantee that position. For example, while some smugglers adopt or invest in new transport methods and new technologies, in an attempt to evade state control, those innovations can be quickly adopted by competitors and discovered by state actors, creating a new scenario with new technologies but in which the competitive relationship continues.

The Red Queen effect presupposes a link between organizational learning and their ecology, understood as the relationship between the organism and their environment. Barnett and Sorenson (2002) state that competition between organizations triggers processes organizational learning and that learning increases the strength of competition generated by an organization. Learning and competition reinforce each other, thus giving rise to the process of self-reinforcement of the Red Queen Effect.

To explain the Red Queen Effect, Barnett and Hansen (1996) consider two distinct and simultaneous effects: on the one hand, the experience of the competition of the focal organization and the way it acts, and on the other hand, the experience of its competitors and how they react. Furthermore, Barnett (Barnett, 2008, p. 12) states, that ‘organizations may not know what logics of competition are operating when they first enter a context, but they learn by experiencing competition,' this is, learning by doing (Fleck, 1994). The answers provided by the organizations will tend to make it appear more competitive than its competitors (Barnett & Hansen, 1996). This improvement will result in the reaction of its competitors who will, in turn, seek to learn and so on. In the dynamic explored under the metaphor of the 'Red Queen' learning and innovation do not provide a lasting benefit, on the contrary, its advantages are temporary.

The Red Queen effect indicates that, in front of the competition, an organization will seek to stand out and create competitive advantages by developing new ways of doing things. In doing so, it will create an environmental imbalance and its rivals will find themselves confronted with a more efficient competitor than them. Competitors will try, in turn, to propose a new solution to match their rivals and gain an advantage, thus improving their performance (Barnett, 2008).

In this thesis, I argue that the Red Queen metaphor is helpful to explain the dynamics of interdiction/evasion. Previous metaphors that place agency on one side of the binary, with the Red Queen metaphor it is possible to stress the symbiotic relationship between both sides, recognizing that the two sides of the binary are constantly updating their strategies, not only as a response to the other side's actions but as a way to remain in the game. In short, the Red Queen hypothesis captures better the dynamics of the WoD, than other metaphors, as states that in the presence of a turbulent, chaotic environment, where the dynamics are particularly aggressive, it is not possible for any of the sides to hold and to maintain a competitive advantage over time.

In doing so, I argue that while changes in host or parasite may confer temporary advantages, and do create variations in the backdrop, those changes are not significantly enough as to escape the dynamic. Players in the War on Drugs (WoD) perceive opportunities to move and act. However, knowledge asymmetry, communication failures, and the actions and strategies of several uncoordinated actors results in situations in which the players end up no better off or perhaps worse than initially. Creating a scenario where both sides of the binary interdiction/evasion a run 'as fast as (they) can' to stay in the same place. By this I mean, it creates a new situation where there is no real change in the dynamic.

While previous metaphors imply patterns of action-reaction and coordinated action, the Red Queen seem to imply that both sides fall into a spiral and are incapable of

avoiding the negative consequences of the dynamic, process that may appear as automatic. Another limitation of the metaphor is the lack of empirical data that possibilities the identification of both learning and imitation phenomena at the smugglers' side, and therefore provide the opportunity to identify mechanisms underpinning the motivations and intentions with regard to the production of innovations and perceptions of its competitors.

The empirical chapters of this thesis delve into describing Maritime Interdiction Operations as interpreted by personnel in the field and envisioned by the upper echelons of the Navy, the arena of practice and the arena of command, and how smugglers produce complex pieces of technology in order to smuggle drugs. These two arenas reveal how local knowledge of technical requirements interplay with global policies of illicit drug prevention. That is to say, how technology in the WoD is socially shaped by several factors. In the remaining of this chapter I present an overview of several concepts emerging from the Social Shaping of Technology (SST) framework that serve as theoretical and methodological guides for this research, specially two concerns, the role of different forms of knowledge, social learning, and the concept of configurational technologies. These ideas have been advanced by the work of Stewart, Williams, and Slack under the banner of social learning (Williams, Stewart, & Slack, 2005) and Pollock, Williams, and Hyysalo as the 'Biography of Artefacts and Practices' (BOAP) (Hyysalo, 2010; Hyysalo, Williams, & Pollock, 2016; Pollock & Williams, 2008, 2011). A main concern for the social learning perspective and biography of artefacts and practices is 'the complex and dispersed processes of learning and struggling as new technological capabilities are adapted to and incorporated within the detailed fabric of social life' (Pollock & Williams, 2008, p. 77).

Social shaping of technology is 'a generic approach to the study of technology that remains anti-determinist and anti-linear, but less concerned with the issue of "materialisation" of social interests' (Sørensen, 2002, p. 21). Important insight from

the social learning perspective for my research of the role of technology in the WoD are, the recognition that the process of procurement of technology is much more complex than customarily understood, and that 'purchasing technology for organisations, are guided and constrained by complex mixes of acknowledged objectives, priorities, criteria and perhaps regulatory constraints, as well as values, pressures, images and associations' (Russell & Williams, 2002, p. 66-67). The idea that artefacts may be reworked and that when an artefact is incorporated into a local setting it opens up new possibilities; this social shaping process occurs across multiple locales and timeframes (Pollock & Williams, 2008; Stewart & Williams, 2005). Another important element of the SST approach is the development of a useful conceptual vocabulary to denote different categories of knowledge used in innovation (Stewart Russell & Williams, 2002). As characterised by Pollock and Williams (Pollock & Williams, 2008, p. 103) the BOAP approach:

> Seek[s] to explore how local actions and outcomes depend upon a context of knowledge and beliefs which, in contrast to a narrowly semiotic interpretation of power, provides material as well as intellectual resources that generate incentives and penalties for local players and pattern the conduct and outcome of local actions by framing discussions. We are also seeking to explain the ways in which local actions collectively react back on to and produce/reproduce social structures.

Distinctions are made between explicit/formal knowledge as embodied in codified theories, as noted by Fleck 'in general, the possession of formal knowledge confers status and consequently a measure of power or influence within organizations' (Fleck, 1997, p. 384) and tacit knowledge as embodied in individuals as skills and intellectual compatibilities that is firmly based on practice and experience, can be transmitted by apprenticeship and training, and through 'watching and doing' forms of learning (Fleck, 1997). These distinctions have been useful for understanding practices and forms of learning. In short these are defined as:

> Explicit knowledge is information or instructions that can be formulated in words or symbols and, therefore, can be stored, copied, and transferred by impersonal means, such as in written documents or computer files. Tacit knowledge, on the other hand, is knowledge that has not been (and perhaps cannot be) formulated explicitly and, therefore, cannot effectively be stored or transferred entirely by impersonal means. (MacKenzie & Spinardi, 1995, p. 45)

Fleck (1997) expand these categories to include knowledge embodied in tool use or instrumentalities, informal knowledge as embodied in verbal interactions, rules of thumb, tricks of the trade. Meta knowledge is knowledge that is embodied in organisation in the form of values and assumptions about the nature of reality. Contingent knowledge is distributed and apparently trivial information specific to a particular environment. This highlights the importance of local knowledge that can be 'looked up'. As characteristics of this form of knowledge Fleck points out that it is 1,) distributed, distributed throughout an organisation, often at the lower levels of the hierarchy, 2.) apparently trivial, the difference from informal knowledge lies in being more accidental and less systematically build around particular tasks or technologies, and 3.) highly specific to the particular application domain, it is concrete rather than theoretical, tends to remains tied to the context (Fleck, 1997, p. 390). Scholars from the social learning approach have emphasised the importance of local tacit knowledge and the difficulties of capturing and disseminating such 'sticky knowledge' (Pollock & Williams, 2008).

With few exceptions issues of learning and knowledge have not been explored by scholars in organised crime or drug studies. Using the distinction made by James Scott in *Seeing Like a State*, between *mētis and techne,* Kenney (2003, 2007, 2007a, 2010) attempts to demonstrate the competitive advantages of traffickers. *Mētis* is experimental and intuitive kind of knowledge. This kind of knowledge can only be developed through engagement in the activities and it resists any form of codification.

While *techne* is abstract technical knowledge that can be codified and transmitted through formal instruction. Therefore *techne* is acquired by abstraction while *mētis* by doing.

When describing smugglers and enforcement technologies the form of the technologies is important. I use the concepts of configurational and generic technologies. The concept of 'configurational technologies' help to characterise how different smuggling groups assimilate different technologies and develop capabilities in order to design, build, and use their own artefacts. A configurational technology is built by selecting and configuring a range of available components (often exploiting cheap and tried and tested standard solutions) coupled with some customized elements to meet the particular requirements. This involves a process of recombination in which existing components are adopted, modified, and/or recombined to create new forms which are adapted to the outlaw users requirements, or bricolage (Büscher, Gill, Mogensen, & Shapiro, 2001; Fleck, 1988, 1994) and 'are largely shaped in each application by user requirements and the specific circumstances in which they are to be used'. (McLoughlin & Harris, 1997, p. 5). generic technologies, however, are those who given their generic qualities 'allow[ing] them to be applied with only minor adjustments' (McLoughlin & Harris, 1997, p. 5).

In this chapter I have explored several themes and concepts in relationships with the dynamics of innovation in the WoD. I explored the organised crime and 'drug studies' literature, which currently stresses the networked and fluid nature of criminal organisations. I built my understanding and analysis on two thematic building block, the importance of users in producing both mundane and complex artefacts, and the co-evolutionary nature of the innovation process in the WoD. Since the phenomena studied here touches on the issue of 'organised crime' I devoted one section to present how literature in this field and the 'drug studies' field make sense of the dynamics of interdiction/evasion, which have usually been the tools used by policy makers when promoting policies and interpreting the phenomena.

I identified several gaps in the understanding of the dynamics of interdiction/evasion as emerging from the literature on organised crime and drug studies. In general, the ideas of network and flexibility are used, both by academics and state agencies, to characterise the different spectrums of criminal actions. I argue that these interpretations are the result of an asymmetrical view of the phenomena, in which the dynamics of the binary interdiction/evasion are analysed only as a result of the players that attempt to evade. Leaving aside the multiple relational aspects of the relationship, and even when recognizing the symbiotic relationship between the two sides, this narrow understanding of the phenomena prevails. In order to close these gaps and provide a more symmetrical overview of the dynamics of the binary interdiction/evasion I apply a qualitative inquiry to the practices of catching smugglers from different points of view and focus the research questions in order to fulfil these aims, stressing the importance of localized knowledge and antagonist interactions.

This literature review has aimed to provide the theoretical foundation and general orientation to answer the research questions by complementing current research on drug smugglers with approaches that complement traditional approaches that usually focus on the smugglers side, and explain the advantages that traffickers have in comparison with state agencies. This is rooted in the idea that the dynamics of the drug market can be interpreted as a pattern of responses and counter responses. I enrich this view by including approaches from the BOAP, user innovation, and a co-evolutionary interpretation in order to stress the ambiguous, complex, and uncertain essence of the process of innovation in outlaw contexts. I pay crucial attention to the role of Navy practices in order to demonstrate that the dichotomy of flexibility/inflexibility is not necessarily present at the local level. This literature review provides the necessary theoretical and analytical tools in order to propose a different view of the binary interdiction/evasion and to propose a different narrative based on the analysis of the practices of people in the field.

In light of these theoretical concerns, I analyse the data and present a discussion of the major findings. I have found that generic approaches to the dynamics of the illicit market can be enhanced by paying particular attention to the practices of the people in the field and the highly localized knowledge they deploy, and by integrating into the debate not only results of their actions but also how the main players make sense of their actions in situations in which secrecy is paramount.

Chapter 2. Methods and Research Design

This is qualitative research aimed at developing an understanding of the process of technological innovation in the War on Drugs (WoD) in Colombia. For this research I have drawn on the broader STS theory as a guide to the methodological approach and to formulate and to provide answers to the research questions. As a qualitative study the methods used focus on the capture of data in the field from key actors. I conducted interviews and performed documentary analysis of public documents as well as did fieldwork in four Navy bases in Colombia. By adopting a qualitative view I argue that STS and qualitative methods can provide a richer view of the phenomena, beyond the traditional quantitative assessments from an economic perspectives provided for many of the sties of drug trafficking. I argue that a turn to an in-depth study of the practices of the Navy personnel in the field from a qualitative stance is important in order to capture the ways technologies, perceptions about enemies' technological capacities, and forms of organisation affects the way different players interpret their actions.

The early stages of data collection were oriented as an exploratory study of smugglers´ forms of transport, performing interviews with public servants in several state agencies in Colombia. Later I orientated the data collection to understand the practices of the Navy personnel in the field. I simultaneously selected and secured fieldwork with the Colombian Antinarcotic Police and the Colombian Navy. After finalizing data collection, I decided to concentrate my analysis on the data from the Navy and to use the information provided by the Colombian Antinarcotic Police to support some arguments. The research questions also evolved from being centred on smugglers´ artefacts to a set of questions aimed at understanding the practices of Maritime Interdiction Operations (MIO) in relation with those artefacts. These adjustments emerged as a result of both difficulties in access and as a response to some views apprehended during the initial fieldwork that provided me with a view of the intricate

symbiotic relationships between the two sides and the evident lack of studies in these sort of relationships. In what follows I will explore the research design process I adhered to at the beginning of this investigation. I will state the aims of the study, the theoretical and policy context in which the research is set, the design and conduct of the study, and the nature of the evidence collected. I will provide a personal account of the difficulties faced in carrying out this research. I will demonstrate how that may have affected the research aims. In this chapter I will also explain how data collection was accomplished and how the data was analysed in order provide answers to the research questions.

Beginning of the Research Journey

This research began as a Master's degree project focused solely on the question of how drug smugglers designed, built and used the artefacts commonly known as narcosubmarines or narcosubs. With this initial interest in mind I started assembling news articles and academic literature on the topic. I soon realized the lack of academic literature on several levels of the study of illicit drug smuggling and enforcement, or what I call in this thesis the binary interdiction/evasion phenomenon. Thus, my focus shifted from initially comprehending merely the smugglers´ side of the story to providing a more complete understanding of the set of relationship of that binary. The provisional literature review, exploratory data collection, a literature review for my Master´s thesis, and the paper for my first year progression board review provided me with the initial set of categories of interviewees and analytical themes to be discussed.

After the initial review of both academic literature and popular accounts of drug traffic enterprises it was clear that the existent literature on both drug smuggling and innovation in non-traditional spaces had not considered the questions I was raising. In summary. I encountered a lack of symmetrical studies in which the symbiotic relationship between smugglers and enforcement agencies was studied. As I

established in the previous chapter, the work of Kenney (2003, 2007) and Andreas 1999, 2003) raised some of those concerns. The work of Kenney explores the way in which both smugglers and state agencies learn, yet he leaves aside the technologies and the study of the practices. Alternatively, despite the extensive literature on the impact of policies, there is little literature exploring the way enforcement agencies have performed their actions in the field. The initial review also uncovered a prevalence of what can be summarized by Tosh´s (2002, p. 146) explanation of the *post hoc propter hoc*: 'Because B came after A does not mean that A *caused* B, but the flow of the narrative may easily convey the impression that it did'. I consider the issue of causation particularly important because, as argued in this thesis, the metaphors utilized to explain the mobility of smugglers and changes in the drug market is a cause and effect relationship. The many accounts of drug traffickers' strategies also present responses as situated in a broader context of evolution of the smugglers´ technologies. It should be added that although STS scholars have fruitfully studied military technologies and surveillance in everyday life, to the best of my knowledge there is little in the STS literature regarding the prosaic and mundane technologies which the WoD is concerned with.

From an initial interest in smugglers´ artefacts and narcosubs this research evolved to cover not only the process of design and building of narcosubs, but also to an understanding of the practices of LEAs and specifically the Navy in the WoD. The early choices of sites and interviews were made in order to explore the origin of the narcosubs. Confronted with the richness of experience of the Navy personnel expressed in the early interviews, I decided to concentrate on exploring those experiences.

Aims and Research Questions

The aim of this research was to gain insights into the ways the binary interdiction/evasion phenomenon has unfolded, and the transformations it encounters and conveys, including an understanding of how the Colombian Navy and specifically the Coast Guard personnel make decisions in the field and understand smugglers´ capacities. Additionally, the aim was to provide an understanding of how smugglers´ technologies were produced. As flagged earlier, neither the literature on organised crime, nor drug trafficking, or security studies, have delved into smugglers´ artefacts or the socio-technical systems used to confront them. When technology appears in those studies, it does so in a traditional deterministic fashion.

One important element in the many accounts of the WoD is the prevalence of statistics. To a certain extent statistics are the *de facto* method to explain the actions of the main players in the WoD. As a secondary aim in this research I want to communicate the need of qualitative studies of the phenomenon. I wanted to examine how the players interact in the field and to understand their learning process. All of the previous considerations where helpful in order to formulate the research questions.

The Colombian Navy is in its own an *emblematic case* of how a traditional military force faces the challenge of non-symmetrical threats. This offers the possibility of some degree of generalization of the results of my research. I am aware of the discussions regarding the possibilities and limits of generalization as result of qualitative studies. I do not make claims regarding the representational or theoretical generalization, but I do consider that it is feasible to establish strategies in order to make use of some degree of generalization. In choosing to study the practices and strategies of the Colombian Navy in order to understand some of the aspects of technological innovation in the WoD in Colombia I am further defining my strategy for generalization of my results, i.e. that other Navies and military are faced with

similar problems. In this perspective I agree with Lewis and Ritchie (2003, p. 267), regarding the possibilities of qualitative research in the sense 'that qualitative research studies can contribute to social theories where they have something to tell us about the underlying social processes and structures that form part of the context of, and the explanation for, individual behaviours or beliefs.'

In formulating the research questions I have attempted to fulfil the set of criteria summarized by Lewis (2003, p. 48) and the classification of research questions offered by Blaikie (2010). According to the former the research questions need to be: clear, intelligible and unambiguous, focused, but not too narrow, capable of being researched through data collection, not too abstract, or questions which require the application of philosophy rather than of data, relevant and useful, whether to policy, practice or the development of social theory, informed by and connected to existing research or theory, but with the potential to make an original contribution or to fill a gap, feasible, given the resources available, of at least some interest to the researcher.

According to Blaikie there are three types of research questions for a qualitative study: *what* questions, aimed at providing descriptions and revealing patterns in a social phenomenon; the *why* questions, that search for causes or reasons for the existence of a phenomenon. Those questions seek to explain relationships between events, social activities or processes. The principal purpose of the *how* questions is to provide connections between the results of the research and strategies and mechanisms to produce change, practical outcomes and intervention (Blaikie, 2010).

Even though some of my research questions start with the *how*, my main concerns are the *what* and the *why*. My research aims are divided into two main themes, (1) to understand the nature of innovation on the smugglers´ side and (2) to comprehend the practices of the Navy in facing drug smugglers. I gained access to both the Colombian Navy and Colombian Antinarcotics Police, as well as to several other officers involved

in the WoD in Colombia. Although both the Colombian Navy and the Colombian Antinarcotics Police have responsibilities in controlling maritime drug traffic, I decided to focus my research on the role of the Navy

The year 1994, the initial date of my research was marked by three key events: first, the recent death of Pablo Escobar in December the previous year, which raised the possibility of ending drug trafficking in Colombia, but one that is currently widely considered as the beginning of the 'democratization' of the drug market in Colombia; second, in 1994 the first of what can be considered as a narcosub was found, and finally, the Colombian government incentive to boost the Coast Guard Unit in order to control what was perceived as an increment in the use of maritime transport methods by drug traffickers.

The research questions that guided data collection and data analysis are presented here. They arose from confronting the early research questions with the preliminary analysis and choices for data collection.

1. How the Colombian Navy makes decisions leading to definitions of the *best* ways to patrol the sea?

This question involves a descriptive account of the Maritime Interdiction Operation (MIO) and of the definition of the strategic plans. This question includes two subsidiary questions:

- What changes can be perceived in the MIO during the period 1994-2014 and what is presented as explanation for those changes?

- How are the strategic plans and strategic concepts defined?

After the preliminary exploratory analysis of the research data, I found that MIO played an important role in the day to day activities of the Navy personnel. This discovery helped me narrow down the list of questions regarding the planning and the performance of MIO. With the two subsidiary questions I focus my attention on the set of practices and technologies concerning MIO and on how success and failure is explained. Responses to these questions are set out in chapter 8.

2. Is the process of technological innovation within the LEAs affected by intra- or inter-organisational competition?

Academic literature on military innovation has highlighted the roles of intra and inter organisational competition in shaping innovation. As different LEAs and Military have responsibilities over control of illicit drugs, the aim of those questions was broadly intended to identify the existence of competition as a motivation for change in the WoD. Answers to these questions are presented in chapter 4.

3. How does the Colombian Navy make sense of the threats and then construct the solutions and how do those threats affect the technological choices?

This analytical question seeks to understand how the Colombian Navy makes sense of its non-conventional enemy, how those images are constructed, and what role they play in the choices made by the Navy personnel. In order to orientate the analysis of that question not only was the emerging field of *ignorance studies* important (Proctor, 2008; Rappert & Balmer, 2015), but also a closer look into Navy personnel practices was necessary, as well as discovering how they describe their jobs and confront change and uncertainty. Chapters 6, 8 and 9 expand on the answers to these questions.

4. How do smugglers and the Colombian Navy acquire their knowledge and how do they learn?

With this analytical question I examine the process of learning and different forums in which the Navy personal acquire, produce and exploit knowledge. On the one hand, I examined the relationship between the upper command, officers and NCOs in reference to the way they produce the knowledge needed for the MIO. On the other hand, I explored the nature of smugglers innovation. In considering these themes the concept of dispersed peer innovation (Hyysalo & Usenyuk, 2015) was instrumental in providing a critical stance in the process of innovation in an outlaw context.

Research Design, Data Collection and Analysis

There is impressive media coverage of drug traffic related issues. Navy operations and smugglers artefacts when captured are highly reported in the media. As pointed out by Bechhofer & Paterson, (2000), a social scientist can use journalism as a source of data and as a recorder of social reality, but s(he) makes a mistake if the data is relied on uncritically. To include media reports in a research process implies a theoretical reflection on media representation of the artefact and how this inclusion contributes to the construction of the phenomenon. Following this advice, I made use of media reports as a guide for my interviews and in order to highlight some specific aspects of the process under study. Interviews are, nonetheless, the main method of data collection utilized in this thesis. However, this is not solely an *interview study.* I combined interviews with documentary research. During 2014, I conducted seventeen interviews in the spectrum between unstructured, non-standardized in-depth interviews and semi-structured, semi-standardized interviews with Navy officials and NCOs. Additionally, I was allowed to perform guided visits to four of the Navy bases in both the Caribbean Sea (1) and the Pacific Ocean (3) where interdiction operations are planned and carried out. I was also allowed to take photos under supervision. In

this sense, I aimed to combine structure and flexibility (Legard, Keegan, & Ward, 2003). The interviews were carried out in different settings[1]. The time available for the interviews varied from 45 minutes to 3 hours.

While I use the interviews and the interview data as a main source for this research, the three main models for data analysis of interview material - positivism, emotionalism, constructionism (Silverman, 2011) - are far from satisfactory when researching phenomena in which secrecy and asymmetry of knowledge is palpable. A constructivist interpretation of the interview data could provide a sense of how the Navy personnel present themselves and how the definition of several aspects of their actions shape their identity. I was not interested in identifying any clues regarding their talks or non-verbal actions. That said, evidently smugglers artefacts and the vessels used by the Navy during interdiction operations are material objects 'out there', I was not looking for a descriptive report of the 'reality' of smugglers artefacts and countermeasures. I sought an understanding on how those different sets of artefacts would come into being. A purely positivistic analysis of the interview data can certainly provide with data and 'facts' that goes underreported in media or even in security, but some interpretations about smugglers by the Navy personnel were not remarkably different from media portraits of drug traffickers.

I use the interview data between an understanding of the perceptions of the informers and how those perceptions are shaped and shape the phenomena, and as providing cues to pursue leads on recorded events relevant to my research. Interviews were then utilized as a way to access *inside* information and data about *facts* in the form of occurrences, procurement of technology, development of new strategies, and in order to 'map out´ other key players coming into a relationship with the Navy´s task of thwarting smugglers efforts. I analyse the interviews in a manner that surpasses the

[1] One of those was carried out in the waiting room of an airport, the only time that the respondent had free time.

mere ‘factual’ data, establishing links between what my informers talk about and broader issues, such as their visions and perceptions, strategic goals, etc.

The interviews that I use to support my arguments were analysed as a whole. Some of my claims are derived from the interpretation of the entire interview, others from a group of interviews. When my aim is to clarify a particular phenomenon, the interplay of security ideals, smuggling practices and the evolution of particular technologies in the interdiction/evasion binary, parts of the conversations are used as evidence to highlight particular issues. Having had the opportunity to converse with or to interview a wider range of people would have allowed for making a more overarching interpretation of the phenomena. Nevertheless, the group of interviews I examined demonstrated a critical mass of consistent data regarding central aspects of the Navy personnel´s perceptions on the phenomena and on specific occurrences (Mason, 2010).

Recruitment of the participants was seldom in the hands of the researcher. While I had the opportunity to speak freely with NCOs in several instances, those occasions were not planned, and those conversations always occurred in between discussions with the officials. Sometimes I was left alone because the officials needed to attend to urgent requirements. Conversations with officials were the result of suggestions made by my gatekeepers who stressed that those were the people who ‘knew’ about the topic. My initial intent was to interview people within three main categories: (1) the Navy personnel with operational experience in carrying out interdiction operations; (2) the Navy personnel with experience in commanding interdiction operations; and (3) officials in charge of designing strategies and operational concepts. I was often redirected to officials in current position of command. In short, from a *targeted sampling*, I moved to a *Stratified purposive sampling*, defined by Patton (2002) as a hybrid approach, in which the aim is to select groups that display variation in a particular phenomenon. Each group is fairly homogeneous, thus subgroups can be compared. Given the constraints of access I consider that this opportunistic sampling

(Lewis, 2003; Rapley, 2014) could provide useful data for the phenomena I had intended to research.

I informed the interviewees about the goals of my research and explained the reasons I was directed to them by my gatekeepers. Additionally, I informed my interviewees how the interviews would proceed, requested permission to take notes and to audio record. I prepared a topic guide and a detailed questionnaire. The topic guide consisted of simple lists of key topics to be covered as a broad agenda during the interview. The questionnaire was built from the template offered by the topic guide and contained specific questions covering issues related to the main categories in the area of expertise of the interviewees. Both the topic guide and the questionnaires were organised following the same sequence. Introductory questions were about: years of service, early experiences in counter drug operations, current job positions; questions regarding specifics on their current and past roles, the main questions concerned: maritime interdiction operations, procurement, challenges; questions regarding their views on smugglers artefacts, changes, current challenges; I finished my interviews by asking all my informers about their views about future challenges. By observing this order my aim was, first, to demonstrate interest in their personal experiences and generate data on the undocumented early years of the coast guard operations. The following section allowed a more detailed account of Navy personnel regarding the two sides of the binary, while the concluding remarks were useful to discuss the perceptions on the efforts of the Navy, their identity, and perceptions regarding the future of the Navy.

Questionnaires were read and commented on by my gatekeeper in order to safeguard that no sensitive information was inquired about. In several instances the questioners were pre-approved by the informant or one of their assistants, i.e. some questions were not asked to some of the informers. In most cases the questionnaire was sent days in advance of the interview. Only on one occasion was it possible for the researcher to ask all the questions in the questionnaire. Most respondents, once given the initial

clues, were more likely to speak freely about their own experiences. I took advantage of their silence to ask a new question or to introduce a new topic.

Much of the documentation regarding reorganisation, operational and strategical documents of the Navy are in principle publicly available. Unfortunately, several public documents that are important to understand the changes in operational arrangements and decisions are lost. Despite claims about their existence and continuous promises to gain access, it was impossible to obtain Navy Strategic Plans prior to 2003. A document entitled Navy Plan Science and Technology - mentioned in several documents and by a couple of interviewees - was never found by the officer in charge of the Navy archive.

The realization of the difficulties in finding several documents led me to adopt the *anything-you-can lay-your-hands-on* approach (Linders, 2007), asking my interviewees about possible sources, names of documents, etc. . This means that series of documents are not always sequential, for example, the official magazine of the Navy, the *Armada*.

Validity and Reliability

In her book *Interpreting Qualitative Data,* Silverman (2011) poses two significant questions for qualitative studies. 1. Does it matter whether qualitative research findings are credible? 2. If so, how might that credibility be sustained and recognised? I believe that these two questions and their responses are important, even highly significant for a research involving any aspect of illicit drug business. The answers to these questions are important in order to position a constructivist, qualitative based study among *realist* studies of drug policies and security studies (both historical and economical), which attempt to build their arguments from the existence of *facts*.

I use triangulation - a process of observing the research object from at least two different angles (Flick, 2000) - as the main tool to ensure validity. In the words of Denzin (2012), triangulation appears to be a useful resource in order to add rigor, breadth, complexity, richness, and depth to any inquiry (Ibid.). In this research I pursue *triangulation of sources, i.e.* comparing data from different qualitative methods, e.g. observations, interviews, documented accounts. Furthermore, I consult my interviewees about the perceptions and data provided by other interviewees. I am aware of the difficulties in following this advice to a full extent when carrying out research in social spaces dominated by the idea of secrecy.

As for reliability, my aim is to describe the process that led me from data collection to the conclusions, and to show how the conceptual tools I used helped me illuminate the data and reach such conclusions. One particular problem was the already established narrative of the illicit drug market, with depictions of 'barons' and powerful and *wily* cartels. I have, thus, adopted what Hammersley (Cited in Silverman, 2011) defines as a 'subtle form of realism', which implies that (1) validity is identified with confidence in one's knowledge, but not as a certainty of its truth, (2) reality is assumed to be independent of the claims that researchers make about it, and (3) reality is always viewed through particular perspectives, hence, our accounts represent reality they do not reproduce.

The approach to transcription was based on Aufenanger's recommendation (2006, p. 111 cited in Kowal & O'Connell, 2014)) that the choice of transcription methods be 'appropriate for the specific purposes of a given research project'. I transcribed my interviews verbatim, including fillers, such as *um, uh, eh,* and repetitions of words, such as *the the*, and other varieties of repetitions and halting, such as *eh we were eh, but,* and a variety of local interjections. I also included pauses. As the interviews were held in Spanish, some of the nuances or emphases in the transcriptions unfortunately got lost in the translation. Transcriptions and the analysis of the interviews were carried out using the Software for qualitative analysis Maxqda®.

The first stage of the analysis consisted of identifying general themes in both the documents and the interviews, i.e. indexing their recurrence. Those indices highlighted which theme or concept was being referred to within a particular section of the data; in that sense the first round of my analysis was composed of sorting the data in 'organisational categories' or 'topics' (Maxwell & Chmiel, 2014). I identified four broader themes, covering two principal topics. First, the Navy strategies, answering questions, such as *who we are* and *what we do*. Second, questions concerning the smugglers´ strategies, namely *who they are* and *what they do*. The three broad themes were selected based on their recurrence and in relationship with the research questions. Then I identified different levels of generality, indexing subthemes in that broad hierarchy, i.e. from the three main substantive themes I derived six categories: (1) The Navy strategies, in which the many activities performed by the Navy were attached; (2) Smugglers' strategies, includes the visions of the Navy personnel about smugglers' activities; (3) Interdiction, the importance of the MIO in the day to day actions of the Navy; (4) Navy boats and innovation; (5) the understanding of smugglers' technologies; and (6) Learning and knowledge about smugglers and smugglers' artefacts. These categories were constructed with the initial idea of comparing the perceptions, visions, and experiences of Navy men in the field and to understand how, and if, those perceptions, visions, experiences had any connection with the construction of broad policies, strategies, etc. Additionally, it was essential to understand how those ideas were transported from the field to the board rooms and back.

Using those topics I proceeded to compare the concepts in order to generate the explanations provided in this thesis. In this I follow Richards and Richards (1994) when they remind that, contrary to most grounded theory approaches to building explanations, those explanations do not spontaneously emerge from data, but are 'actively constructed (Miles and Huberman, 1983). They will continue to be constructed by human researchers. Explanations are 'mental maps' and abstracted webs of meaning; the analyst lays over bits of data to give them shape without doing violence to them' (Miles and Huberman, 1983 cited in: Richards & Richards, 1994).

During my analysis I use several tables and graphs showing seizures of drugs or smugglers artefacts. I utilize them for several reasons: first, to highlight the social context in which those statistics are produced, as well as the process of production of those data; second, to demonstrate how those data shape the views of the players regarding the phenomena; and third, to show how the data is used by the Navy.

Challenges in Researching the War on Drugs

Researching military organisations is challenging in many ways. The constant change of personnel and the need to establish rapport with new people was a challenge. Military organisations are traditionally bounded by cultures of secrecy, where outsiders are clearly and easily identified. While carrying out fieldwork in the Navy bases access to specific areas was sometimes restricted. Where granted, the researcher's identification papers were constantly reviewed. Once the security check was cleared, there was, nonetheless, another challenge to find the right person to talk to, in a context in which the researcher had little control over choosing who to converse with. The Office Against Drugs and the gatekeeper suggested a list of Navy officers, all of whom were in their late thirties and early forties, who were considered to have knowledge on the topic I wanted to research, because as was explained to me, 'they know about technology'. To all of them I was presented as a researcher taking part in a public relations program designed to improve the relationships between the Navy and the civilians. The idea of someone who 'knows' proved to be an interesting one. For my gatekeeper and subsequent interviewees, people who 'know' are automatically seen to be those occupying key spots within the Navy hierarchy, namely the commanders, chiefs, etc.; therefore, my continuous suggestion of talking with NCOs or with officials not necessarily in command posts appeared strange to my gatekeepers.

I have no grounds to doubt the sincerity and honesty of the information and the data that the interviewees provided to me. Nevertheless, during several moments during the

interviews, interviewees withheld some information or suggested that I should not report a particular aspect of what they had said, or they abstained from responding due to the 'classified' character of their potential answers to my questions. At some point, either during or after the interview, most of my respondents explicitly informed me that they were not able to provide some data due to issues of confidentiality or security. This happened despite the fact that it had been clearly stated at the beginning of the conversations that I was not looking for any data that might cause any damage to current operations.

I attempted to gain access to inmates serving their sentences in the United States and Colombian jails, but the entry to the United States Bureau of Prisons facilities was denied on grounds of security issues and the lack of 'impact' of this research to their institutional goals. Alternatively, a contact with four inmates in Colombian jails was guaranteed, yet the bureaucracy delayed any access to the Colombian Institute of Penitentiaries Control (INPEC) because the entry had to be negotiated with three different press chiefs. I had, nervertheles, the chance to conduct interviews with four retired drug smugglers with knowledge of maritime routes from the North Caribbean Coast of Colombia.

The lack of first hand data from current smugglers limited the collection of evidence about the resources, visions and knowledge of those actors in the WoD. The absence of this data necessitated a reformulation of some of the research questions, in this case, from looking at the mutual shaping of smuggling and interdiction technologies and practices to a focus on how the images of the smugglers capacities are constructed and how those images help shape technological choices by the smugglers and the Navy.

There are some ethical considerations that have an impact on my research. Issues of confidentiality and anonymity were addressed through a continuous reflection on the set of questions posed by Uwe Flick (2014): How can the analysis do justice to the

participants and their perspective? How does the presentation of the research and its findings maintain their privacy as much as possible? How can feedback on insights from the analysis take the participants' perspective into account and do justice to their expectations and feelings? Regarding the first question, I do not provide any information that might help link the interviewees with particular events. Most importantly I abstain from reporting on material or comments that my respondents asked not to disclose.

Chapter 3. A Brief History and an Overview of the War on Drugs in Colombia

In 2015 SIMCI or *Sistema Integrado de Monitorio de Cultivos Illicitos* (Integrated Illicit Crops Monitoring System), a United Nations Office on Drugs and Crime (UNODC) project, and a source authorized by the Colombian government, announced a new increase in the growth of coca field plantations, from 69,132 ha in 2013 to 96,084 ha in 2014. This growth represented the possibility of producing up to 442 tons of pure cocaine compared to the potential 290 tons in 2013[2]. This happened despite a reported decrease of consumption of cocaine in some markets and stabilization in some others (UNODC, 2015), and notwithstanding Law Enforcement Agencies' (LEAs) claims that interdiction efforts were reducing the size of the market (Drug Enforcement Administration, 2013). According to the UNODC the value of the cocaine retail sales in 2008 was higher than the GDP of 123 countries (UNODC, 2010b).

During the same period, The Colombian Observatory of Drugs reported a displacement of the traditional cultivation places to new ones. These coca fields were even more difficult to control. Moreover, a decrease in size of the coca fields made measuring and eradication harder. At the same time, Colombian LEAs routinely displayed *new* methods of transporting cocaine, reported seizure of cocaine with *old* methods, and announced the regular capture of the new *boss* or the new *cartel* or *network*. However, the familiar headline 'The New Route of The Narcotraffic' or 'A New Route Is Discovered' could be read in1993, 2001 or 2015 (El Tiempo), or indeed almost any other year. All these snapshots allow us to understand the complexities of the so-called War on Drugs and its vicissitudes. In this chapter, I present an overview of the history of the WoD.

[2] It is worth pointing out that there is no market for pure cocaine. According to the UNODC those figures are produced in order to be used as a guide to compare production between countries.

The popular history of the War on Drugs consists of narratives in which sensationalization of violence is merged with stories of clichéd drug barons. As Boyd (2002, p. 397) states, 'Today's war on drugs is characterised by the "routinisation of caricature" which promotes worst case scenarios as the norm, sensationalises, and distorts drug issues in the media'. Perhaps the name Pablo Escobar - the top leader of the so-called Medellin Cartel - is the figure that most fully consolidates all the demonization present in the narrative of the WoD. However, far from being dominated by the competition between powerful *cartels,* who exert control using indiscriminate violence, the history of the WoD can be better seen as result of the failure of enforcement-led strategies.

Early Uses and Early Prohibitions

Coca is a native American plant. It has been used since pre-colonial times as food, stimulant, and analgesic by natives. Spanish conquerors noted its widespread use. Native populations not only chewed the coca leaves as a supplement to their diet, but also utilized it on ceremonial grounds, as part of rites of passages and for medical purposes. Coca use in what today is Colombia was not as prevalent there as it was in other Andean regions, and it was used mainly by groups subjected to Inca influences before the Spanish conquest in what today is the south Andean region of Colombia (Thoumi, 1995).

Initially the Spanish conquistadors, and especially the Catholic Church, opposed the use of hallucinogenic substances. Later, the recognition that coca chewing allowed natives to work for longer hours without eating or resting was instrumental in a change of perceptions regarding the use of the alkaloid. In 1573 the viceroy Francisco de Toledo lifted the prohibition on the farming and consumption of coca, which was instead taxed.

During the 1740s Joseph de Jussieu, a French botanist, provided the first leaves to Jean Baptiste Lamarck who classified the genus *Erythroxylon*. There are more than 200 species classified under this genus, but only a handful – e.g. *Erythroxilum coca* and *novogranatense* - are used to commercially produce cocaine. In 1859 an Italian physician, Paolo Mantegazza published a paper on the properties of coca leaf extract (Wielenga & Gilchrist, 2013). In 1860 the German doctoral student in chemistry at Göttingen University, Albert Niemmann, was able to isolate the alkaloid from coca leaves. Also, in 1884 the Peruvian scientist Alfredo Bignon developed a fairly simple formula adapted to local conditions of the jungle of Peru (Gootenberg, 2008).

In 1863 Angelo Marini produced and launched the successful Vin Mariani, a mix of Bourdeux wine and coca extract, soon followed by an *elixir*, pills and finally the tea Marini[3]. In fact after 1863 Mariani became the largest buyer of Andean coca (Gootenberg, 2008). The late nineteenth century also saw the use of the anaesthetic properties of cocaine during surgery, and between 1884 and 1887 Sigmund Freud published a series of papers concerning his experimental results on the use of cocaine and its anaesthetic properties.

At the turn of the twentieth century, consumption of cocaine was a socially accepted practice in most European countries. Cocaine was used for recreational purposes, and, together with heroine, as a medical ingredient. However, as early as 1887, moral, religious, and medical arguments concerns led to increasingly prohibitionist policies taking shape. Boville (2004, p. 18) argues that 'Measures against opium, cocaine and alcohol were part of a social environment marked by a growing rejection of any degree of drunkenness or drug dependence.' At a federal level the U.S first established a restriction of the use of hallucinogens, with the 1906 "Food and Drug Act" that required the labelling of products in order to inform consumers of any opiates, cocaine,

[3] Mariani products were widely used by the public and the elite, including Queen Victoria, Thomas Edison, Ulysses S. Grant, and Pope Leo XIII. Pope Leo XIII even awarded Vin Mariani with a Vatican gold medal.

cannabis, alcohol or other psychoactive ingredients. The Poisons and Pharmacy Act of 1908 posed similar restrictions in the United Kingdom. While in February 1909 the Shanghai convention, the gathering of thirteen countries summoned by the U.S. since 1906, discussed the regulation of the traffic and control of opium consumption. This forum was known as the Opium Commission. The bishop of the Philippines, Reverend Charles H. Brent, was elected President of the Commission (UNODC, 2008a). In 1914, the Harrison Narcotics Tax Act conferred government power and authority over states on drug issues, and imposed a drug tracking tax. In this document the word narcotics was first used to refer to marihuana, cocaine, and opium. In 1919, an amendment to this law was passed increasing the restrictions on cocaine imports, and in 1922, the Jones-Miller Act finally closed U.S. borders to cocaine and strictly regulated coca imports. In the meantime, in 1916 The Defence of the Realm Act was instituted in the UK as an attempt to deter illegal possession of cocaine. In 1920 the Dangerous Drugs Act limited the production, import, export, possession, sale or distribution of cocaine (Wielenga & Gilchrist, 2013).

The Shanghai convention and the prohibition of morphine and opium that the U.S. promoted laid ground for the first international treaty, The Hague Convention (1912). The International Opium Convention of The Hague attempted to control narcotic drugs, including cocaine, and to limit their use for medical purposes. In 1920 the League of Nations adopted the control of drugs as part of its functions and established the Advisory Committee on the Traffic in Opium and Other Dangerous Drugs usually referred to as the "*Opium Advisory Committee*". It was in charge of, among other things, compiling information about imports, exports, re-exports, consumption, and reserve stocks of narcotics (UNODC, 2008a). Efforts to control the flows of illicit narcotics, specifically opium, continued with the second agreement, the new International Opium Convention, or "1925 Convention", entering into force in 1928, and later the 1931 Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs. In 1936 the League of Nations held the Convention for the Suppression of the Illicit Traffic in Dangerous Drugs. As noted by Gootenberg (2008) the practical effects of the 1936 convention were severely limited by the

absence of several important producers from the League of Nations and by the refusal of several countries to sign and ratify it.

After the Second World War in 1946 the United Nations continued the efforts of previous commissions and created the Commission on Narcotic Drugs (CND). During the 1950s the CND produced a series of reports on the control of farming of coca plants in Peru and Bolivia, leading to the 1961 *Single Convention on Narcotic Drugs,* which aimed to control the farming and production of narcotics, and required the absolute elimination of coca fields, even for traditional use. The 1961 Convention was amended by the 1971 *Convention on Psychotropic Substances,* and then by the 1988 *United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances* - also known as the Vienna Convention - with the main focus on cocaine. Delegations from 106 states participated and eventually adopted a new Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (UNODC, 2008). Aside from the efforts of controlling the production of narcotics, the 1988 convention focused on law enforcement matters. The convention aimed to disrupt drug trafficking by: (1) targeting drug traffickers' revenues, (2) establishing strategies that would prevent money laundering, (3) freezing and confiscation of assets resulting from the illegal trade of narcotics, (4) setting up provisions for extradition of major drug traffickers.

Gootenberg (2012) presents a chronology of the historical process of what he calls the 'making of a global drug'. To him the history of cocaine traffic can be divided in four periods: the rise and fall of legal cocaine (1885-1947), the birth of illicit coke (1947-1973), the rise and demise of Colombian cartels (1973-1995), and Mexican Opportunities seized (1985-2000). Criminalization of the production and traffic of the Andean cocaine started in the late 1940s and early 1950s, for example in 1948 in Peru and in 1952 in Bolivia. Before that period Andean cocaine, mostly Peruvian, enjoyed a prominent position in the world trade of the product (Gootenberg, 2012). After the prohibition, since the early 1950s and up to the 1960s, Peruvian and Bolivian

smugglers dominated the illegal trade by exploiting the expertise in the making of legal cocaine sulphate, gained during the late decades of the nineteenth century and the first half of the twentieth century. During the 1950s Andean Cocaine was mostly exported to Cuba, which was both arrival point for local consumption and a node on route to the U.S. This privileged position ended with the Cuban revolution and with the arrival of the socialist party to power. The latter heavily criminalized the consumption and traffic of illegal drugs. Chileans, who served mostly as couriers during this period, abandoned their courier role and became *empresarios*[4] until 1973, the year in which the Allende coup ended the age of *Chilean narcos,* pushing the traffic toward a new region, thus, initiating the rise of the Colombian cartels (Gootenberg, 2008). The majority of historians of drug trafficking in Colombia agree that during the 1960s and 1970s Colombian drug smugglers occupied a prominent role in the smuggling of drugs to the U.S. and that before then Colombians only played a minority role, almost always as drug mules, couriers, and due to the use of Colombia as a transit point (Gootenberg, 2008, 2012).

The Colombian War on Drugs: From Early Prohibitions to the Plan Colombia

An important moment in the recent history of Colombia was the killing of Pablo Escobar. While hiding from prosecution the last days of the world renowned drug baron occurred far from his vast estates and luxurious houses. December 2، 1993 is no doubt a landmark in the history of the War on Drugs (WoD). Almost 20 years later several of the so-called 'cartels' have been dismantled, harvesting has been moved several times, cocaine plants have been modified to augment the alkaloid production, transport methods of cocaine have shown to be beyond imagination, and overall the consumption, the production and flows of illicit drugs continues. The consequences of

[4] Entrepreneurs.

drug traffic in Colombia have not been bound to the economic cycle, but have been felt in the whole fabric of society (Gómez, 1995).

The production of cocaine is a relatively simple agricultural and chemical process. The coca plants do not require special care, irrigation systems or fertilization. The plant sprouts easily in poor quality soil in large areas of Bolivia, Peru, Brazil, Colombia and Ecuador, with an estimated time of growth between six to nine months from sowing to harvesting, depending on the variety of the plant and the farming practices. The harvesting is done manually; the leaves are dried in the sun. The production of cocaine is not capital intensive, nor are specialized labour skills employed, and it can done with widely available raw materials, such as cement or gasoline, and every day tools, such as heat lamps, fans, and microwaves. As highlighted earlier, since the boom of cocaine production in the late decades of the 19th century a process well suited to the jungle conditions existed.

The farmers who cultivate the crops usually undertake the initial stages of the production of the alkaloid. This process involves the production of the non-perishable *pasta basica* (coca paste), which is produced by mixing the dry coca leaves with a reactive to release the alkaloid from them. A 'cook' or a 'chemist' performs the next stage of manufacturing the cocaine. It is done in a makeshift *laboratory*, usually in the jungle, although such *laboratories* have also been found in urban centres. Despite restrictions on the import of several of the chemicals and other supplies needed to produce the cocaine, producers have been able to modify the formulas by replacing those substances with other similar compounds and still produce hydrochloride of cocaine of a purity close to 90%. The outcome depends on the skills of the 'cook', but with a formula simple enough that it could be followed without previous expertise. In the early 1980s, Colombian drug traffickers dominated the illicit market of Andean cocaine and were the main suppliers of cocaine to the U.S.

The beginning of attempts to control narcotics in Colombian legislation can be dated to 1920 with the creation of the first regulations, establishing the rule that the prescriptions of narcotics could only be written by physicians or pharmacies (Law 11, September 15). In 1928, the Colombian congress enacted the bill 118 instituting minor punishments for the 'misuse of drugs'. In 1936, the criminal code initiated prohibitions on elaboration and distribution of narcotics, without making any reference to cocaine. In 1938, the sale of coca leaves was limited to medically prescribed doses filled by authorized drug stores. In 1941 all new plantations of coca were prohibited. In 1947[5] new legislation was enacted, prohibiting not only the farming, the distribution and the sale of coca leaves, but also the practice of paying salaries in coca leaves either partially or in full. Additionally, the destruction of existing plantations was ordered and jails for those guilty of infractions were set up. There was no relevant internal legislation until 1974, with the Decree 1188, which established the production and traffic of marihuana, morphine, cocaine or any other hallucinogenic substance as a crime. The Estatuto Nacional de Estupefacientes (National Narcotics Statute) later replaced this decree in 1986. This statute created penalties between 12 and 30 years of jail time for production and traffic of illegal drugs.

Over time the supply approach has become central to the WoD anti-drug policy, and it has combined various approaches, among them eradication and interdiction. Eradication has sometimes been done manually but mostly by aerial aspersion of chemical products (Felbab-Brown, 2010). Eradication policies have created a whole different range of problems, from controversies among the Colombian government, NGOs and local communities about the environmental and health related issues of fumigation (Oldham & Massey, 2002) to social mobilization and resentment from poor farmers who are dependent on coca cultivation (Felbab-Brown, 2010).

[5] Due to internal power struggles this decree was initially delayed by one year and later never reissued or enforced.

The interdiction approach is based on the idea that increasing the cost of transport will make traffickers give up on their intention to smuggle their cargo and to abandon the business altogether (Echeverry, 2004; Kawell, 2001). Those in favour of interdiction base their arguments for the approach in calculating that transport accounts for up to 40% of the total cost for traffickers. It is seen as 'the most vulnerable phase in the business' (Echeverry, 2004, p. 8). They assert that interdiction is more cost effective than other forms of control (Mejía & Restrepo, 2008) and that those in charge of transport also earn an important proportion of drug revenues (Thoumi, 2005a). Nevertheless, in order to carry out interdiction the LEAs' surveillance infrastructure needs to be constantly updated (Echeverry, 2004). Despite the use of different eradication and interdiction approaches and the constant militarisation of the WoD, that started in the early 1980s (Chepesiuk, 1999; Moloeznik, 2003), cocaine is still produced, and smugglers continue to move their illicit cargo.

The term War on Drugs has been used to describe the efforts of the U.S. government to enforce counter drug policies, i.e., an enforcement-focused approach, in which controlling the supply of illicit drugs is the main goal. This has led to an increasing participation of the military in the interdiction of illicit flows of drugs and in the capture of drug traffickers. In June 1971 president Richard Nixon declared the WoD with the reorganisation of drug policy around repression of consumption by creating The National Institute on Drug Abuse (NIDA) and the Drug Enforcement Administration (DEA) (Boville, 2004). However, the modern era of the WoD began with the presidency of Ronald Reagan in the early 1980s. Reagan's anti-drug crusade is the closest historical antecedent of the current policies around the flows of illicit drugs. During the Reagan presidency, the production and traffic - mainly in the Andean region - were considered a threat to U.S. national security. Initiating the process of militarisation of the WoD meant that the authorizing members of the U.S Armed service would participate in the interdiction of illegal cargo, and in the apprehension of drug traffickers. The armed services were deployed in foreign countries with the aim of stopping the production of illicit drugs in the source countries (Bagley, 1991). An early example of the process was the deployment of the U.S. Army in Bolivia in

what was known as Blast Furnace Operation. The aim of the operation was the destruction of the makeshift *laboratories* and coca *refineries* (Reuter, 1992). The enforcement-focused approach was continued during the subsequent presidencies of George H. W. Bush and Bill Clinton.

The Bush administration asked the military to play a major role in interdiction of illicit drugs, and increased military help to source countries and prioritized training both military and police forces (Bagley, 1991). Enforcement of supply strategies were continued during the presidency of Bill Clinton (1993-2000). It was during the second term of Clinton that the Plan Colombia was designed. The Clinton government, as well as his predecessors, considered drug trafficking as a threat to the U.S. national security. Relationships between the U.S. government and the Colombian government during the presidency of Ernesto Samper (1994-1998) were hampered by the decision of the U.S. not to provide financial aid to Colombia because President Samper faced impeachment charges for receiving money from the 'Cali cartel' to fund his presidency campaign. During Samper's government the circumstantial alliance between the left wing guerrillas and the drug market deepened. In the areas or recent settlements where the central state was absent, the guerrillas acted as a government, settling disputes and introducing taxes to producers and buyers (Boville, 2004). Samper's successor Andres Pastrana (1998-2002) became more aligned to the strategy outlined out by the U.S. government. The strategy was clearly expressed in the Plan Colombia, launched in July 2000[6]. When being proposed, both the Colombian and the U.S. government had different versions of what the Plan Colombia would entail. While the Colombian government sought the Plan Colombia to be a counterinsurgency plan, the main goal of the U.S. government was to prevent the flows of illicit drugs towards that country (Veillette, 2005). During the Samper Government the FARC-EP, one of the main guerrilla groups, was able to mobilize the *cocaleros* (coca farmers) to carry out military strikes against the central government in an effort to stop the fumigation of coca crops

[6] Initially called Plan for Peace, Prosperity, and the Strengthening of the also known as Alianza Act. The part of the Plan Colombian funded by the U.S. government received mainly the funding from the American program called Andean Counterdrug Initiative (ACI) and assistance from the Foreign Military Financing (FMF) of the Department of Defense's Central Counternarcotics Account.

and with their attacks imposed severe loses on the Army. Pastrana initiated peace talks with The FARC and conceded a territory of 42.000 square kilometres. The peace talks ended abruptly in 2002 after the FARC kidnapped several local politicians.

The central goal of the Plan Colombia was to reduce the cultivation, processing, and distribution of illegal narcotics by 50 percent over a period of six years, starting in 2000. The Plan Colombia contemplated an initial investment of 1.2 billon USD in counterdrug operations, but resulted in a package of 7.5 billion USD in aid, of which at least 75 percent was destined for the military and police forces (Rochlin, 2011). According to the United States Government Accountability Office (GAO), the United States funding for the military component of Plan Colombia was on average 540 million USD per year between 2000 and 2008. The Colombian government invested in the Plan Colombia approximately 812 million USD per year during the same period (Mejia, 2016). The reduction in the illicit drug trade, according to the Plan Colombia, was to be achieved with a combination of different instruments, among others the strengthening of the judicial system of Colombia and improving the living conditions of farmers. The main strategies contemplated in the Plan Colombia for the reduction of the flows of illicit drugs were: (1) manual and aerial eradication, with a strong emphasis on aerial fumigation, (2) interdiction of drugs, (3) identification and destruction of processing *laboratories,* and (4) the control of products used in the elaboration of cocaine.

According to several evaluations of the results of the Plan Colombia, a number of goals were not met, especially regarding the size of coca plantations. While poppy and heroin were reduced by 50% between 2000 and 2006, during the same period coca fields grew almost by 15% and cocaine production was reported to be up by 4% (Mejia, 2016; United States Government Accountability Office, 2008).

The Plan Colombia can be considered as an example of the merging of security discourses against crime and the securization logic promoted by the United States (Arteaga Botello, 2011). This logic was designed to counter 'narco-terrorism', and to unite the discourses against drugs and terrorism. The Plan Colombia links both the concept of 'national security' to that of 'public peace'. A further consolidation of this trend comes with the connection between the concepts expressed in the Plan Colombia - a concept of 'hemispheric security' developed by the Organisation of American States - (OAS) and the presumption that the complex threat of 'narco-terrorism' should be faced with transnational solutions, involving mainly an enforcement solution and the military.

The Colombian internal conflict, in which a multitude of players, such as two main left wing groups the FARC-EP and ELN and the right wing paramilitaries, along with brokers, drug smugglers, and emerging bands all have benefited from the drug market, thus created further complexities when determining the role of the different military organisations and LEAs in the WoD. Three different branches of the military have been carrying out counterdrug operations against the guerrillas and left wing groups and other criminal groups. The Army, The Navy and the National Police have specialized as counterdrug units, yet they have further been deploying resources from other units in counterdrug operations.

From the 1970s and until the mid-1980s the Colombian Police was the main player in the control of illicit drugs. During the 1970s the Colombian Police mainly focused on the control of marihuana crops in the Caribbean coast and on thwarting maritime traffic of marihuana from its source, that is to say, by seizing suspicious vessels in the North Caribbean Coast. In order to fulfil its mission the Colombian Police deployed two units, the *Air Service* and the *Specialized Antinarcotic Police Service*, which merged in 1987 to become the Antinarcotic Police. Later with the support of the UK Government, the Colombian Police received training in intelligence operations.

Furthermore, it was granted training in commando operations from the Special Air Service (SAS).

The National Army of Colombia created the Antidrug Brigade in 2000 with the double function of carrying out counter guerrilla operations and destroying cocaine processing *laboratories*. Meanwhile the Air Force was key in deterring smugglers both from transporting coca and *pasta basica* from Peru and Bolivia, in thwarting airplanes en route to consumer countries, and in destroying air strips where those airplanes departed. Finally, the Central Intelligence Agency, known as DAS (Departamento Administrativo de Seguridad)[7] and the Colombian Attorney Office both created units with the sole purpose of capturing and prosecuting people involved in the different stages of the illicit drug market. In summary, the Colombian military and LEAs expanded their traditional roles in order to participate in dismantling and thwarting the production or transport of illicit drugs.

Moreover, the declaration of the WoD implied that the production and transport of illicit drugs was no longer merely a criminal activity, but also a threat to state security; a scenario confirmed with later attempts to tie illicit drug smuggling with terrorist activities (Björnehed, 2004). This enabled the legitimization of the use of the Armed Forces and the deployment of military technology in thwarting the supply of illicit drugs. According to Gootenberg (2008) and Kenney (2007) strategies in the WoD follow the same pattern as the United States military intervention in South and Central America in the past. Furthermore, it has been argued that there is a continuity between 1960s and 1970s law enforcement campaigns against drug trafficking by the United States Government and the modern era of international crime control, and that the evolution of the latter has been shaped by the efforts of the U.S Government against illicit drugs (Andreas & Nadelmann, 2006). A typical argument for the use of military forces and for the militarisation of the police in the WoD claims that the possession of

[7] Dissolved in 2011 and replaced by the National Directory of Intelligence.

weapons by drug traffickers is beyond the capacity of regular police units (e.g. Garzón, 2008)

According to Griffith (1994, 2004), the end of Cold War geo-strategic goals opened up the way to what he conceptualized as Geonarcotics, that is to say, the complex dynamics behind the drug problem in the Caribbean, in which issues of power and geography are intertwined, and in which countless state and non-state actors interplay, and the existence of measures and countermeasures in order to control the several threats and security challenges created by the drug traffic market.

In addition to this argument, the WoD, which requires the policization of the Military, in which military apparatus is deployed both as surveillance and control efforts, in order to regulate the unruly illegal flows, can be described as a 'Securocratic War' (Feldman, 2004). In these type of wars, the objective is not necessarily territorial conquest and the enemy is not easily localizable and identifiable. The aim is to counter territorial contamination and transgression by multiple illegal flows, the 'terrorist' and other forms or demographic and biological infiltration. The day to day activities in the WoD, as well as the War on Terror (WoT), then, despite the label 'War', have more relation with crime fighting than war activities (Andreas, 2003). To a certain extent the case of the WoD in Colombia can be interpreted in the light of the concept of *new wars*, coined by Kaldor (1999) who considers that the *new wars* involve the blurring between war, organised crime, and large-scale violations of human rights.

Since states have imposed border controls there have been groups that have attempted to challenge state control and have sought to take advantage of disparities in commodity prices across borders. What has changed is 'their methods and speed of cross-border movement; state laws and the form, intensity, and focus of their enforcement; and the level of public anxiety and policy attention' (Andreas, 2003, p. 79). Moreover, Andreas (1999, 2003) demonstrates that the end of the Cold War led

many states to reshape their military apparatuses to cope with border regulatory policing, targeting different illicit flows, and the multitude of groups that attempt to avoid border controls. The involvement of the United States Military predates the end the Cold War and goes back to the authorization given by then president Ronald Reagan in December 1981 allowing civil authorities to use military technology, intelligence resources, and a sophisticated network of Navy E-2C, the so-called mini AWACKs, radar planes operating out of Jacksonville, Florida, in the WoD, while the U.S Navy participated in the interdiction of drug smugglers in international waters (Chepesiuk, 1999).

Those illicit flows are intense in borderlands. It is on the borders in which the contrast between visibility and invisibility is likewise key. While border crossers and smugglers attempt to remain invisible, the state makes efforts to highlight their visibility and their territorial sovereignty (Van Schendel, 2005). The efforts of Colombian Military, and especially the interdiction operations, and Maritime Interdiction Operations by the Colombian Navy are aimed at preventing illicit flows from abandoning the territory.

From Peripheral Producer to Main Players: Colombian Drug Traffickers

About 60% of the cocaine now consumed in the world is produced in Colombia (Mejia, 2016) - a country that in 1980 was producing roughly 3.7% of the world's cocaine. The increase in coca cultivation in Colombia can be traced back to the late seventies, but the rapid growing of the plant did not appear until mid-1980s. By 1990 Colombia was producing 13.7% of the world wide available coca leaf, with an area of approximately 40.000 hectares (Thoumi, 1995) of coca cultivations. This amount of hectares increased up to more than 162.000 at the turn of the century. By 2000 Colombia was the country with the highest amount of coca fields and had become the main producer of cocaine.

It was also during the eighties that Colombians traffickers integrated their participation in the manufacturing, transporting and marketing of cocaine. Since the 1950s a multitude of smuggling enterprises involving nationals of several Latin and Caribbean countries - Peru, Bolivia, Cuba, Chile, Mexico, Brazil, and Argentina - were involved in the smuggling of cocaine and heroin from South America to the markets of Europe and U.S., and illegal cocaine laboratories were routinely reported in the Andean countries (Camacho Guizado & López Restrepo, 2000). The first *laboratory* for cocaine production ever seized in Colombia was found in 1957 in Medellin. By the standards of the time it was reported as large. Allegedly this *laboratory* refined cocaine, heroin and morphine both for the local market and to be exported to Havana, where it was marketed by American 'Mafias' (Camacho Guizado & López Restrepo, 2000; Thoumi, 2003). Cocaine traffic from Colombia to U.S. via Cuba was reported throughout the 1960s. It is during that decade that the traffic of marijuana from Colombia to U.S., reached a new level, the so called marijuana *boom*. This initiated what Thoumi (2014) considers to be the beginning of a serious participation of Colombian traffickers in the illicit drug business. The traffic or marijuana from Colombia to U.S. was extensive, especially in the north of Colombia, where the plant was grown in the slopes of the Sierra Nevada, an isolated mountain range. By the late 1970s the marijuana *boom* had subsided, in part because of interdiction efforts, fumigation and eradication, as well as changes in consumption pattern and supply, and therefore profitability for smugglers (Reuter, 1992; Thoumi, 1995). By the early 1990s Colombian smugglers' participation in the marijuana trade was marginal.

During the 1970s Colombian traffickers obtained the coca leaves or coca paste from Peru and Bolivia and transported them to Colombia to be processed (Felbab-Brown, 2010). Yet, as highlighted earlier, domestic coca farming grew since the early 1980s, especially in the poor southern plains and jungles in the south of Colombia.

According to Camacho & López (2000) the drug smuggling phenomenon in Colombia is the result of a long history of violence and other smuggling activities that go back

as far as colonial times. The reasons why the illegal business was developed in Colombia at such a high pace and has proven to be difficult to manage have been explored by quite a few academics. According to Thoumi (2005, p. 20) there are a set of 'structural and institutional weaknesses of the Colombian society that attracted the illegal industry', such the traditional disregard for norms and law, corruption, and high levels of inequality. At the same time drug traffic money has deepened those weaknesses. Drug business has had an enormous impact in the recent history of Colombia (Camacho Guizado & López Restrepo, 2000). The amount of money that entered Colombia as result of drug traffic has precipitated changes in economy, political and cultural institutions, as well as fuelled the internal conflict, providing the principal source of finance for left-wing guerrillas and right wing paramilitary groups. Drug dealing from Colombia has generated a worldwide stigma, which has affected the sense of national identity in that country (Camacho Guizado & López Restrepo, 2000; Felbab-Brown, 2010; Thoumi, 2005a).

The history of drug smuggling in Colombia has usually been narrated as divided into three phases. The first one stretches from 1955 to the late 1970s. This phase involved the farming of marihuana. As was highlighted earlier, marijuana was cultivated mostly on the slopes of the Sierra Nevada de Santa Marta and transported to the U.S. in small airplanes and fishing boats using Atlantic coast routes (Felbab-Brown, 2010; López Restrepo & Camacho Guizado, 2007). The second phase was the generation of the 'capos' or drug lords, who managed to turn Colombia into the biggest producer of cocaine in the world within a decade. The third generation is said to be composed of low profile traffickers with an entrepreneurial style of dealing, following the demise of the Medellin and Cali 'cartels' (Thoumi, 2005a; Vellinga, 2004). In three decades Colombia turned into an important marihuana producer and exporter, the main producer and exporter of cocaine, and by the 1990s it was harvesting around 50% of opium poppy in the world (Camacho Guizado & López Restrepo, 2000).

It is widely considered that Colombians played a fairly peripheral role in the traffic of Andean cocaine during the 1950s and 1960s, with Colombian nationals mostly fulfilling the role of couriers carrying small amounts of cocaine in the suitcases and shoe heels for Peruvian or Chilean traffickers (Chepesiuk, 1999; Gootenberg, 2012). It was in the early 1970s when Colombian traffickers occupied the void left by the Chilean *narcos*, whose networks were disrupted by the political turmoil in that country. Between 1970 and 1972 Colombian LEAs started to carry out action against the presence of cocaine traffickers in the country (López Restrepo & Camacho Guizado, 2007; Roldán, 1999). It is the second generation of drug smugglers that gained attention and transformed the drug businesses into a well know enterprise. The history of the rise of Colombian traffickers has been well documented, nevertheless, the origins of the so called 'cartels' are less known (Gootenberg, 2012).

Colombian traffickers managed to transform and expand the business in less than a decade. Initially they obtained the coca leaf and paste '*pasta básica de cocaina'* from Peru and Bolivia, using the route of the Huallaga Valley (near the south of Colombia). They utilized a small aircraft to transport the coca base, which then was transformed into cocaine hydrochloride in refineries in Colombia, later to be transported to its final destination (Felbab-Brown, 2010; Gootenberg, 2008, 2012). By 1976 Colombian *capos* had already organised and centralized the production, distribution, and commercialization of cocaine, and they were able to use large-scale smuggling methods (Roldán, 1999). In 1996, the U.S. government claimed victory over the 'air bridge' that transported cocaine from Peru to Colombia. The official data of the DEA pointed out that while in 1995, 39 suspicious airplanes were detected and thwarted, none were detected in 1996. These results were, according to the DEA, a possible consequence of the establishment of a radar system in the north of Peru, and the cooperation between the Peruvian Air Force and the United States government (Ahart & Stiles, 1991; Fialka, 1996). As a result of this, and despite the lack of indigenous coca leaf tradition, Colombian traffickers introduced extensive plantations of coca plants in tropical areas of Putumayo and Caquetá. They were sustaining and generating processes of colonization in unpoliced areas of the country and thus created a new coca

culture (Gootenberg, 2012), and eventually integrated the whole chain of production of cocaine within the country (Echeverry, 2004).

The golden era of the 'cartels' ended in the mid-1990s with the killing or capture of the relevant members of the Medellin, Cali, and Bogotá 'cartels'. The stages version of the history of Colombia's drug traffic in due course assumed the demise of the so-called cartels and the democratization of the drug business. The void was rapidly filled with a multitude of smaller groups; those groups have been described with an abundance of terms, such as the self-contradictory, *baby cartels* or *boutique cartels*. Possible existing organisations that were already acting in the shadow of the previous more powerful ones. Important considerations made about those new organisations are their structural arrangement and characteristics. The new trafficking organisations are considered to possess a less hierarchal structure in order to be more flexible than the so-called cartels, and to have a high degree of expertise, with some of them specializing in only one or more aspects of the process. It has also been said that those new smugglers have diversified their routes and markets, and invested money in improving technologies for facilitating their business (Bagley, 2013; Gootenberg, 2012; Kenney, 2007b; McCarthy, 2011; Vellinga, 2004a). This new set of characteristics is also said to make it harder for LEAs to obtain intelligence in order to thwart their illegal activities (McCarthy, 2011). Another important change is that Colombian smugglers no longer control the whole cocaine supply chain; as they now fulfil a more subordinate role to Mexican Cartels (Andrés López Restrepo & Camacho Guizado, 2007; Medel & Thoumi, 2014). As highlighted earlier, both cartels and drug smuggling networks are considered to possess specific characteristics that contribute to their success. I consider that those set of explanations are the result of an asymmetric view of the drug market that places the agency on smugglers and does not consider the dynamic ecosystem of the drug market.

By 1997 enforcement agencies in Colombia, Mexico and U.S. considered that with the disintegration of the major Colombian trafficking organisations, Colombians no longer

dominated the cocaine traffic, which was by then controlled by Mexican 'cartels'. A collaborative relationship was formed between the Colombian traffickers and the Mexican 'cartels', with Colombian groups controlling production and routes to the Caribbean, but with the Mexicans as the owners of the drugs and in charge or their transport to consumer countries (Astorga & Shirk, 2010).

Quantifying Illegality: The Use of Numbers and the War on Drugs

Despite many criticisms made of statistics over crime related issues and the difficulties of measuring the drug market (Andreas, 2010; Thoumi, 2005), figures produced by state agencies and multilateral organisations play a central role in defining the 'illicit drug traffic' problem. Several scholars have pointed out the impossibility of producing accurate measurements of the drug market (Andreas, 2010; Andreas & Greenhill, 2010; Buxton, 2006; Gootenberg, 2009; Thoumi, 2005b). The challenge, as expressed by Andreas (2010, p. 23), is that illegal actors are 'actively attempting to avoid being noticed, reported, and quantified'.

One indicator with important policy consequences is any reduction or growth in the quantity of drugs seized in a specific region or over a period of time. As seen with the air transport example earlier, decreases of seizures are often taken as an index of success in controlling a particular method, strategy, or route. Success in seizures in one area often mean a subsequent change of routes or smugglers' methods, but independent of the ultimate impact, seizure statistics are often displayed as an indicator of success. Statistics on drug seizure are at the core of the process of shaping the enforcement agencies; they use those data in constructing the drug traffic narratives, and allocating budgets, resources or rewards. That is not to say that the data is cynically forged or fabricated, but that the very process of collecting, displaying, and using these statistics should be taken into account when discussing success in the WoD.

Measurement of the success of law enforcement and military organisations in the WoD is validated by statistics. Policy reports at different levels of aggregation provide readers with graphs, charts and figures about the 'behaviour' of the drug market. Those figures are used to define strategies and policies, and to provide arguments through which institutions prove their value as important players in the WoD. Statistics are the *de facto* tools for constructing evidence about illicit drug traffic. Each step of cocaine traffic - production, transport, and distribution - has been subject to quantification. Seizures of cocaine are considered as a reliable indicator of military and law enforcement performance; they influence the allocation of budgets and the definition of strategic and operational resources. Statistics are central in producing accounts of smugglers actions and choices. Global evaluations of the efficiency of the efforts in the WoD are also presented in the form of statistics. Since 1997, the UNODC has produced the World Drug Report (WDR). The Colombian Government publishes the *White Book* on drugs. As a combined effort, the UNODC and the Colombian Government present the annual Colombian Coca Survey.

Before 2000 Colombian LEAs routinely gave an account of results in the form of statistics in their own publications (e.g. the Navy Magazine: Revista Armada and the Colombian Police Magazine), as well as reporting statistics as press releases, highlighting the effectivity of the LEAs and the results of the different approaches, in which interdiction and drug seizures have been central. The UNODC started publishing the WDR in 1997, compiling and analysing illicit drug market trends. Estimates of drug traffic using maritime routes have focused not only on the different transport routes, but also have aimed to provide a high level of accuracy on the amounts of illicit drugs transported e.g. by providing the amounts of illicit drugs departing from the Pacific or Caribbean shores. In 2004, the Colombian Navy considered that 72% of the cocaine was transported using maritime routes sailing from the Colombian Pacific coast, while 27% travelled from the Colombian Caribbean coast. The Colombian Navy asserted that it was the 'national institution that captured most drugs on an annual basis' (Ortiz, 2002).

The data presented by the UNODC since 1997 in the WDR relies on the responses to questionnaires submitted to state members of the United Nations. The Colombian government has attempted to centralize the statistics on the different stages of the drug market since the 2000s. Since 2001 the Colombian Observatory on Drugs, an office of the Ministry of Justice, is in charge of compiling and presenting data from the different enforcement agencies and of publishing the available results of the different stages of the drug market. Both can be considered as attempts to respond to a demand for *numbers* to be used as policy tools, and as efforts to clearly fix what is in essence mobile - the flows of illicit drugs (Van Schendel, 2005).

Statistics, numbers and figures then play an important role in the WoD. Additionally, there is clearly a demand for numbers in different forms for both global views of the phenomena and for the evaluation of institutional and individual efficiency. Statistics are thus key from the policy point of view. Despite the criticisms mentioned earlier statistics provide some information about the scale of certain phenomena, and are used as a rationale for action (Reuter & Greenfield, 2001). In what follows I will highlight some of the most important statistics regarding the drug market in Colombia. My intention is to accentuate, as is elegantly pointed out by Reuter & Greenfield (2001), the 'scale' of the phenomenon.

The extent of the coca plants farming and the potential production of cocaine are key figures for measuring the results of eradication practices and, indirectly, of interdiction efforts. In this sense, providing *accurate* measures of coca farming is central in discussing not only the prevalence of coca plants in particular areas or countries, but also these measures are used to evaluate specific efforts at different levels, such as the effectivity of aerial fumigation versus manual eradication. Different measuring methodologies and interests produce different figures. While Colombian data are presented in the white book based on SIMCI reports as an official measurement, the U.S. government relies on the U.S. Department of State figures. There are often significant differences between them. Figure 1 shows the comparison of the

measurement of coca plantations between 2010 and 2013 made both by SIMCI and by the U.S. Department of State.

As result of this difference in data, there are also different versions of the amount of coca fields and various figures regarding the potential production of cocaine. As mentioned earlier, the potential production of cocaine is the amount that could be produced if every coca leave planted were to be harvested and transformed in pure cocaine, that is to say cocaine at 100 percent of purity, despite the fact that no such market exists and the purity of the cocaine depends of several factors, among them, expertise of the *cook*, plantation techniques, local soil, etc. The potential production of cocaine is utilized to make comparisons between the cocaine entering the illicit market and the seizures of cocaine. As presented in the Figure 2 the values of potential production are also radically different between the ones produced by the SIMCI in Colombia and those of the U.S. Department of State.

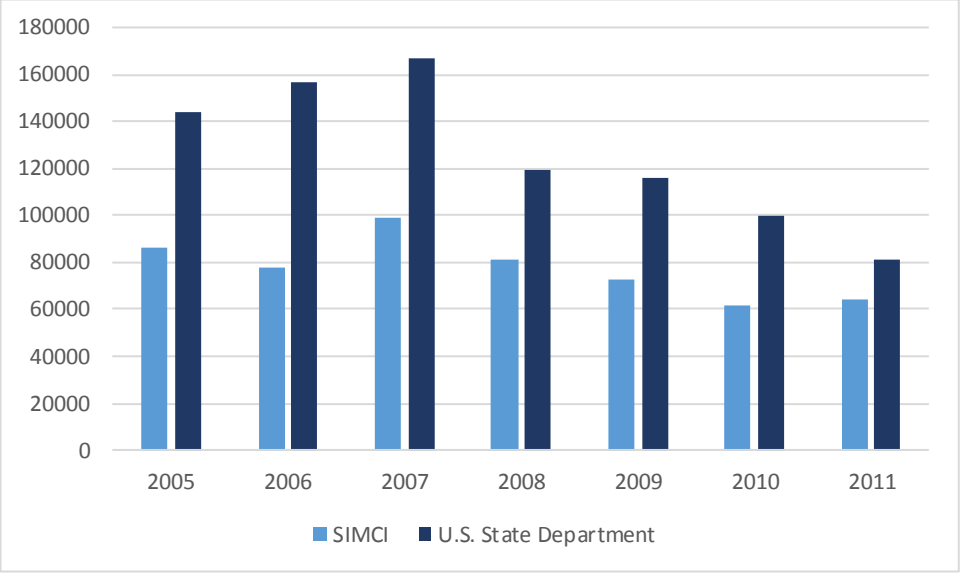


Figure 1. Coca field hectares in Colombia. Comparison between SIMCI and U.S. Department of State measurements; 2005-2011.
Source: Author with data from SIMCI and U.S. Department of State.

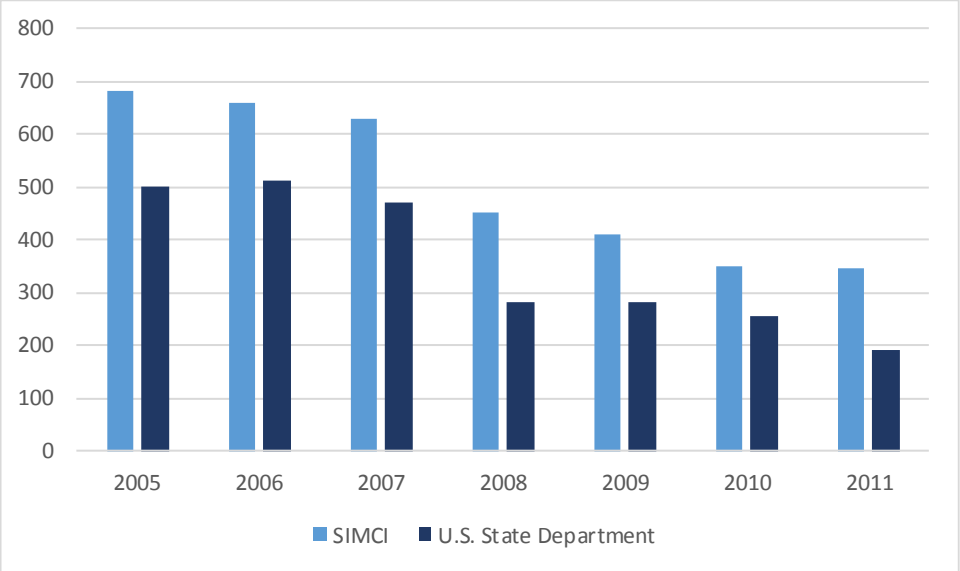


Figure 2. Comparison between SIMCI and U.S Department of State measurements; potential production of cocaine, tons, 2005-2011.
Source: Author with data from SIMCI and U.S. Department of State.

Interestingly, the values of farming and potential production are inverted. While according to the U.S. State Department data there are more cultivations of coca plants, the potential production of cocaine is higher for SIMCI, even if there are considerably less[8] coca plantations. Those figures are even more relevant when taken as the backdrop to measure effectivity of interdiction practices. On the one hand, Mejia (2016, p. 10) affirms that 'since 2000, 1,842 metric tons of cocaine have been seized, with an average seizure rate of 27 percent of potential cocaine production'. The Office of National Drug Control Policy (ONDCP) of the U.S. Government, on the other hand, calculated that the cocaine 'available to depart' as a result of the estimated amount of cocaine available for export after deducting local consumption and seizures. The ONDCP also attempts to present a detailed overview of the flows of cocaine to the

[8] Apart from the methodological difficulties of measuring illicit market, after reviewing data on production, potential production and interdiction, several observations are to be made. Reports often round up the measurement without clear indication of the methodology employed for such measurements. While carrying out fieldwork in a Colombian institution, I was able to observe how officials in the practice of compiling data, that far from the result of a standardized process, it is up to the official to decide how the round up will be performed, and sometimes with brief discussion with colleagues. Official reports claiming use of the same sources often vary in the presentation of the measurements, and most importantly, official reports within the same institutions often present different values for the same year in different reports.

U.S., without offering a detailed methodology of how those estimates are compiled. During my fieldwork, Colombian Navy and Antinarcotic officials often referred to potential production of cocaine in order to compare their performance in front of other Colombian LEAs or the U.S. LEAs. In short, measurements and estimates are utilized as an evidence of a problem to be solved and also as a confirmation of its successful resolution. Figures produced around illicit flows are in most cases *guesstimates* of a process that is not only difficult to see, but also one that actively attempts to hide from the gaze of the state.

In what follows, in order to highlight the scale of the problem, I present some figures produced by multilateral agencies and the Colombian government regarding production and seizure of cocaine. These measurements are not without any of the problems mentioned earlier, such as several agencies applying different methodologies in order to provide measurements, and the adjustments of those methodologies, for example, SIMCI including guesstimates of small plots to their measurements since 2010 [9]. Seizure data, however, present several problems. The collection of data is usually carried out by NCOs without proper training in basic statistics.[10] LEAs put little effort in discriminating seizures as outcomes of interagency operations, and as result double counts are inevitable. Rounding up figures is a common occurrence, without a clear indication of how that process may/will impact the ending figures.

Since 2001 data about coca cultivation in Colombia has been produced by the Sistema Integrado de Monitorio de Cultivos Illicitos, SIMCI (Integrated Illicit Crops Monitoring System) a United Nations Office on Drugs and Crime (UNODC) project. Before 2001 data about coca crops was mainly produced by the Department of Justice and National Narcotics Intelligence Consumers Committee (NNICC) and The

[9] SIMCI use satellite photos complemented with fieldwork and interviews in farming areas. Photos are usually affected by cloudiness and farmers strategies to hide coca fields, and are less reliable in capturing small plots.

[10] During fieldwork with the Antinarcotics Colombian Police I was asked to give NCOs training in basic statistics.

Department of State of the U.S. Government, or the United States General Accounting Office. Since the early 2000s data from SIMCI was officially accepted by Colombian LEAs and is currently in use, although the Colombian Police continue to use ONDCP or NNICC data. Later in 2008, the Uribe government was disagreed with 2008 results that showed a growth of 27 percent of coca fields compared to 2007. The government attempted to replace SIMCI data and sought to hire a private firm for this task (El Tiempo, 2008a)[11].

Figure 3 presents an overview of the amount of coca cultivations in Colombia from 1992 until 2015. The graphs show an increase in cultivation since the early 1990s with a peak at the turn of the century, followed by a decline of hectares of coca plants in Colombia, and again a relatively mild increase in 2014.

According to the 2015 WDR, the cocaine that is moved from the Andean countries of South America to North America travels with the familiar routes of the Caribbean and the Pacific, while the illicit cocaine route to Europe travels via the Atlantic or via Africa. In both cases a variety of means of transportation are used. As interpreted from annual seizures, maritime transport is considered to be the main means of transporting large amounts of cocaine. According to the report this form of transportation accounts for more than 50 percent of the seizures of cocaine, followed by air transport method, which is used for moving both large amounts of the product, and increasingly in order to transport small quantities, on average 6 kg for the period of 2009-2014. Cocaine seizures remained stable between 2012 (687 tons) and 2013 (684 tons). The biggest seizures of cocaine occurred en route from South America to North America or Europe (UNODC, 2015).

[11] Eventually the agreement was terminated and renegotiated.

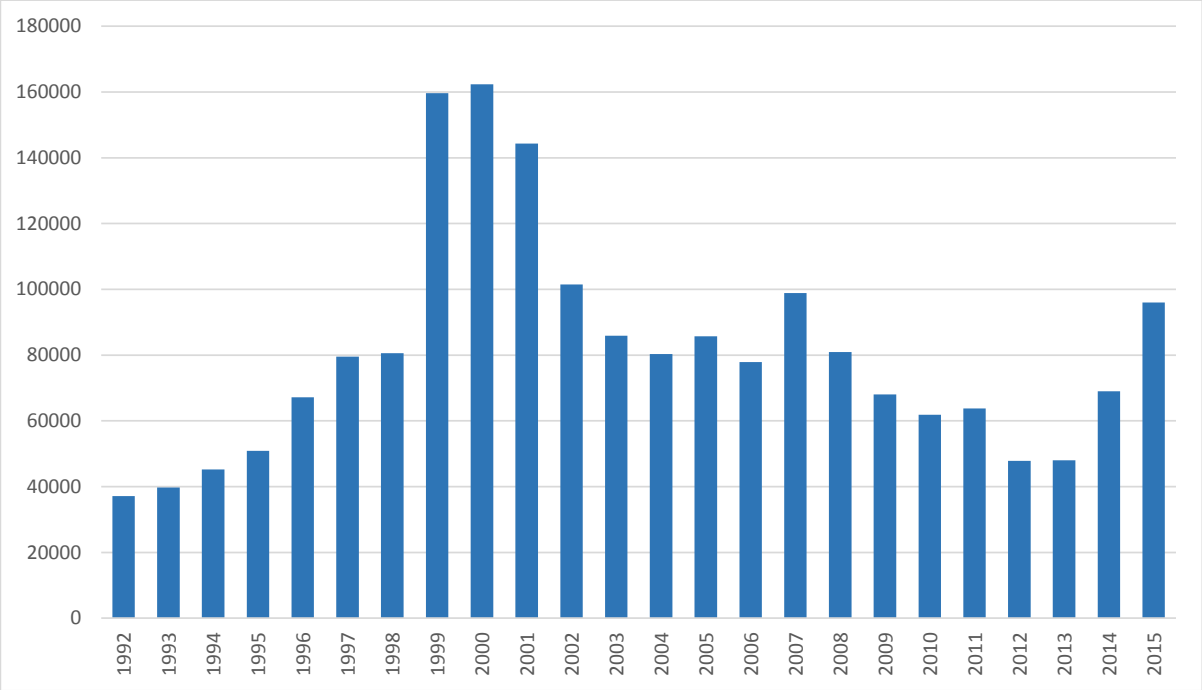


Figure 3. Coca plant field in Colombia, hectares, 1992-2015, Source: 1992-1998 U.S Department of State, 1999-2015 SIMCI.
Source: Author with data from SIMCI.

Figure 4 summarizes the amount of cocaine (pasta and salts) seized by the Colombian LEAs between 1994 and 2014. Seizures of cocaine reported by Colombian LEAs are relatively stable since 2004. As highlighted in Chapter 6, the maritime agreement between Colombian Navy and U.S. Navy entered into force in 1997. As indicated

above, resources from the Plan Colombia were available since in 2000.

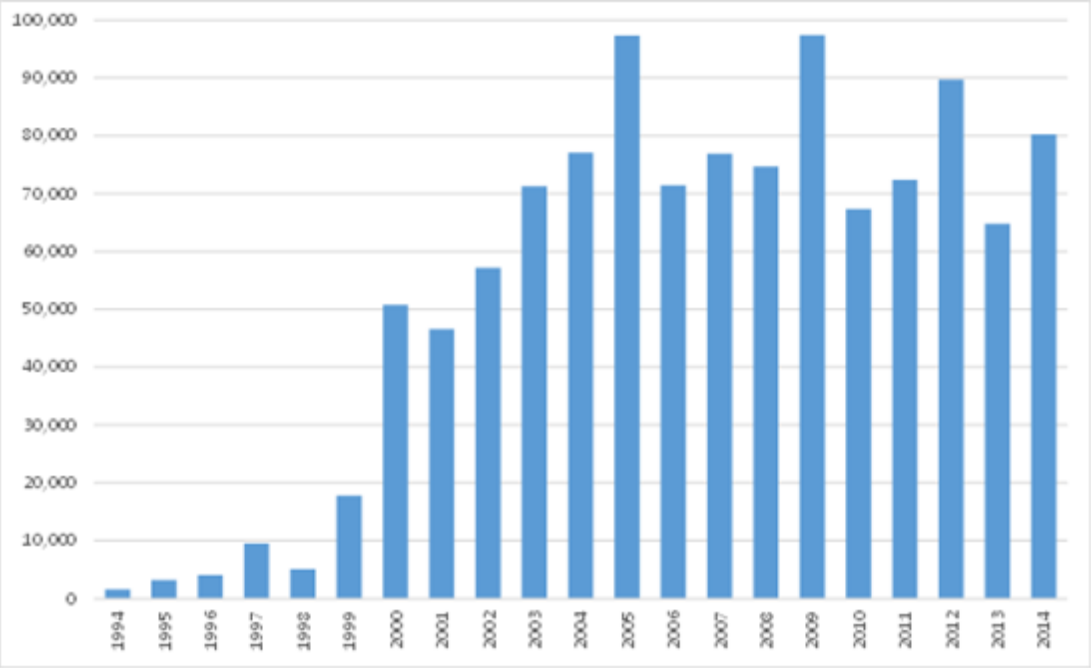


Figure 5 shows the amount of cocaine reported by the Colombian Navy as result of interdiction operations. The data reported by the Navy clearly demonstrates the increase of participation of the Navy in terms of percentage of cocaine seizure. While in 1994 the percentage of seizures was approximately 2%, between 1999 and 2014 the average participation of the Colombian Navy was of approximately 40% of the total seizures. In 2001 the Navy was able to seize up to 62% of the total cocaine seized in the country. This figure is, nevertheless, a result of a total decrease of seizures in the country to 75,087kg of which the Navy seized 46,610kg. It is the lowest amount seized between 2000 and 2014. In 2014 the Colombian Navy reported 105 'events' or successful interdiction operations, leading to the interdiction of forty one go-fast boats, one semisubmersible and multitude of other vessels, fishing boats, transport boats, etc.

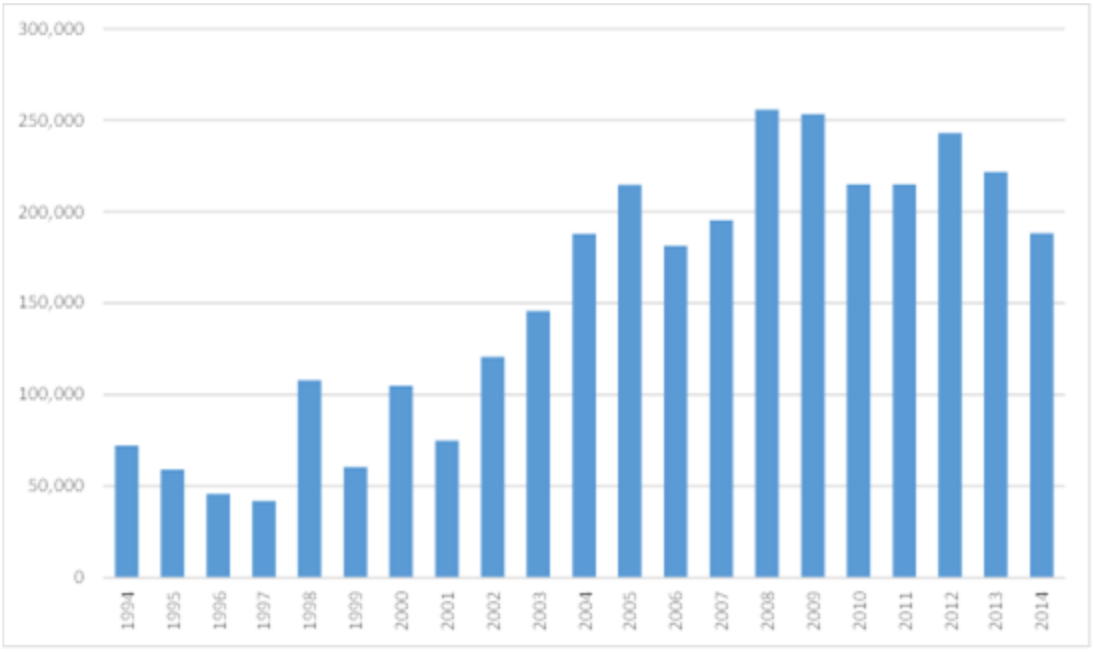


Figure 4. Seizure of Cocaine, pasta base and salts reported by Colombian LEAs 1994-2014. Source: Author with data from UNODC 1994-2009 and OCD 2010-2014.

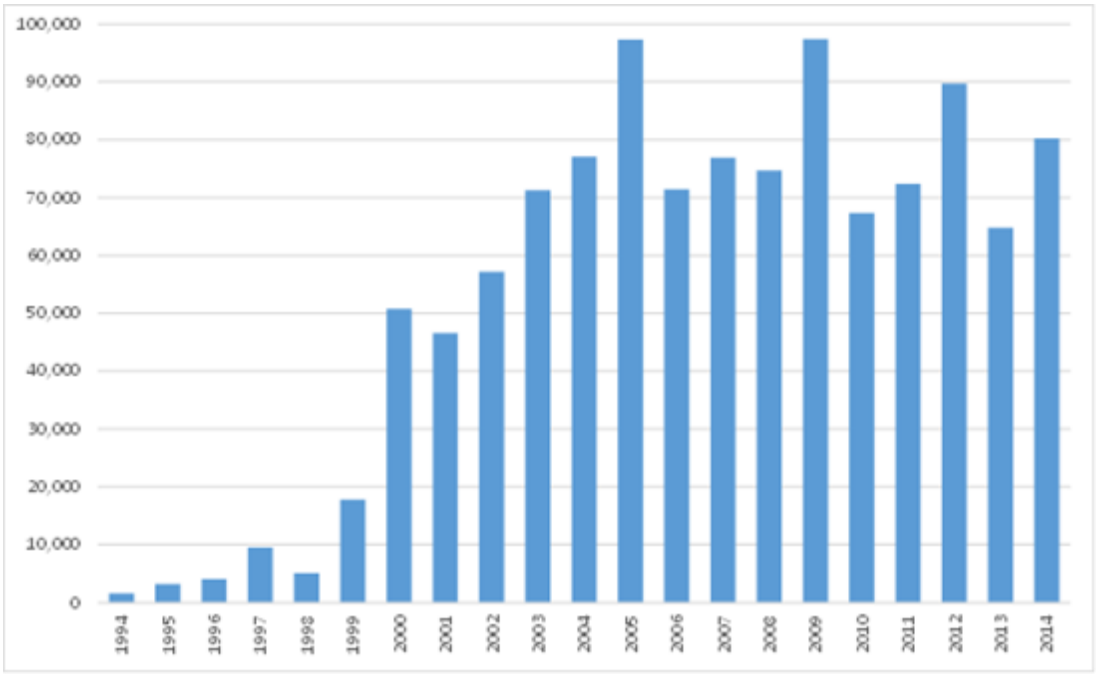


Figure 5. Seizure of cocaine, pasta base and salt by the Colombian Navy 1994-2014. Kilos. Source: Author with data from Armada Nacional de Colombia 1994-2007, ODC 2008, Armada Nacional de Colombia 2009-2014.

Between 1994 and 2014 Colombian LEAs reported the seizure of 3,204 tons of cocaine or *pasta básica*, while in the same period more than two million hectares of coca

plantations have been sprayed with glyphosate, 413,000 manually eradicated and 28,344 coca leaf processing *laboratories* destroyed (Mejia, 2016).

Some Costs of the War on Drugs

Perhaps the most striking indicator of the cost of the War on Drug in Colombia is represented by more than 57,000 Colombians estimated killed between 1994 and 2008 as a consequence of their involvement in any of the different stages of the drug market, counting both deaths a result of vendettas among traffickers and of members of stage agencies killed during counter drug operations (Mejia, 2016).

In terms of financial expenditure the Colombian government has also made great investments in order to control the flows of illicit drugs, mostly in supporting strategies aimed to reduce the supply of illegal drugs. It is not until the second part of 1990s that some preliminary analysis of the expenses of Colombia in the WOD was carried out. In 1997 López wrote an essay entitled: *Costos del Combate a la Producción, Comercialización y Consumo de Drogas y a la Violencia generada por el Narcotráfico* (Expenditure of the Combat on Production, Commercialization and Consumption of Drugs and Violence Generated by Drug Trafficking). López undertook archival work in an attempt to compile the expenditure of the major agencies in the WoD from 1978 until 1996. The first official report on the Colombian expenditure on the WoD was in in 2002 by the Departamento de Planeacion Nacional-DNP (National Deparment of Planning) *Comportamiento e Impacto del gasto en la Lucha contra las Drogas:1995-1999* (Behaviour and Impact of the Expenditure of the Fight Against Drugs: 1995-1999), which attempted to complement the series presented by Lopez, together with a methodology to calculate the expenses of the Colombian state in the WoD, to be used in subsequent reports.

Those initial studies show the difficulties of assessing the expenditure in absence of specialized data bases of the agencies involved. López (1997) found little evidence of centralized accounting regarding expenditure in the WoD, as well as a lack of consistency in the data bases. He pointed out that in many cases it was to the discretion of the person in charge of the accounting department to provide a review of the expenditures. Both studies under discussion point out the absence of clear categories for the accountability of expenses. In the case of the military, many of the costs accounted for both interdiction operations and counterinsurgency operations, as they were assumed to be the same by the military.

Taking into account the caveats mentioned above, the reports by Lopez (1997) and the DNP (2002, 2005, 2008, 2009 and 2012) provide an overview of the expenses of the Colombian State on the WoD. Supply control strategies accumulate the biggest proportion of the total budget in the WoD between 1979 and 2010. While during the 1980s the Colombian expenditure in the WoD was concentrated in supply reduction efforts, aspersion, interdiction and dismantling smugglers' organisations, since 1990 the efforts diversify to cover other approaches and fighting different aspects of the drug market chain from production to consumption, and to mitigate the impacts of drug traffic, such as environmental aspects and an impact of trafficking on local communities. The expenditure of the Colombian state in the WoD between 1995-2004 was devoted to five different approaches in which reduction of supply accounted for the 54.4% of the expenditure, institutional and judicial strengthening for 30.5%, alternative development for 10%, demand reduction for 4.4%, environmental impact reduction for 0.7% and 0.5% for international collaboration.

A similar distribution of the budget continues for the period of 2005-2006. 55.6% was spent on supply reduction efforts, 19.45% on institutional and judicial efforts, 15% on alternative development, 3.05% on demand reduction and there was an increase on environmental impact reduction, which accounted for the 5.9% of the total budget (Alvarado, 2008). The percentages of the total expenditure of the Colombian State for

the period of 2007-2008 suggest a clear focus on supply control efforts. During this period the increase in expenditure of the military was driven by investments made by the military, especially the Army and Air Force, on transport and communications systems (Altamar Consuegra, Baquero Quevedo, Hernández Reyes, & Parra González, 2009). The expenditure on supply reduction efforts increased from almost 10% to 64.1% of the total budget. 23.87% was destined to institutional and judicial efforts, while the other components of the overall strategy were diminished percentagewise, e.g. 8.86% for alternative development, 2.5% for demand reduction and 0.83% and 0.015% for international relationships and environmental issues.

The most recent reports of the Colombian expenditure in the WoD covers the period 2009-2010. In relation with the six broad strategies of the Colombian government for the control of illicit drugs the percentages of the total expenditure are similar to the previous period, with a 2% increase in the efforts to tackle supply of drugs, which constituted 66.2% of the total budget. Institutional and judicial efforts composed 23.2% of the budget expenses, 5.6% were expended on the alternative development strategy, and further 4.4% were invested in demand reduction (Departamento Nacional de Planeacion, 2012; Departamento Nacional de Planeación, 2011).

In summary, the Colombian government spent 2.4 billion USD [12] between 1978 and 1999 on efforts to curfew the production and transport of illicit drugs. These figures increased and stabilized after 2000 with the beginning of the Plan Colombia. There are three clearly distinguishable periods in re Colombian expenditure on the WoD, (1) a period between 1978 and 1989, in which the expenditure is sustained under 100.000 Colombian pesos annually and less than 0.15% in relation to the Colombian GDP; (2) between 1990 and 1999 with an increase in the expenditure but with a high variability in subsequent years, and an increase in the percentage up to 0.40% in relation with the GDP; (3) as a result of the Plan Colombia from 2000 to 2004 a stabilization of the

[12] As in 1999 currency.

expenditure can be observed, and then a new increase in the expenditure is noted again from 2005, yet a decrease follows in terms of the GDP percentage with an average around 0.31%.

Supply Control Expenditure: The Rising Budget of the Colombian Navy

As indicated previously, the biggest proportion of resources of the Colombian state spent on the WoD between 1978 and 2010 were destined to efforts at reducing the supply of illicit drugs, in which the LEAs and the military played the main role. Of the total expenditure between 1995 and 1999, approximately 58.2% were destined to reduction of supply of illicit drugs, of which the military and Police expended 77.86%.

Due to the 2005 DNP report it is possible to distinguish military expenditure in the WoD between 1995 and 2004, both as a total and separately (Alvarado & Lahuerta Percipiano, 2005). According to this document, the Air Force account for the biggest amount of expenditure, followed by the Navy (Figure 6). In 2008 a DNP report summarized the expenditure of the Colombian government between 1978 and 2006. It shows the continuous growth, going from 200.000 million pesos to 13.3 billion Colombian pesos[13](Alvarado, 2008).

[13] The baseline was Colombian pesos of 2006.

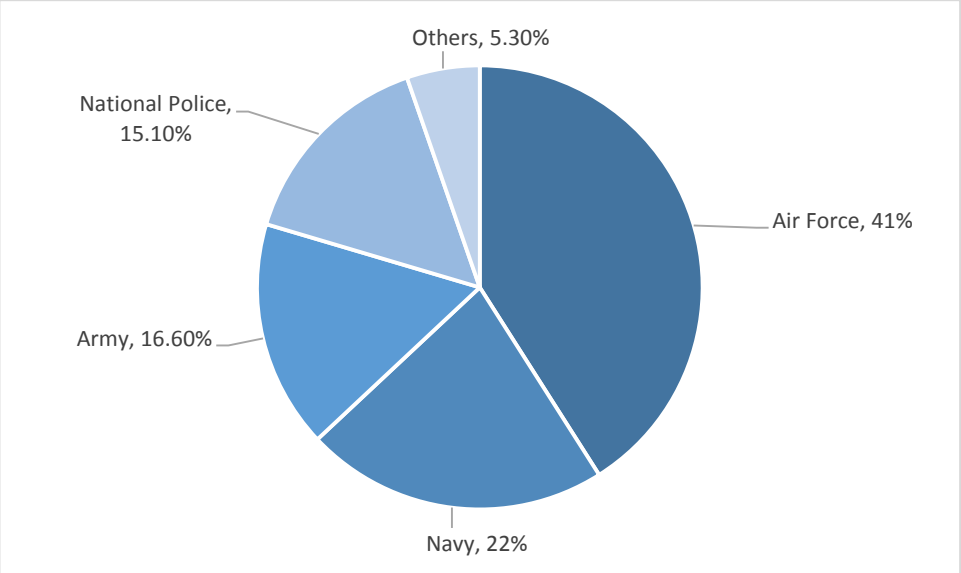


Figure 6. Percentage of expenditure by Military and LEAs in supply reduction efforts 1995-2004
Source: Author with data from DNP.

In total, during the period of 2005-2006 86.4% of the budget expended on supply reduction policies consisted of: aspersion of illicit crops, manual eradication, interdiction of illicit drugs and chemicals used in their manufacture, prosecution of drug smugglers, as well as dismantling infrastructure used to produce and transport illicit drugs. This percentage accounts for 643.538 million Colombian pesos that went to the Military and another 69.889 million for the Colombian Police. Concerning the military expenditure, the Colombian Navy accounts for the biggest percentage destined to control the supply efforts, representing 46.75% (26% of the total budget), while the Air Force expenditure accounts for 33.8% (19.5% of the total), Antinarcotic Police makes up further 8.75% (4.5% of the total), the Army forms 5.35% (3.1% of the total), and the general attorney office and a multitude of state agencies involved in supply reduction efforts account for the final 5% (Alvarado, 2008).

Resources invested in the military were mainly destined for the Navy and the Air Force, and mainly for interdiction efforts. For the period of 2007-2008 the Navy account for the biggest percentage in total expenditure with 17% of the total budget;

31.85% of the expenses are used for the supply reduction government efforts, Antinarcotic Police accounts for 22.3%, the Air Force makes up 22.15%, and the Army boasts 8.75% (Altamar Consuegra et al., 2009). For the 2009 and 2010 period the Navy consolidates as the agency with the highest expenses both as a percentage of the total invested in the WoD and as the percentage of the supply control strategy, with an increase of almost 20% in relation to the total expenses of military, and LEAs with 51.1%; 25.4% went to the Colombian Police, 8.4% for the Army and 3.8% to the Air Force.

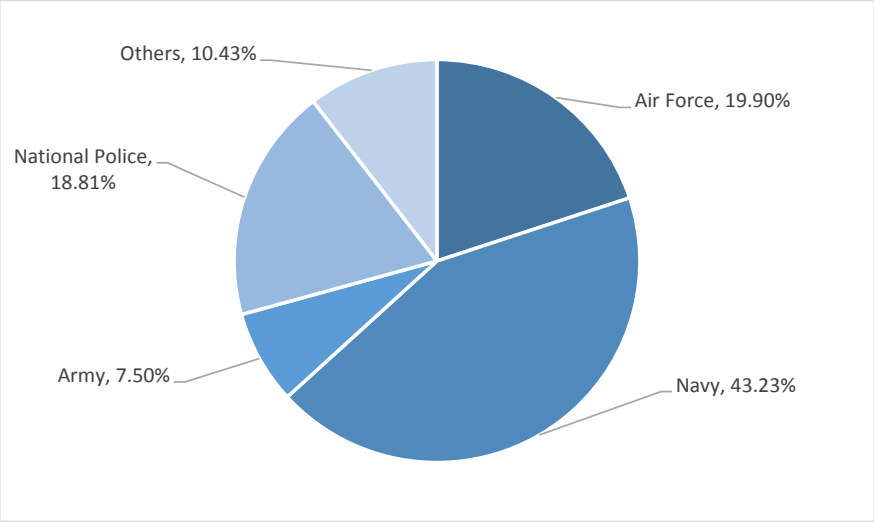


Figure 7. Percentage of expenditure by Military and LEAs in supply reduction efforts 2005-2010
Source: Author with data from DNP.

The percentages of the 2005-2010 period are summarized in Figure 7, this figure shows the increase of the importance of the Navy in terms of expenditure both in procurement and operating expenses.

In summary, between 1995 and 2010 1.2 billon Colombian pesos (64.2%) of the total expenditure of the Colombian government in the WoD was used on strategies aimed to reduce the supply of illicit drugs, followed by strengthening of the judicial system

with 0.4 billon Colombian pesos (25.7%), alternative development with 0.1 billons (5.5%) and reduction of demand with 0.08 billons (4.1%). Consistent with their increased participation in the WoD, the expenditure of the Navy accounts for 53.4% of the 1995 - 2010 budget on the security and defence entry concerning supply control strategies.

The evidence presented in this chapter shows the persistence of the illicit drug business in Colombia. One of the main features is the involvement of Colombians in the different stages of the drug business, from couriers in the sixties and early seventies to leading producers and exporters in the seventies. The growth of the illicit drug business in Colombia, was possible, according to Thoumi (2005a) due to the existence of a set of structural weaknesses, high levels of corruption and high disregard for the law. Several policies have been put in place to control the production and flows of illicit drugs. Since the early eighties, the militarization of the WoD has increased, and with the Plan Colombia, that meant the merge of counter-terrorism activities and counter-drug activities, the Colombian government has grown. Based on the quantification of drug traffic the Colombian Government has produced readings of the mobility and strategies of drug smugglers. According to this smugglers stopped using aerial routes, and that since the nineties the foremost strategy used by smugglers was maritime routes and methods, and that those groups are highly ingenious. The mobilization of this particular reading was instrumental in the increase of the budget of the Navy, and the creation and boost of the Coast Guard Unit (Chapter 7).

Chapter 4. Moving Illicit Drugs in the Sea

Illicit drugs are moved from producers to consumer countries, but with minimal exceptions (Caulkins et al., 2009; Decker & Townsend Chapman, 2008), few have considered the role played by the set of artefacts that are used by smugglers to transport illicit drugs, nor the consequences of the entanglement of these illicit flows with legal trade (Martin, 2015). As implied by illicit drug seizures, Colombian smugglers use both the Caribbean Sea and the Pacific Ocean as the spaces in which those flows are moved, that is to say, the same spaces where legitimate commerce is moved. These spaces are then the scenario of 'dispersed and heterogeneous flows of different categories of peoples and objects' (Urry, 2007) all of them targets of state control. This entanglement more and more defines the logics of border control aimed at regulating or stopping networks and flows criss-crossing porous borders (Hannam, Sheller, & Urry, 2006; Urry, 2000).

As pointed out in chapter 1, the history of drug trafficking has been narrated to stress the organisational arrangements of drug smugglers. And it is characteristically a generational story in which complete new structural arrangements replace the previous one. A brief, standard history of Colombian drug smugglers would be one in which the demise of the 'cartels', democratized the drug industry giving space for the entry of new players, often organised as networks (e.g. Thoumi, 2014). The set of characteristics of that new structural arrangement, cell-like structures of smuggler groups, the flatness of their decision making, are said to explain the advantages of smugglers over hierarchical state structures and state agents (e.g. Kenney, 2007). In the same fashion, the story of drug transport methods is narrated in stages, in which air transport methods were thwarted and replaced by maritime transport methods. One of the main arguments of this thesis is that those portrayals of the drug market can lead to an oversimplification of the interdiction/evasion binary. As such I argue that the

binary opposition is an oversimplification, in which opposition hides complex, non-dichotomous, and non-hierarchical relations. Those simplifications goes hand in hand with the efforts of the state agencies to reduce uncertainty about enemies' strategies and strategies and displaying success, and in general those accounts place the process of innovation as a result of interdiction actions. To understand the thinking of the LEAs regarding innovation practices of the smugglers is key to delve into the production of images of the enemy. The reproduction of those images helps both, to navigate uncertainty and to promote discourses of control (Gootenberg, 2005, 2009). They are the result of the collusion of localized views, statistics as result of drug seizures, the blinders of intelligence gathering, competition with the rhetoric of other LEAs, myth-making and media sensationalism.

As my study of the narcosubs in the next chapter will show, those accounts of the process of smugglers' innovation, based on the idea of interdiction as the main driver of that innovation, cannot explain the process of micro innovation present in the technologies used by drug smugglers for transporting drugs, and do not take into account changes in the competing smugglers' techniques. In this thesis I aim to show that interdiction efforts can account for some initial motivation, but interdiction of transport methods does not deter smugglers from continuing to use them, nor does it explain why some smugglers' innovations appear to pre-empt the developments of the other side of the binary.

I argue that the study of the interdiction/evasion binary would benefit from a co-evolutionary point of view, but stressing the particular dynamics of each side of the binary and recognizing that there is more than a fundamental opposition. The technologies of drug smugglers and the navy co-evolve, where the adaptive moves of each of the players introduces changes in the landscape of its neighbours in the ecosystem or technological economy (Kauffman & Macready, 1995). In this sense it is also possible to assert that the evolution of one of the players, the state or smugglers, is partially dependent on the evolution of other players. I state that the more suitable

form of co-evolution that may help explain this relationship is the 'Red Queen hypothesis', in which the entities are in constant competition with other entities, generating constant changes in the ecosystem.

In this chapter, I present an analysis of smugglers' innovation practices and technologies as derived from research with LEAs, (interviews, guided visits to Navy bases where artefacts are stored, intelligence documents and media). I also present an overview of the maritime transport methods used by smugglers, and emphasise the *traditional* methods of transport, especially those over which the Colombian Coast Guard has responsibility. A traditional war is usually a conflict between at least two well defined groups. The WoD is not an armed conflict between sovereign states or the state against politically geared rebels. It is in fact a conflict that mixes local and mundane artefacts with state of the art technological systems. The WoD is waged every day, and it occurs in the open sea or coastal waters (as well as in production areas and controlling consumption), where the Colombian Navy persecutes go-fast boats, trawlers, fisher boats, and small cargo boats in order to seize any small amount of cocaine, from a few kilos to several tons.

Ignorance, Uncertainty, Imagination and Images of the Enemy

A way of seeing is also a way of not seeing – a focus upon object A involves a neglect of object B. The Burke Theorem.

Smugglers carry out their activities in secret. Law Enforcement Agencies (LEAs) and the military, also perform most of their activities in secret. Even if both sides undertake actions in order to know beforehand the intentions of the other (such as smugglers

bribing Navy personnel in order to have access to patrol routes planned by the Navy,[14] and the Navy and LEAs intercepting communications and carrying out intelligence operations), it is clear that neither can manage to obtain perfect information about the intentions of the other. Therefore, both sides need mechanisms that allow them to make sense of the actions of the other, to make sense of how the 'absence or presence' of certain clues indicates the actions and image of the enemy, and how these can be seen as a call to action.

Proctor (2008) points out three different ways in which ignorance is produced or maintained: ignorance as a native state (or resource), ignorance as a lost realm (or selective choice), and ignorance as deliberately engineered and as a strategic ploy (active construct). This last one is of importance for any research dealing with military organisations. Secrecy is an active part of any war: 'The whole point of secrecy in this realm is to hide, to feint, to distract, to deny access, and to monopolize information' (Proctor, 2008, p. 19). In this regard, Rappert notes the importance of configurations of absence and presence, and how 'seeing is a way of not seeing because of what gets left out of the picture formed' (Rappert, 2015, p. 10).

In this chapter I deal with the ways images of the enemy are constructed by members of the Navy. In the second section I argue that intelligence based operations are a way not only to achieve results but to reduce uncertainty of the outcome and in so doing to continue reinforcing the previous history of success. Finally, I deal with the different forums through which Coasts Guard personnel acquire knowledge in order to face drug smugglers. I place emphasise on the *Malicia Indigena*, a highly localized form of knowledge, difficult to codify and translate.

[14] While carrying out fieldwork two NCOs were sentenced to prison for providing drug smugglers with the Navy's navigation plans.

Of Cartels and Others: Creating the Images of the Enemy

I argue that there are at least two different interrelated ways in which the Coast Guard personnel construct (see) their image of smuggler 'organisations' and smuggler artefacts: 1.) By stressing the innovativeness of smuggler organisations, 2.) By the way they construct images of smugglers' forms of organisations. The construction of these images plays an important role in the process of innovation in the WoD. They help to shape the contours of the 'unknown' and allow the Government and its forces to formulate responses. These images are an important part of the different plans and agreements to fight illicit drugs, and the amalgamation of security and militarisation.

In the previous chapters I have shown several examples of how Coast Guard personnel have responded to the discovery of a new method of illicit drug transport, or a new strategy or technology. For example, in chapter 7 when it became clear that smugglers were using a new set of technologies, GPS, in order to coordinate their activities, this understanding allowed Coast Guard personnel to create a set of counter practices, buying their own GPS, requesting, capturing, and using them in order to reaffirm their identities as a competent enforcement agency, and competent Navy Officers. Using this newly acquired knowledge and artefacts and experience, Navy Officers and their crews changed their routines and forms of coordination, leading to an increasing sense of 'effective interdiction operation'. But this also highlights that seizing smugglers' artefacts and discovering 'new' methods has led the Coast Guards to direct their views to particular objects and smugglers' practices. Following this set of encounters of the Coast Guard and smugglers, Coast Guard personnel constructed: 1.) Images of smugglers as innovative and ingenious organisations, 2.) Localized patterns of smugglers' actions, and 3.) Long term patterns of smugglers' actions.

Thus, smugglers are seen as highly reactive 'organisations' that are able to quickly change and adapt to losses. 'These organisations will continue changing tactics and

strategies every time a vessel is intercepted' (Lesmes Duque, 2005). The availability of cash flow is understood as a key element in allowing this adaptability: 'I think that they adapt quickly because of the availability of the money, sometimes to develop a project we can spend up to two years, and they can build a semisubmersible in three months' (Interview).

Local views are important in the creation of the image of smugglers as dynamic and innovative. For local commanders the discovery of novel methods of drug transport is an important moment in their careers, and this may help to accumulate enough evidence to create new patterns. These discoveries achieve a double result: they characterise smugglers as highly innovative organisations and they enable the Coast Guards to show abilities to thwart these highly ingenious methods and gain prestige as a result. For example, a local commander shared his view about discovering a 'new' method, a parasitical device that scuba divers attach to cargo ships below the water level:

> Take this modality…the tubes…it was first highlighted by the Cartagena Base…I was working on that case…intelligence information…and my work here…I knew they were working towards this…but when I finally found them…it was like finding the Rosetta Stone…because the first one we caught was a PVC tube…and then we found these…so…you can appreciate the evolution…from the first one we caught…and in less than half a year…you can see the evolution. (Interview).

A second commander referred to the use of fishing boats as the main transport method (he had recently captured one, a canoe with a 250hp motor), and stressed the use of these vessels as the preferred method for smuggling, which includes a complex logistic of transhipments and oil refuelling in the open sea. A third commander in a different area believes that subaquatic transport methods might be the main threat: 'The

consideration that I made is that…the dynamics…in this moment are the subaquatic methods…so…we have to try to raise the percentage (of drug seizures) that we have in aquatic methods' (Interview).

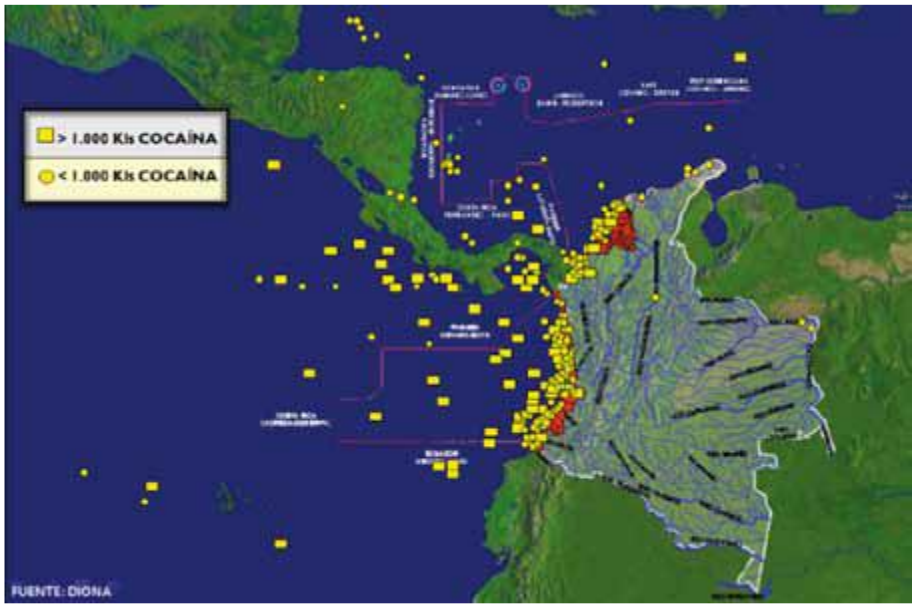
Observing smugglers' artefacts is not necessarily a clear cut process. In the early 1990s, when the efforts of the Navy concentrated on stopping drug smuggling using maritime routes by thwarting fishing boats and go-fast boats, the discovery of early narcosubs was not initially associated with drug smuggling. A commander recalls the Navy's initial encounters with narcosubs: 'In that time, we caught two, one in the Tayrona area and the other on Providencia Island. The thing is that, there was no Coast Guard, so the smugglers used to do their things in plain sight, but in that time, *no one knew what those artefacts were*! Who was using them and for what? That is something we didn't know then, we couldn't make it up, later we found out' (Interview, my emphasis).[15]

Local views are important because they are a part of assembling the Navy's opinion on how to tackle smugglers. Locality then plays an important role in how Coast Guard Commanders perceive the dynamics of smuggling methods. Local relationships and the local context further cement these visions.

As an overall guide for their actions the Coast Guard updates the main 'threats' associated with particular regions. That is to say, based on their experience of years of interdiction, their interpretation of the behaviour of the sea and navigability factors, and the 'history' of routes used by smugglers, the Coast Guard often present their interpretation of smugglers actions and capacities, and are able to match areas, strategies, and smugglers' transport methods: 'We had established some

[15] This story reassembles several other narrated by antinarcotic police personnel in which smugglers were able to carry out their business in plain sight, because police personnel were not even aware of what the cocaine was or how it was transported.

differences…so…they don't commit their crimes in the same way from the Central Pacific Coast to the South Pacific Coast…than they do from the Central Pacific Coast to the North'. The consolidation of these events, is represented graphically on maps (Map 1), and via images that represent the evolution of smugglers artefacts (Figure 8) and statistics (Figure 9) together with the experience gained by of the local commanders and their 'discoveries' and perceptions of drug smuggling methods.



Map 1. Size and geographical localization of cocaine seizures in the Caribbean and the Pacific between 2006 and 2010. Source: Revista Armada (2011, N 98).

Figure 8. The evolution of smuggler artefacts according to the Navy.
Source: III Seminar of Good Practices with Emphasis on the Control of Ports and Airports Against World Drug Problems, Colombia-Africa. Ceded to the author by the Navy.

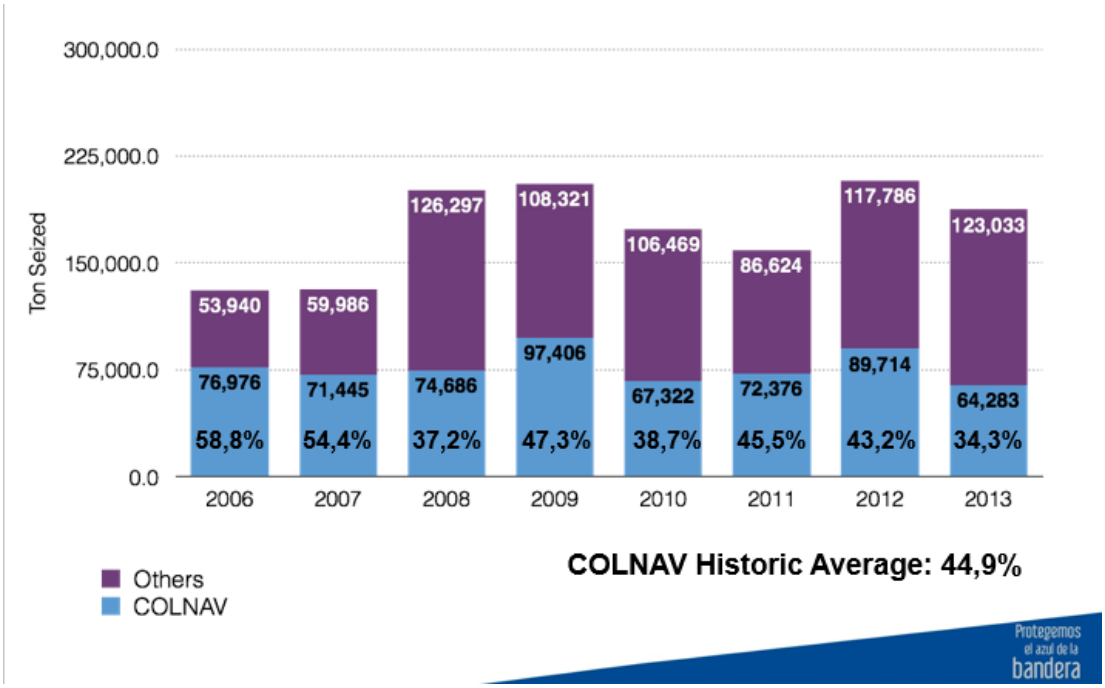


Figure 9. Seizures of cocaine between 2006 and 2013 by the Colombian Navy.
Source: III Seminar of Good Practices with Emphasis on the Control of Ports and Airports Against World Drug Problems, Colombia-Africa. Ceded to researcher by the Navy.

In dealing with the presence and absence of information about smuggler artefacts two different versions of the direction of the pattern are presented, one establishing a 'cyclic' version of smugglers' uses of artefacts. In a visit to the yard of drug smuggler artefacts, the commander of the base, pointed out several recently captured vessels:

> Look what I have showed to you…the common fishing boat…look…they're using them again…twenty years later…and they continue with the basics…yes, a lot of stuff has changed…and yes…they have changed the semisubmersibles…and yes…they have used go fast boats with, 3, 4, 5, 6, 7 engines…but they…let me tell you…they change…but they always go back to the basics (Interview)

This version has been represented graphically:

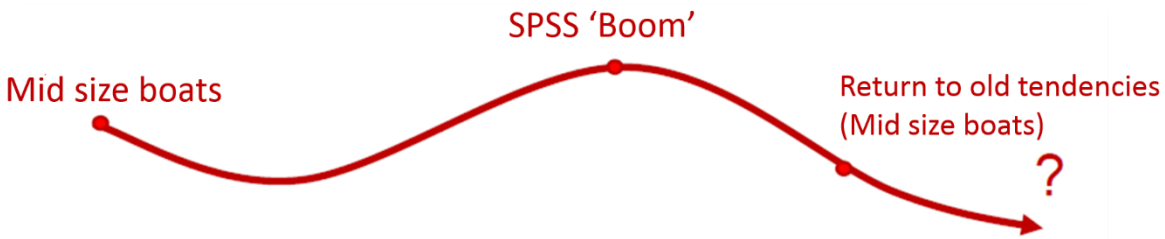


Figure 10. Representation of smugglers evolution,
Source: power point slide presented by a commander in a regional forum.

The second pattern is the already mentioned idea that 'smugglers' always innovate and follow 1.) Clear trajectories of innovation and/or 2.) Are able to exploit different methods of transport. Based on the history of drug trafficking routes and seizures, LEAs reconstruct and project smuggler behaviour. This behaviour often appears as impersonal and is referred to as the 'behaviour of routes'. The construction of these patterns allows the LEAs to diminish the uncertainty of their tasks. Using these images,

Coast Guard personnel develop their goals and set priorities for their targets. Centralized interpretations of smugglers' actions interplay with both localized views of the phenomenon and the incentives set for the Coast Guards to perform their jobs. The different versions that appear as a result of what is seen and what is not seen are often complemented with versions of who the enemy is.

Who is the Enemy?

Illicit drug trafficking and drug traffickers are both highly mediatized and highly politicized phenomena. On the one hand, we have a continuous portrayal of drug smugglers as highly rational, hierarchical, overly powerful structures. This idea is summarized in the prevalent use of the words 'cartel' or 'mafia' in order to refer to any group of people involved in drug smuggling, or even the contradictory terms of 'mini-cartel', 'cartelitos' or 'baby cartels' (e.g. Sullivan & Bunker, 2002; Thoumi, 2014). On the other hand, the central government and the military have highlighted the political dimensions of drug smuggling by directly linking Colombian guerrilla groups to drug trafficking. For example, the FARC are said to be the biggest drug dealers in the country (El Tiempo, 2001b), although this allegation is constantly denied by the leaders of the guerrilla movement. The relationship of this multitude of players and non-state actors with the illicit production and transport of drugs (guerrillas, left wings paramilitary groups, and multiple smugglers groups) may explain the high levels of violence in this illicit business, especially when territorial control is at stake.

Interpretations of drug smuggling activities as carried out by cartels in which a small group, often a handful of individuals, controls all the stages of the production, transport, and distribution of drugs leads to the formulation of policies and strategies that target cartel leaders (famously Pablo Escobar) and the creation of specialized units to carry out such operations. Most famous was the 'Search Block', a police unit in charge of coordinating all the efforts to bring down the heads of both the 'Medellin Cartel' and 'Cali Cartel' (de Francisco, 2005). This interpretation has also been used

in the explanations of drug trafficking by Mexican organisations, with authors proposing a continuum from Colombian to Mexican cartels (e.g. Bagley, 2011)

State agencies have also described the FARC as a 'cartel', with a clear example of that being the Minister of Defence stating that the rebel group was involved in all levels of the drug trade (Siglo, 2012), and that they have close ties with other cartels, such as the Mexican cartels. Academic articles also claim that the FARC have filled the void left by the demise of the cartels (e.g. Tickner, 2004).

This view of the FARC as cartels has been contested (Duncan, 2006). The involvement of the Guerrillas is more often understood as a symbiotic alliance with drug traffickers (e.g. Bibes, 2001) in which producers and traffickers are allowed to benefit from FARC security, while the FARC receive a percentage of the earnings. Mejia and Rico (2010) point out that the FARC may be involved in buying *pasta basica de coca*, or buying and selling cocaine to smugglers, who then transport it to consumer countries.

In order to defeat the 'narcoterrorism' threat, as the merging of guerrillas and drug smuggling was labelled, both the Colombian and U.S. Governments implemented a policy known as the 'Plan Colombia'. This plan in practice blurred the lines between drug trafficking and guerrillas (Otis, 2014; Tickner, 2004). The aid provided by the U.S. Government focused on military expenditure, which made up 80% of the total budget. The 'Plan Colombia' helped to consolidate the role of the military in the WoD.

Definitions and reinterpretations of who the enemy is matter, they matter because they serve as the knowledge base used by policy makers, LEAs, and the military in order to develop their strategies. As seen, definitions of the drug market as controlled by a 'cartel' was (is) used as a rationale to hunt the leaders of such groups, while the merging of leftist guerrillas, considered terrorist groups, and branded as

‘narcoterrorists’, allowed the establishment of a counter insurgence/counter drug program in which the military forces took the lead. The Colombian Navy adopted the label ‘narcoterrorism’ in their official documents (Armada República de Colombia, 2003, 2007b), but it is possible to find a broader characterization of the enemy, which is associated with the local view of Coast Guard personnel. Smugglers in the eyes of the Navy are ‘cartels’, ‘specialized structures’, or ‘bandits’. They are smugglers that possess organisational structure and are able to assemble fleets on their own, a ‘fleet’ of narcosubs, a ‘fleet’ of go-fast boats, a ‘fleet of refuelled boats’.

Formal Knowledge, Informal Forums, and the *Malicia Indigena*

The Coast Guard carries out maritime interdiction operations in both *brown waters* (Territorial Seas) and *blue waters* (Economic Exclusive Zones). While most of the operations are carried out solely using Coast Guard capacities, some operations require collaboration with other branches of the Navy, other branches of the military, and LEAs. Carrying out operations in different spaces and in collaboration with multiple players means that the Coast Guard unit needs to possess and acquire knowledge: knowledge on how to plan and carry out an operation, knowledge on who the ‘enemy’ is, and knowledge on how to collaborate with other players.

Illegal drugs are moved from producer to consumer countries, and they are moved from production centres to shipment points. This often involves further movements to complete the journey from ‘south to north’ (Gootenberg, 2012). In moving illicit drugs, smugglers acquire knowledge of logistical networks, what Martin (2012, p. 363) calls ‘extra-logistical knowledge’ or forms of knowledge and expertise ‘that are developed (as a result of being excluded from legitimated corporeal flows) in order to *appropriate* and utilise the interconnectivity of commodity flows’ (original emphasis). Drug smugglers may also appropriate this knowledge through their structural and social

embeddedness in drug smuggler networks (Van de Henk & Zaitch, 2014) as they take advantage of existing social ties.

Drug smuggling has built on continuities of the knowledge acquired during decades of smuggling, evolving from marihuana and illegal goods to the most recent forms of smuggling (López Restrepo & Camacho Guizado, 2007). One important component of this is the traditional knowledge of the sea and the use of traditional smuggling and fishing routes in the north of the Colombian Caribbean. A retired drug smuggler, when talking about the transition between marihuana smuggling and cocaine traffic, explained: 'There was a lot of people who moved from smuggling illegal goods, the old guys, they had to, they had everything and they had the routes, the ships' (Interview).

The process of the military and LEAs acquiring knowledge is subject to a variety of limitations: changes in the chain of command, the influx of new personnel, promotions, early retirements, the introduction of new practices and strategies, new collaboration agreements with other LEAs, and perceptions of new threats and smugglers' artefacts. This complex panorama implies that training personnel in counter drug operations, and at the same time maintaining relationships of collaboration with other agencies, requires the constant updating of one's knowledge of the different processes of the institutions: communications, methods of detections, intelligence, new technologies, new artefacts, as well as new adaptations, practices, and 'knowledge' of the enemy.

As mentioned, the Colombian Navy participated in counter drug operations during the late 1970s and throughout the 1980s and the early 1990s using traditional military vessels (frigates), which provided knowledge about 'corridors' and smugglers' practices. Early operations of the Coast Guard Unit were marked by a learning-by-

doing approach to the operations, as a Coast Guard base commander, who entered the Coast Guard Unit as a fresh lieutenant, narrates:

> Those who initiated this…let's say eighteen, seventeen years ago we did it for art's sake, later we changed our way of thinking. Nowadays…we don't do it…so much for art's sake…they used to just to say to us…you and you go there…I remember one day, I left Puerto Bolivar[16]…and when I realized I was almost at the border with the Dominican Republic (laughs)…in one of those boat that I tell you…were really unstable…you end up doing interdictions far away…on the border with the Dominic Republic…250 miles from Puerto Bolivar. (Interview).

In going to the field with formal training in interdiction and inspection operations, officers possess an initial sense of the local threats, which complements the experience of other officers and NCOs. When that knowledge is shared officers are provided with a 'better' understanding of the local area that enables them to perform their duties. Officers that combine this sophisticated local knowledge/training are able to develop a set of routines that allows them to 'know' when a boat or vessel is carrying drugs and to order an inspection operation, minimizing the risk of being considered unlawful by people in the area, and generating a sense of accuracy among the Navy. Being in the field allows officers to gain from the knowledge acquired from NCO's and other officials, and to develop knowledge about the knowledge and resources of the Navy and to create a vision of the threats. In other words, they become 'experts' on interdiction operations.

[16] A port on the northern Colombian Caribbean Coast.

Formal Knowledge, Capturing Local Knowledge

Training officers and NCOs in maritime interdiction operations is highly important for the Coast Guard. The first attempt to formalize knowledge about MIOs, again, came from the U.S Government in 1995 when Colombian Navy personnel received training from the U.S. Customs Service on how to use the *Dolphin* in operations. Nearly 20 years later, in 2014 the Colombian Coast Guard led the XII international course on maritime interdiction. In this course Colombian officers and NCOs trained officers and NCOs from other countries about the different strategies, tools, and methods of maritime interdiction.

This training course was both a way to formalize the knowledge gained by the Coast Guards, and to professionalize the role of the Coast Guard as an able player in counterdrug operations, establishing the prestige of the Colombian Navy as a role model for drug interdiction practices in the region. Thus, according to interviewees:

> Today we are training other Centre America and South America countries, even the U.S. is sending people to be trained about interdiction here. (Interview).

> At the regional level…the Colombian Navy…is now a reference in the fight against illicit drugs…we have the school in Cartagena…and we provide teaching capacities to the countries in the region…even countries from Africa…even the Americans…fifteen years ago, the Americans came here and taught me: do this, do that, this is an interdiction operation…now *I teach them* how it is done…because the experience, the day to day experiences have given us that. (Interview, original emphasis).

> We have the Coast Guard School…and until now…24 countries from the region have come…even some from Africa…149 students from other countries…there have been some Colombians…but 80% have been foreign…and what's the benefit from that? Well that you go today to Costa Rica, to the Dominican Republic, to Honduras, to Panama, to any of those countries…and we talk the same 'language'…the same operational language…that we have developed here...in the Colombian Navy. (Interview).

> Our experience…has lead us to develop our own strategies, our own tactics…and the countries in the region, who work in the same operational theatre…have decided to take advantage of our learned lessons.(Interview).

This course then also allows for the standardization of practices needed for inter-agency operations. The chief of operations of the Coast Guard explained how training personnel from different countries has an impact on developing interdiction operations:

> And Colombia took over the banner…and that's why…you go and see…those students from the (different) Navies…and we speak the same language…you go to a Maritime Coast Guard Operation…and you meet with them on the sea…and today we speak the same language…and for the same language I'm talking about…procedural operations, the lexicon we are using…and all of this because it is a course where…you work on teaching the proceedings for interdiction. (Interview).

One important element of this is a demonstration by the Colombian Coast Guard Unit on how to carry out an interdiction operation in which 'real life' conditions are simulated. This demonstration is performed in the Cartagena Bay where the main

building of the Coast Guard is located. It stages the interception of a go-fast boat (sailed by Coast Guard personnel acting as narcotraffickers) by Coast Guard rapid patrol boats. This demonstration includes the deployment of all possible resources available to the Coast Guard, including helicopter and frigates, and is intended to demonstrate the tactics used to chase down smugglers as well as the strategies used by 'smugglers' to evade capture.

An NCO instructor affirms that 80% of the Coast Guard School course is 'practical', with an emphasis on the transfer of knowledge about tactical manoeuvres in rapid reaction units (patrol boats) and operating procedures. The stress placed on the practical aspects of MIO is confirmed by the commander of the Caribbean Coast Guard who states: 'We teach what we know how to do well, that is to operate our boats in the sea, so they work so they could be efficient and effective'. However, even with this emphasis on the 'practical' aspects of interdiction, it is acknowledged that the course cannot replace the value of learning from everyday experiences:

> There are some things that you learn in the School, but there's nothing like the everyday practice (…) a lieutenant may arrive with the best attitude, but if he doesn't have the experience, he won't catch the clues, he won't be able to catch the information that smugglers unknowingly may be providing. (Interview).

During interdiction operations experience may, transitorily, invert rank or seniority. Those who possess field experience, even if of lower rank or seniority, may command an operation even in the presence of a higher ranking or senior official who has just arrived from training.

Informal Knowledge, Day to Day Exchanges of Information and Experience

Officials also share their knowledge about smuggling practices, interdiction, and boat performance in informal forums, as a result of their embeddedness in informal networks with other officers or NCOs. This establishes rapport and enables new personnel to embed themselves in existing informal networks, thus mitigating potential knowledge gaps caused by the frequent changes of personnel.

The researcher observed an example of how knowledge is exchanged when he was invited to dine with Navy officers. At a U-shaped table, officers were organised by rank, with senior officers occupying the centre of the table and fanning out to lower ranking officials. The researcher was invited to take a seat at one of the ends of the table. Officers shared their impressions about the performance of a newly acquired boat used in the Caribbean for interdiction operations, as well as the performance of the boats after local repairs and general updates on local boats.

Day to day interactions also provide moments in which officers and NCOs can share experiences. While walking on a Coast Guard base, the local commander stopped to talk with other officers and NCOs and to give advice and instructions. During these types of informal meetings officers share experiences about training and recent operations. The informal forums also allow Navy Officers to update their knowledge and to acquire ideas from places and practices outside of their range of action. During these informal exchanges, officers do not exchange formal procedures, but rather personal experiences and impressions.

Officers also have the opportunity to learn from the orders received from older officers on how to conduct MIOs. A regional commander discussed how he explains orders to

a local commander: ‘In an operation…I lead the operation…and I tell Lt 1, place a unit here, another boat here, a ship here, an airplane, etc., and as soon as it goes…we jump on him [referring to the smugglers]’ (Interview). This allows Lt 1 to gain knowledge from an experienced officer who some eight years ago was the commander of the same base.

Other forms of knowledge are difficult to grasp even when sharing time with experienced officers. Some officers recognize that only experience and time can allow someone to turn into a ‘Sea Wolf’ to the point of recognizing the ‘behaviour’ of their ships only by listening to the engines, and recognize their performance by how it vibrates, how it feels.

Informal forums also contribute to the adoption of new technologies and practices, as well as new awareness of enemies’ tactics. These opportunities also provide officers with a chance to continue reinforcing their prestige as able counterdrug officers.

For the Coast Guard personnel it is important to receive training on how to interdict a smuggler’s boat, how to deal with the evidence, and how to comply with international norms on the use of firearms. Often a smuggler’s cargo is not in plain sight making it difficult to determine if something is actually being smuggled, but as mentioned, smugglers have used a wide range of concealing methods. Previous authors have explored the rationale used by smugglers when deciding which method to use (Decker & Townsend Chapman, 2008), but it is also important to take into account what happens when a Coast Guard officer or NCO ‘knows’ a smuggler artefact is carrying drugs, but cannot find them.

Local Contingent Knowledge: The *Malicia Indigena*

Training in counterdrug operations also focuses on detention and boarding. Some issues regarding inspection[17] of the boats are also part of the training courses. The inspection of vessels in the open sea or even on dry land, however, often requires a specific ability that is not necessarily transferable, and success is often interpreted as a result of being 'wily' or having *malicia indigena*. These inspections are often carried out without the help of any tool or detection technology, or where the most advanced piece of technology is a drill.

In the case of inspection it is possible to affirm that officers and NCOs display a sort of sophisticated local/tacit/contingent knowledge, known by some as *malicia indigena*.[18] The concept of tacit knowledge has an important place in STS studies(MacKenzie & Spinardi, 1998). Contingent knowledge is distributable and can include trivial information specific to a particular environment, highlighting the importance of local knowledge that cannot be 'looked up' (Fleck, 1997). Scholars from the social learning approach have emphasised the importance of local tacit knowledge and the difficulties of capturing and disseminating such 'sticky knowledge' (Pollock & Williams, 2008).

The idea of *malicia indigena* as a form of knowing has not been widely discussed in the academic literature. It can be defined as a 'local resource, inherited, non-transferable to other nationalities by means of friendship, marriage, residence in

[17] The search of a vessel by the competent authority of the parties for the purpose of checking the material, equipment, crew, personnel, and cargo, and verifying that they are not being used for illicit activities in accordance with the domestic legislation of each country, conventions, and international agreements.

[18] Although none of the officers refer on tape or during the interview to using this concept, after the interviews when talking freely, they sometimes use the idea of *malicia Indigena* to interpret the decisions they make. This was corroborated by the Anti-Narcotics Police NCOs who freely speak about the need to have *malicia indigena* as a tool to catch smugglers.

Colombia, etc. but susceptible of diminishing if a Colombian national lives long periods of time abroad' (Morales, 1998). The Colombian anthropologist Morales traces the concept of *malicia indigena* to the contact of pre-colombian natives with Spanish colonialist. It was established as a defence mechanism in their dealings with them. In this sense, *malicia indigena* is also the capability of feigning ignorance when knowing what the other is talking about. Having *malicia indigena* allows a person to read the 'true' intentions of the other person. *Malicia indigena* gives a person who possess it the advantage of being able to understand what you would do if you were the other in order to take advantage of a situation. For the Coast Guard personnel having *malicia indigena* implies knowing what the other is going to do in order to evade state control, imaging how to act as a smuggler would, sharing the codes and actions needed to evade being captured, and, at the same time, legitimising having such knowledge, not through participation in criminal activities, but through using it as a tool to perform their job and outsmart smugglers.

The *malicia indigena* has become into a national cultural attribute, applied to specific local or regional ways of knowing and behaving. The *malicia indigena* has many forms; particular attention is given as a form of resistance and strategy of defence used by subordinated in front of the powerful, here the subordinated apparently follows the rules imposed from above, but act against them (Ariza, 2013). In this sense, this is characteristics of the Colombian poor to find a way around impositions from the government and the powerful. However, it can also refer to unconventional and sometimes illegal practices, such as cutting in line, cheating on exams, unauthorized street vendors, altering utility meters, among others. The *malicia indigena* fulfils a key role in shaping the Individual and social attitudes towards the actions of the others, as one of its main features, is not to trust other people intentions. Once considered an attribute of the lower classes, interpretations of actions as result of having *malicia indigena* have reached the upper classes, as it also describes cunning and a certain capacity for manipulation and to get ahead in business and politics (Garcia-Villegas, 2011).

The *malicia indigena* can be used as praise or as a derogative term, depending on the situation and who says it, and it is celebrated when is perceived as a tool that helps the poor to face the powerful and well-off. In short, those who used, praise or demote *malicia indigena*, sees it as a part of the Colombian essence, rather than an interpretation of the actions as result of the local knowledge, as the practices of everyday life.

In this study, the *malicia indigena* is used by interviews as a positive trait, and having *malicia indígena* is seen as an important quality to balance the actions of LEAs and smugglers, as NCOs and Coast Guard Personnel often come from the same regions as smugglers and use the same sort of cultural resources. As non-compliance with the law is common in Colombia, those having *malicia indigena* but are in charge of imposing the rule of law, are able to 'know' and to recognize the resources used by others to evade the law. The *malicia indigena* then implies detailed knowledge of the context, and in the hands of LEAs is used as a tool to outmatch smugglers 'ingenuity'.

Classic authors from the cultural sociology tradition, Bourdieu, and De Certeau suggested the need to focus on skills, tacit knowledge and embodied ways of doing things as they consisted of unspectacular forms of resistance. James Scott (1998) highlights the importance of local knowledge, which he describes under the term *methis*, to conceptualize the kind of practical embodied skills akin to the *malicia indigena*. Scott presents several examples of how local situated knowledge, is often superior to formalize knowledge in solving problems. To Scott, local knowledge is key to sustaining high modernist-designs such as the urban modernism of Le Corbusier, Prussian Forestry or Soviet Collectivization. To Scott 'Formal order, to be more explicit, is always and to some considerable degree parasitic on informal processes, which the formal scheme does not recognize, without which it could not exist, and which it alone cannot create or maintain (Scott, 1998, p. 310).

To Kalb (2006, p 579-580), a characteristic of those local forms of knowledge is that they are 'generated and situated within complex local life-worlds; it refers to the know-how of dealing with local complexity and exigency'. Kenney (2010) points out how the lack of local knowledge and poor tradecraft can be exploited by LEAs to thwart terrorist actions. Kenney argues that to carry out their activities, terrorist need local knowledge, street smarts, and a talent for clandestine operations and that training does not substitute local knowledge and practical experience. On the other hand, Bonelli and Ragazzi (2014) calls for a study of the production of practical knowledge and the practice of the actors, as they play a central role in practices of anticipation in the War on Terror.

An inspection operation requires a combination of different kinds of knowledge. In the first place, Coast Guard personnel need to comply with laws, to not disrupt commerce, and to interact with other local formal and informal authorities as well as sharing information and coordinating with other LEAs about suspicious boats. The local commander, usually a captain, arrives at a Coast Guard station with a set of information provided by the Chief of Naval Operations. Usually he has a conversation with the outgoing commander. Conversations with NCOs and regular naval personnel account for the rest of his knowledge, providing the incoming commander with the initial information needed to understand threats to control in the area (e.g. how smugglers act, which groups and possible threats are present in the area, and what are the main transport methods used by smugglers in the area).

Malicia indigena plays a key role in the inspection of a suspected drug transport vessel. The commander of the operation needs to decide whether to stop the vessel and tow it or accompany it to the base for further inspection. Even here, a further decision needs to be made as to whether and how to proceed with intrusive methods, such as using a drill. The next quote shows how *malicia indigena* is used as a tool to discover drugs, and how possession of that knowledge is justified:

> I remember once we were ordered to stop a boat…near here…we were given the order…so the Captain goes and says…ok stop that boat…and we stopped the boat, and started searching for cocaine…we were told that the boat carried drugs…so we were searching for the cocaine and nothing…and the boat crew only smiled…so the captain goes and ask an NCO…what do you think? 'I think it carries [cocaine]', replied the NCO…And the captain was…'but we already searched the whole boat!' So the captain says…'I bet you we just **** it up'. 'I bet there are drugs', said the NCO, so they made a bet….don't remember how much…and the NCO went and started scratching a little crack in the boat painting and the boat crew started to get nervous…and finally the NCO found a hidden compartment…so he said, 'I told you so'…and the captain asked him, 'how did you know?'. 'I just knew', responded the NCO. (Conversation among officers, a Coast Guard inspector visiting the base).

A rear admiral, then a fresh lieutenant, recalls a similar occurrence in the early 1990s:

> There was this boat…it was captured near the base where I was…and the people in charge had already made ten inspections…and couldn't find anything…it was really well hidden…so it occurred to me to measure the boat…to measure it outside and to measure inside…and so I found that the boat was 25cm less wide inside and 25cm more outside. (Interview).

As the initial extract suggests, even officers prepared for the job find it difficult to match the local knowledge of NCOs, even in situations where intelligence has provided a high degree of certainty that drugs will be found on a ship. The officers' capabilities, do not necessarily match the capacities of smugglers to camouflage and conceal the cargo. *Malicia indigena* thus performs two different roles. First, it diminishes the distance between smugglers and the Coast Guards, because in the absence of detailed information about smuggler methods or the precedent of a transport

method, having *malicia indigena* is a tool that allows Coast Guard personnel, by 'thinking as the bad guys', to perform their jobs effectively. Second, the display of *malicia indigena* is also a tool that helps NCOs to diminish their distance from the officers, by demonstrating their capacities to detect and understand smugglers' rationales.

This *malicia indigena* enables Coast Guard personnel to read and obtain clues from the behaviour of locals. Successful officers use this sophisticated local knowledge, not necessarily their own, in order to achieve results. This local knowledge can produce a 'profile' of the behaviour of people in an area, which can be combined with knowledge about the technical capacities of smugglers' artefacts:

> You start to know…this one [signalling to a boat] was captured with 4 kg of cocaine and 355 of marihuana…you start to know the profile of the people…you start to know the profile…it's just to look the profile of the thing and you know…first this motor for this hull?...this is a flying machine without a body…and second…it has a radio!!!...and the norm says that you must have a radio!!! But people around here never comply with the norms! Who wants to comply with the norm? Well…only those who doesn't want to be bothered. (Interview).

This also suggests that Coast Guard personnel pick up and filter information from their day to day activities, and in doing so they create images of who smugglers are and how they behave.

I have shown that in order to carry out their tasks Coast Guard personnel combine different forms of knowledge, acquire knowledge in both formal and informal manners, and that the deployment of certain forms of tacit knowledge is branded under

the label *malicia indigena*. I have also shown that Coast Guard personnel learn from experience and in informal forums. These different kinds of knowledge can be displayed in different instances of an operation. Formal training may be important in the initial stages of the operation in deciding speed and direction, while other, more local knowledge, such as *malicia indigena*, may be more important in searching for drugs hidden in compartments and for anticipating smugglers' actions. A proficient Navy commander is able to combine different forms of knowledge in order to achieve 'events'. These 'events' are valuable to both the prestige of the commanders and macro institutional goals.

Images of the enemy in the WoD play an important role in the way the Coast Guard's perception of the way their role is constructed. Ideas of outsmarting overreaching cartels, powerful narcoterrorist organisations, and dominant drug syndicates permeate the official discourse of the Navy. Navy personnel envision their enemies as: fleets, captains, and soldiers, as often smugglers organisations are described by Navy personnel. These are also ways of projecting a sense of what is unknown. The technological trajectories of the smugglers are another topic of dispute; locality plays an important role in describing these trajectories. At the macro level attempts are made to characterise these trajectories. Fears of un-learning about how to catch some methods of smuggling because of learning how to tackle new ones also plays part on the way members of the Navy project images of their enemy.

In practice commanders can decide to order a search for illegal cargo based on simple details such as the disposition of the radio antennas or how old the paintwork looks. In areas where the non-compliance with rules is common, a commander can even decide to order a search if a boat is 'trying too hard' to comply. Many of these decisions can be seen as a result of *malicia indigena*. *Malicia indigena* is an important resource to achieve results. *Malicia indigena* is used by putting yourself in the shoes of the other, the criminal. You have to 'put your feet in the shoes of the enemy' to 'think as a bad guy' as summarized by a successful lieutenant: 'In order to achieve operational results

you must think as a criminal, that is the only way you're going to achieve results' (Interview). However, you also have to be resourceful, to work with the tools at hand to compensate for the differences between the Colombian Navy and other navies, as a chief mechanic (equivalent to a sergeant) states: 'We're Colombians, we have to work with what we have' (Interview).

Van Schendel shows how the cartographies representing illicit movements are dominated by the presence of the arrows: 'The arrow is a godsend for those wishing to represent illegal flows in a threatening manner because it is a discursive tool that conveys the notion of motion, stimulus and target as perhaps no other graphic code could' (Van Schendel, 2005, p. 41). But as the same author suggests, those arrows 'hide more than they reveal', arrows simplify the movements, conceal details, and compress time and space in a single dimension. As stated in documents and Navy plans, patrolling the sea is an act performed to stop those arrows from abandoning Colombian territory, while the story of the procurement process of the patrol boats, in the next chapter reveal a more localized response to what coast guard personnel is seeing in the field.

From Air to Sea: An Overview of the Illicit Drug Smugglers' Transport Methods

Throughout history, drug traffickers have developed and used a wide range of concealing and transport methods. These include moulding cocaine into different shapes, such as religious symbols, or disguising the drugs in casts, crisps, diapers, hair extensions, dissected insects, or changing the chemical properties of cocaine in order to enable it to be transported in liquid form (Avendaño, 2011). Those methods demonstrate different levels of expertise, scientific and technical knowledge, as well as different levels of adaptability and change. In this part of the chapter, I will briefly review some of the most important transport methods identified by LEAs.

Globalization puts new technologies in the hands of drug smugglers, such as Global Position Systems (GPS), cell phones, and even competent strategies for gathering and collecting intelligence.[19] The interplay between drug traffickers and LEAs, market conditions, and internal changes offer broad explanations as to why smugglers buy technologies and innovate. They do so in order to improve the efficiency of their business, which means reducing vulnerabilities to enforcement (Galeotti, 2004; Kenney, 2003). Even if smugglers cannot match the technologies used by LEAs, they seem to remain permanently one step ahead of enforcement efforts (Kenney, 2007a; López Restrepo & Camacho Guizado, 2007).

The history focussed on the 'cartels' has overshadowed a subtler story. The story of the transport methods used by smugglers and the strategies designed to thwart smugglers' efforts. The lack of both training and clear strategies on how to face illicit drug trafficking at the beginning of the era of the 'cartels' allowed drug traffickers to use unpoliced (and even policed) areas to carry out their activities almost without precautions. They could easily camouflage the illicit cargo to facilitate transporting the drugs from processing facilities, *laboratories,* to rendezvous points using little or no means of hiding. As was expressed by General Serrano - the head of Colombian Police in charge of the demise of the Medellin and Cali 'cartels' - 'during that time we didn't even know what cocaine was or what it looked like'. He was referring to the early years when the Colombian Police started facing drug trafficking, 'we learned fast', he added (Interview). The same observation is shared by members of the Antinarcotic Police I interviewed, and by retired drug smugglers. Since the mid-1980s, nevertheless, Colombian traffickers were able to develop sophisticated transport and distribution networks (Thoumi, 2014). They developed capacities for using more sophisticated logistics, including the use of different forms of camouflage for the illicit drugs and the development of 'faster' transport methods. The traffickers made new adaptations that allowed them to benefit from the infrastructure offered by global commerce, and to exploit a wide array of knowledge to produce their own logistics

[19] During its heyday the Cali 'cartel' possessed a sophisticated network of informants and a central data information centre (Brzezinski, 2002; Kaihla, 2002).

and artefacts, of which the design and building of go-fast boats and narcosubs are main exemplars.

As was mentioned earlier, the history of drug trafficking is widely narrated by following more or less clear stages, from ‘cartels’ to ‘cartelitos’ to ‘networks’ and from air transport methods to maritime transport methods, etc. I argue that this is, nonetheless, an oversimplification of the complexity of the interdiction/evasion binary. Rather than stages in which a particular transport methods are adopted to be discarded later, what is possible to appreciate in the field is a continuous readjustment of old and new artefacts, old and new practices on both sides of the binary. Most importantly, while I consider that it is important to characterise those different ‘moments’, it is also significant to try not to diminish the uncertainty of this complex dynamic. Efforts by the state to control the illicit drug trafficking are also efforts to reduce the uncertainty about the ‘enemies’ strategies, and the attempts of different state players to continuously reaffirm their importance to the WoD. Thus, while in the 1980s the Antinarcotic Police ‘successfully’ dismantled the ‘cartels*’* the attempts pursued throughout the 1990s, and still ongoing, are varied, andthe Air Force was ‘successful’ in thwarting air transport routes, once maritime routes were identified as the main transport of illicit drugs The Navy have asserted that their strategies and capacities have been effective in controling drug smugglers. However, descriptions of smugglers as *innovative*, *ingenious*, *wily*, and so on, are common when characterising their attempts to transport drugs, both in journalists’ accounts and in academic literature and policy documents.

In 1993 the Drug Enforcement Administration (DEA) prepared a document entitled ‘The Illicit Drug Situation in Colombia’(Drug Enforcement Administration, 1993). It is a short intelligence report, but it shows how the involvement of Colombian organisations in the traffic of illicit drugs was perceived at the time. According to the report, Colombian organisations were ‘involve[d] in every stage of the illicit drug traffic process, including cultivation, production, transportation, international

wholesale distribution and money laundering of the resultant profits' (p, iii). The cartels - Cali and Medellin - were said, in this report, to dominate the drug traffic, with smaller 'cartels' lending services, mostly transportation. Those groups, therefore, have also been called 'transportation groups'. Those smaller cartels were said to mimic the structure of multinational corporations. They have been able to dominate the international wholesale distribution, and to transport the cocaine by means of general aviation aircraft, commercial aircraft, maritime vessels, and couriers.

The aforementioned report discusses the innovative character of cocaine producers. It states that: 'Cocaine traffickers are always seeking new methods and technologies for improving the efficiency and cost effectiveness of their laboratory operations' (Drug Enforcement Administration, 1993, p. 7). The processes of chemical recycling and chemical recovery are pointed out as examples, chemical recovery systems being seized since 1991. According to this document: 'A high percentage of the cocaine destined for the United States drug market is smuggled out of Colombia on board general aviation aircraft. Gulfstream Aero Commander, Beechcraft King Air 300, Cessna Conquest JI, and Piper Cheyenne aircrafts are preferred by traffickers'(Drug Enforcement Administration, 1993, p. 17). Those aircrafts have also been utilized for transhipments to Central America, where the cargo is sent to the United States by land or airdropped near the Bahamas.

Maritime drug smuggling was considered of secondary importance, and mostly a Caribbean problem. Drug smugglers used the Colombian Caribbean island of San Andres as a transhipment point. According to this report, individual aerial couriers, *mulas* (mules),[20] were a pressing problem, as they would carry the delivery both externally, as luggage, and internally, inside their bodies. Those methods of transport were still common in subsequent years, as my newspaper review and fieldwork demonstrated, hence the need to continuously control airports. Whereas containerised

[20] A term that emphasises docility, exploitation and physical strength (Zaitch, 2002).

marine cargo traffic was considered only as an emerging problem, it was seen as such mostly through ports in the Caribbean (Strategic Intelligence Section, 1993).

During the 1980s, the efforts of the state agencies concentrated on the control of bulk drug transport using different air methods. A series of newly coined words described smugglers' tactics: *Narcovuelos* (narcoflies), *Narcoaviones* (narcoplanes) and *Narcopistas* (narcotrack). It was argued by the Colombian Police, that in order to improve air transport methods, traffickers modified gas containers and augmented the autonomy of the airplanes, providing the capacity to travel from Colombia to Mexico and back without needing to refuel (El Tiempo, 1995b). In the first half of the decade Colombian LEAs seized a multitude of aircrafts, among them a Boeing 727, which, according to the Colombian Police, belonged to the 'Cali Cartel' and was used to transport illicit drugs from Colombia to Mexico (El Tiempo, 1995c). Traditionally the main air transport methods were three: firstly, air droppings. Traffickers developed durable and impermeable packaging systems and logistics. Secondly, landing in small airplanes near the US borders. Thirdly, the use of commercial airlines or cargo planes with a range of concealing methods was practiced (Decker & Townsend Chapman, 2008). As was mentioned earlier, one such air transport method is body packing or the so-called *mules*. This approach consists of the transportation of illicit drugs by swallowing small containers, or hiding the drugs in luggage. The *mules* would travel as passengers. Other transport methods have exploited the already existing infrastructure by transporting big or small amounts of cocaine via cargo. Different reports mention varied numbers concerning the weight of the shipments, from 300g up to 5 kilos, for which smugglers resort to a wide array of camouflage methods, some of which imply formal knowledge of chemistry and others of artisanal work, and quite often a combination of both.

According to Decker and Townsend (2008), with the use of the Airborne Warning and Control System (AWACS), most air transport of illicit drug was thwarted. Others point to the implementation of operational teams such as the Operation Bahamas and the

Turks and Caicos (OPBAT) for reducing air traffic methods and forcing smugglers to use maritime routes and methods. However, claims about the results of this approach have been contested by Bagley (1991), who admits that the use of AWACS might have helped to improve the surveillance of the Caribbean drug routes, yet it did so at a high cost and without the expected results. In 2015 the Colombian Air Force reported a decreasing tendency in using air routes, yet pointed out that the use of small and medium size airplanes in the transportation of illicit drugs has continued, only on a smaller scale than in the past (Observatorio de Drogas de Colombia, 2016). Notwithstanding, during the 2010s, air transport continued to be among the most widely used strategies to smuggle illicit drugs. Smugglers have made extensive use of the GPS systems that (1) help them avoid the problems of the past, such as airdropping or landing in the wrong place and (2) increase logistic capacities, as Killbrew and Bernal note (2010).

It is, nevertheless, generally assumed that the use of air traffic methods has been highly reduced and that this reduction has contributed to a shifting in smuggling methods from aircraft delivery to less detectable methods, e.g. maritime smuggling methods. For example, the Colombian Drug Observatory (2010) considered that by the late 2000s smugglers in Colombia preferred maritime methods of transport, such as cargo ships, fishing ships, go-fast boats, and narcosubs. According to UNODC in 2008 most of the cocaine from South America to the U.S. was transported using a combination of terrestrial (54%) and maritime (44%) methods. Colombian authorities have estimated that 78% of the drugs smuggled from Colombia to the USA are transported using maritime methods, and 65% of those drugs are carried in go-fast boats, small ships and narcosubs (UNODC, 2008b). Many Navy officers consider that the intensive use of maritime routes makes sense to smugglers. These transportation methods give them better results. The difficulties that the sea has, the length of the journey, and the changing oceanographic situation are all contributing factors that make the detection, following, and interception of ships carrying illicit drugs difficult (Interviews).

While in the Caribbean smugglers made use of traditional knowledge of goods smuggling routes, in the Pacific drug trafficking exploited the fact that the Pacific Ocean was difficult to patrol. In the early 1990s there was little presence of the Colombian Military and Police in the Pacific. Hence, the traffickers started to challenge enforcement agencies by using speedboats, fishing boats, and container ships in that area (Bagley, 2004; Chepesiuk, 1999). Colombian LEAs initially reported the use of small cargo boats or fishing boats for the transport of cocaine. Although it has been reported that once LEAs were able to easily identify suspicious boats, smugglers consequently turned to go-fast boats. Due to the widespread use of go-fast boats in drug smuggling, those artefacts soon came to the attention of the LEAs and their movement was considered suspicious (Decker & Townsend Chapman, 2008). By 1995 Colombian LEAs and the DEA reported the use of an artefact, similar to a go-fast boat but capable of submerging under the waves in order to hide from the radar (Hohnson, 1995). The capture in 1997 of a communication centre in the middle of Bogota's industrial district for coordinating go-fast boats movements, and the discovery of a drug smugglers' ring that combined go-fast boats, scuba divers, and open sea freighters in order to transport drugs to Europe provided LEAs with further evidence of the widespread use of maritime smuggling methods (El Tiempo, 1997).

During the 1990s, smugglers used yachts and sailboats because these two forms of transportation allowed them to hide greater amounts of cargo, and to make longer trips. Smugglers started to develop considerable engineering capacities by using fibreglass in building compartments, often with hydraulic system between the hull and the floor near the gas compartments, which made it hard for the trained dogs to recognize the cocaine smell (Decker & Townsend Chapman, 2008). Another transport method operated extensively during that decade was shipping containers that enhanced cargo capacities and minimized risks. The strategy was to either hide the illicit cargo in false walls, or among licit goods.

The Colombian Navy and Antinarcotic Police have made efforts to know and foresee routes and trends in maritime transport methods used by smugglers, mainly by producing statistics based on seizures, and by devoting efforts on intelligence activities and on sharing evidence. During the 1980s the perceived increased in the use of maritime routes by drug smugglers led the Colombian Government to the activation of the Coast Guard Unit in 1991, initially operating exclusively in the Caribbean Sea and later, in 1993, in the Colombian Pacific. Also, several state and multistate actors (OAS, ONUDC) attempted to highlight the rising importance of maritime routes as the main transport used by smugglers. The importance given to the rise of maritime drug trafficking as a regional security problem was crystalized by the conformation in 2003 of a group called the 'Group of experts on maritime narcotrafficking' working as a consulting body for the Inter-American Drug Abuse Control Commission (CICAD). The CICAD is part of the secretary of security of the Organisation of American States.[21]

The first task of the 'Group of experts on maritime narcotrafficking' was to present the CICAD with a report on the issue of maritime narcotrafficking involving illicit drugs and related contraband in the hemisphere. The report is called *Hemispheric Study of Maritime Narcotrafficking*, and it was to be used as a blueprint for regional action in combating drug trafficking in two major areas: Ports; and Port and Maritime Interface and Interdiction.

One key theme of discussion held by the 'Group of experts on maritime narcotrafficing' was how to share knowledge and intelligence among different states as a key element for fighting drug trafficking. Documents produced by this group show that cooperation in the early stages of international agreement was full of problems:

[21] http://www.eltiempo.com/archivo/documento/MAM-163544

> Information and intelligence are not usually shared among and within countries in a timely, proficient manner in order to create effective and efficient counterdrug operations. The sharing of information and intelligence is limited among agencies/countries for several possible reasons. Among them are the fear of compromising operations or sources, no direct contact between officers that would foster trust, lack of communications, institutional rivalries, lack of bilateral or regional agreements/arrangements, lack of a secure means of sharing the information, limited knowledge of the operational capacity of others, and lack of understanding of the needs of others" (Group on Maritime Narcotrafficking, 2003, p. 18).

Port security was another salient preoccupation for the Group of experts on maritime narcotrafficking, especially during the group's early meetings. The increase in the use of containers according to the group was accompanied by increased use of containers in maritime narcotrafficking (Group on Maritime Narcotrafficking, 2003). Control of ports and the control of containers were seen as two separate issues, but for both two solutions were presented. They include the standardization of practices called 'Port Security Standards', and the use of technology. As stated by the document, what was to be protected in the case of ports was maritime commerce. Maritime commerce and shipping has been broadly defined as a 'common good', and it includes maritime commerce and related activities that have global implications.

By 2013 regional actors, such as OAS and Colombian agencies – the Colombian Navy and Colombian Police – had narrowed down the maritime drug transport methods to a handful, including cargo containers, go-fast boats, recreational boats, fishing boats, and the narcosubs. The same actors and agencies have provided different accounts of the development of 'narco-tecnologies'. In short, smugglers have used maritime transport methods since the early days of marihuana smuggling from la Guajira region in Colombia. The use of traditional smuggling routes was continued during the marijuana *boom*. The same routes that were intensively utilized during the era of the *cartels*, survived the demise of cartels, and passed into the era of '*cartelitos*' and '*networks*'.

Perceived changes in the seizure of illicit drugs while being transported using maritime routes are subject to different interpretations. To some members of the LEAs decreases in seizures correspond to a more effective control of the sea (as well as serving as a motivation for smugglers to innovate). A decrease in the amount of the cocaine confiscated from smugglers was also seen to be connected to changes in the patterns in routes and strategies. As one Colombian Navy commander explained: 'Earlier smugglers used to transport one ton or more of cocaine, but recently they prefer to send smaller quantities. In recent months, we have captured only small shipments of 100 kg or less and the same happens with what they dispatch in cargo containers'. For others, when seizures diminished it should have been interpreted as a confirmation that smugglers were a step ahead of state control. Thus Admiral Mike Mullen argued that: 'The bad guys are moving faster than us' (Gomez Maseri, 2008). Often those localized perceptions of changes in transport methods, or increases and decreases of seizures, are, at a global level, taken as both proof of the effectivity of the strategies and the need to reinforce those strategies.

Camouflage and Speed: Smugglers Strategies to Transport Illicit Drugs

In order to succeed drug smugglers need to develop strategies in the form of operational stealth, and strategic and logistical flexibility and tactical-logistical knowledge (Basu, 2014; Martin, 2012). Colombian drug smugglers using maritime routes have used several methods of transport, using diverse forms of stealthness and knowledge of the logistic circuits. By the late 1990s seizures of illicit drugs provided an overview of the main key sites, forms of transport and destinations to be listed as 'red flags'. In 2000 a Navy report stated that:

> Intelligence reports indicate that more than the 90% of the cocaine that moves along the Pacific and Caribbean transit zones is transported using: commercial transport methods, constituted by cargo container ships, non-commercial boats

> such as fishing boats and fast boats, known as go-fasts which are characterised by being small and fast, hardly detectable by radar and hard to detect in daylight, and that are currently the most difficult task for security institutions (Observatorio de Drogas de Colombia, 2001).

The smuggling of illicit narcotics in containers was as well considered as a key issue for regional forums. After the creation of the 'Group of experts on maritime narcotrafficking' within the Inter-American Drug Abuse Control Commission CICAD, its first task was to present the CICAD with a report on the 'the issue of maritime narcotrafficking involving illicit drugs and related contraband in the hemisphere.'

A short report produced by the CICAD in 1997 already identified the main methods of maritime transport of illicit drugs (First Inter-American Cooperation Meeting On Antidrug Maritime, 1997), that smugglers have continuously been using: Low-Profile vessels, go-fast vessels, Fishing vessels/small coastal freighters, Recreational vessels, and Ocean going freighters.

Regarding ocean going freighters (cargo-containers) LEAs have identified several strategies: 1) when a member of the crew decides to smuggle, without the involvement of any other member of the crew a small quantity of illicit drugs, usually using his/her own lodgings to camouflage the drugs; 2) bigger amounts of cocaine hidden inside the containers or inside engine rooms, according to LEAs has been done with or without the knowledge of the crew or the owner of the goods.[22]

[22] It is not uncommon for traffickers to establish legal exporting firms, and to send several 'clean' shipments in order to create a good record, and when this is achieved to start testing controls by sending different amounts of cocaine.

Colombian smugglers have managed to gain tactical-logistical knowledge of the workings of port security and its vulnerabilities.[23] They have gained knowledge about how to used the inherent mobility of the shipping container (Martin, 2015) as well as other forms of cargo shipping. In doing this, smugglers are able to modify the structure of containers in order to hide the illicit drugs in the floor, ceiling, or walls of the containers, or to disguise illicit cargo among licit cargo. This particular method of transport resulted, just in 2011, in an estimated 11% of all of cocaine being seized en route to the UK and Europe, via Spain, the Netherland and Belgium, from containers departing from Latin American Ports (UNODC-Studies and Threat Analysis Section, 2011) and 15% of the total of cocaine seized in Colombian ports for the years 2013-2014. Port security practices have resulted in the discovery of illicit drugs, such as the discovery of 2 tons of cocaine hidden behind steel welded sheets (El Tiempo, 2000a), or the discovery of one ton of cocaine mixed with tropical fruit jams shipped to Amsterdam (El Tiempo, 2007a) and more recently still of 2.3 tons of cocaine disguised among insecticides shipped to Mexico (El Tiempo, 2012).

Smugglers also use multi-mode transportation shipments, with various methods of transport used from the source to the final destination, often using a combination of small fishing or passenger boats or go-fast boats and refuelling in open sea. This method required a complex strategic and logistical flexibility which implies the coordination of efforts across loosely tied individuals accomplishing specific tasks. Captures of smugglers using this method of transport show that smugglers manage to move up to 3 tons of cocaine in one shipment. In doing so smugglers use heavily transited areas, difficult to police without interrupting the flow of commerce. By utilizing this combination of means, smugglers avoid moving huge amounts of cocaine in solo runs, and therefore maximize security and reduce loses.

[23] Colombian Ports have been owned by private societies since 1991. Port management is set to provide the security mechanisms to deter smugglers from using ports as points of departure of illicit cargo. Since 1995 the Colombian Antinarcotic Police has been in charge of performing security activities, inspections, intelligence, etc. within the main Colombian Ports, with the support of the Narcotics Affair Section of the U.S Embassy in Colombia.

As pointed out earlier, by the turn of the century go-fast boats were considered a main threat to the Navy concerning drug smuggling using maritime routes. Seizures of drugs also indicated that the Pacific Coast was increasingly used in the transport of illicit drugs. In 2000, the Colombian Navy declared that 54% of cocaine was transported from different points from the Colombian Pacific Coast (El Tiempo, 2000b). According to the Navy smugglers had a logistically sophisticated arrangement to move the cocaine from Colombia to the US. They use maritime Pacific routes and go-fast boats, which are faster than previous boats with a speed up to 60mph, and have established gas stations in the open sea to guarantee a continuous supply of petrol to the boats. The Navy then, facing the difficulties of competing with the speed of narco boats, have established as a priority thwarting the boats serving as gas stations, an easier target giving their size and speed.

Smugglers using go-fast also have developed considerable learning of evasive mechanisms that allowed them to evade Coast Guard Units (Chapter 7), using speed as a form of stealth, moving big amounts of illicit drugs, and continuously introducing improvements to their boats in order to gain speed. The vast majority of the go-fast boats seized have been off-the-shelf boats, almost never reused. Smugglers also have built their own fast boats and increasingly modify them in order to protect the cargo. Placing a hull on top of the boats serves both purposes, shielding the cocaine from the water and gaining marginal aerodynamic advantage, Figure 11, speed has been complemented with the inclusion of an increasing number of engines, Figure 12.

Figure 11. Makeshift Go-fast boat.
Source: Author

Figure 12. In search of speed, four engine go-fast boat.
Source: Coast Guard Tumaco Station.

Go-fast boats then, are able to carry their load from coastal areas to their final destination, often Central American countries, by reprovisioning fuel and food. Go-fast boats can carry between 2 and 5 tons of cocaine, and a crew of 3 to 5 people, who usually carry communications systems and GPS devices. As mentioned, smugglers use a combination of solutions, procurement of boats from manufacturers, tinkering with them, and building their own boats.

By 1994, the time in which the Coast Guard was boosted by the entry of the *Dolphin* patrol boats, achieving up to 35knots of speed (Chapter 7), smugglers were already using go-fast boats. It is possible then to observe a wide diversity of go-fast artefacts, ranging from 7.62 m and two 200hp engines, with a speed of up to 25 knots, and go-fast boats of 10.9 m, with three to five 200hp engines, developing speeds up to 45 knots, and some boats with internal motors (inside out) with diesel fuel, which allow these artefacts to reach speeds higher than 50 knots, making interdiction efforts more difficult. Interestingly, as I will show describing the building of narcosubs, smugglers were able to build makeshift workshops in the middle of the jungle and to design and build these artefacts using a combination of local knowledge, such as traditional knowledge of fiber glass handling. Both the Antinarcotic Police and the Coast Guard discovered several of these makeshift workshops between 2002 and 2007 both on the Caribbean Coast and the Pacific Coast (El Tiempo, 2007b). A captain who served in the Uraba area confirms this information and points out the difficulties of chasing the covered go-fast boats:

> They started having those makeshift shipyards…and to build those shipyards they needed good areas, areas favorable to hide those workshops…and they chose the jungles near the tributary areas of the rivers…and it is not a big deal what they did there…they just covered the boats, and with waterlike colours…or just placed a tent, a blue tent…and during the day they stopped…so the airplanes flying 5,000 or 10,000 feet couldn't really see it…only a piece of something floating on the sea…(Interview).

By 2005 the capture of cocaine using go-fast boats accounted for up to 50 tons of cocaine and by 2013-2014 confiscation of cocaine in go-fast boats accounted for 55% of Navy seizures.

The flows of illicit drugs are then carried out using a wide variety of artefacts, with different levels of stealthiness that require different arrangements. The smugglers' efforts demonstrate resilience to interdiction efforts and show different variants of 'learning by trying', making improvements and modifications of the logistical arrangements and components to correct difficulties, and 'learning by using' making improvements to the artefacts or systems of artefacts implemented (Fleck, 1994). This resilience, however, can be also be found in the prey/predator dynamic of the drug smuggling context. Academic literature on drug smuggling, as well as LEAs and the Military, often portraits the availability of different methods of transport as shifts, generations, changes, new methods, and the novelty of the transport methods used by smugglers, in which the success of controlling one method of transport paved the way to the appearance of a new one. As highlighted in Chapter 1, smugglers are also attributed a high degree of ingenuity, innovativeness, and flexibility, and as continuously seeking what for smugglers is the best way to transport drugs, as they are always in search of new methods and technologies for improving the efficiency and cost effectiveness of their enterprise. In the words of a Coast Guard commander, 'it is a demonstrable fact, narcotraffickers are constantly changing their tactics' (Interview).

I argue that one important aspect in order to understand the process of innovation in outlaw contexts, is to take into account the continual entry and exit of players, Specifically, regarding the interdiction/evasion binary, the presence of a prey/predator dynamic type of interaction, considering that movement and attachments are not linear or sequential but capable of rotating back and forth. This s non-linear occurrences are characterized by different groups attempting to solve problems as they are presented to them. The process by which smugglers are able to combine existing artefacts, materials, and technologies presents interesting consequences for the study of the diffusion of technologies. It demonstrates the possibility of complex technologies being generated without the intervention of a unifying policy, which is unrelated to the logics of increasing returns.

I suggest that the wide variety and the somehow unexpected combinations that the outlaw process of innovation produces, which I am going to illustrate with my analysis of the narcosubs, arise not from an iterative process in which 'organisations' or 'cartels' innovate time and time again, but in the continuous entry and exit of smuggler groups, which constantly provide the drug market with new flows of ideas, and who are able to take risks using new (and old) transport methods. I suggest then, that is the actions of many players that provides the dynamism of the binary interdiction/evasion in the WoD.

As pointed out in chapter 1, outlaw innovation can be related to what some academics refer to as 'democratization of innovation' (von Hippel, 2005) and the growing importance of 'users' for product modification and development. The case of smuggler technologies flags the capacities of 'outlaw innovators' in producing working artefacts across diverse geographies and constrains. Finally, smuggler technologies demonstrate interesting combinations of old and new technologies, e.g. a primitive 'panga', a traditional fishing boat equipped with cutting edge communication and positioning systems, a process resembling what Edgerton describes as creole technologies (Edgerton, 2007). A view from Science and Technology Studies allows us to overcome many of the metaphors in use to explain innovation in the interdiction/evasion binary, such as 'cat and mouse' and 'balloon effect', by introducing nuanced explanations of the process of innovation without coordinated or centralized efforts, by users at the fringes of society, in a continuously changing environment. In the next chapter I turn my attention to describe the evolution of the narcosub.

Chapter 5. The *Evolution* of the Narcosubs

They say, in the Caribbean Sea, they've seen a submarine
And those who tried to catch it, haven't been able to get at it.
It carries the purest drug and contraband it brings
And to catch it, the sea they're going to drain[24]

After several months of intelligence gathering, The Pacific Task Force was able to consolidate an *intelligence package* regarding the approximate location of a semisubmersible vessel. The Commander of the force and his staff planned the operation and sent an experienced team to locate the narcosub. They had to arrive at the precise moment when the cocaine was being stocked up in the narcosub, therefore being able to capture not only the vessel but the drug smugglers and the cocaine. The captain and lieutenant in charge knew how difficult it would be to find the artefact, they had already participated in various successful similar operations…but after weeks of continuous searching in the mangroves and many mosquito bites later, still no sign of any illegal activity… 'we had the intelligence information!', says the commander, 'so we kept looking, but while we were there looking for it, controlling possible exit routs, it set sail', the commander of the operation received information that the narcosub was already in the open sea, it was stranded some 60 miles from the coast and the crew was requesting to be rescued. 'After that, we spent some 24 hours more trying to find the vessel, finally a "gringo" airplane was able to detect it'…but when we got there it was already empty, and they didn't sink it, possibly because they wanted to rescue it and use it again…' concludes the captain.

This story summarizes some of the key issues regarding the use of submersible and semisubmersible artefacts by Colombian drug smugglers and the efforts of the

[24] Song *The Submarine*, Grupo Nuevo Texas, October 2009, *Corridos prohibidos* Vol. 12.

Military, specifically the Colombian Navy and Coast Guard Unit and Law Enforcement Agencies to thwart the sailing of the narcosubs.

This story, as indeed the history of the narcosubs and of other drug smuggler artefacts such as go-fast boats and cargo containers, clearly show how users facing barriers such as geographic isolation and continuous persecution are able to manufacture complex pieces of technology. In this chapter I will show that the history of the narcosubs demonstrates that in some instances, arenas of interaction and interchange of information are not necessary for the process of innovation. Finally, the difficulties the Coast Guard team encountered in the previous story also show the difficulties of attributing success and failure when describing technology in outlaw environments.

The history of the narcosubs intersects several different theoretical discussions. First, the discussion on mobilities, and specifically on the issue of illicit motilities, the movement of undesirable things and persons as part of the large-scale movements of people, objects, capital, and information across the world. Second, in the study the process of the coevolution of technologies in antagonist interactions. The dynamics of the process of innovation in illicit drug smuggling have been explained as the result of interdiction efforts in which the agency is momentary placed on one side of the interdiction/evasion binary. I argue that the study of the process of designing, building, and using narcosubs corresponds not only to a push/pull process as interpreted by the academic literature so far, but may be explained as the result of dispersed peer innovation. I will concentrate my argument to show that the story of narcosubs contributes to the literature about the role of users in creating complex pieces of technology.

In this chapter I present an overview of the theoretical themes in which the smuggler technologies are situated and an overview of several competing transport methods used by drug smugglers. Then I turn my attention to the process of design, building, and use

of narcosubs by Colombian drug smugglers, in short, the evolution of narcosub. I then present a view of the process of innovation of the narcosub from the point of view of the Colombian Navy, and finally I summarize the main findings that stem from the study of smuggler technologies, and specifically of the narcosub.

The constant adaptation of both sides of the binary has resulted in high variation in artefacts, especially on the smugglers' side. Hyssalo and Usenyuk (2015) introduced the concept of dispersed peer innovation as an alternative explanation of the process of evolution of a complex artefact where users retain control over invention, modification, diversification, building, and maintenance. I consider that this concept could help explain the diversity of smuggler artefacts, and specifically in this chapter of the narcosubs. In the case of smuggler innovations, the process is also affected by several constrains, such as the illegality of the activities, which limit the availability of materials and impose difficulties for the transport of such materials to the building sites. The study of the design, building, and use of submersible and semisubmersible artefact narcosubs feeds into the growing number of academic studies on the user's capacities for innovation, but also expands this literature to cover instances where barriers for innovation are affected by the illegality of their activities. Faced with many conflicting constrains both from their internal organisation and the interaction with the environment (Kauffman & Macready, 1995) smugglers are left with alternative, locally optimal, negotiated solutions for the transport of illicit drugs.

In this chapter I make use of the biography of the artefact and practices approach, combining an historical approach with ethnographic investigation (Pollock & Williams, 2008, 2011). My historical analysis is based on documentary research of the main Colombian newspaper (El Tiempo) and Weekly magazine (Revista Semana), I collected 757 entries related to Maritime interdiction operations between 1993 and 2014 and 82 about the narcosubs, as well as a review of the Navy, Police, and CICAD documents. I performed ethnographic observations and conducted interviews with members of the Navy during visits to the main Coast Guard bases in the Caribbean

and the Pacific and a guided visit to the narcosub museum in the Bahia Solano Navy base, where I kept a fieldwork diary and visual records.

Variation and Dispersion in Narcosub Design

Narcosubmarines, drug subs, narco semisubmersible, Self-Propelled Semi-Submersible, or simply narcosubs, are maritime custom-made vessels utilized principally by Colombian narco traffickers and developed with the purpose of smuggling illicit drugs into the U.S. market. The term narcosub encompasses a diversity of artefacts that includes semisubmersible vessels and fully submersible vessels that are characterised by the use of maritime diesel engines, a rudimentary system of refrigeration, no facilities, and a valve that is activated in case of being captured by Law Enforcement Agencies or Military that allows water to fill the artefact and sink the vessel. The narcosubs are not made to last, as smugglers, mostly discard such vessels after ending their one trip journey.[25] Smugglers have been using narcosubs from at least as early as 1993, but the majority of captures have been made since 2005. Narcosubs are described by the Navy as artefacts that are highly difficult to detect and/or track, due to the lack of emissions once departed, the little wake that facilitates visibility from above, and a small radar signature.

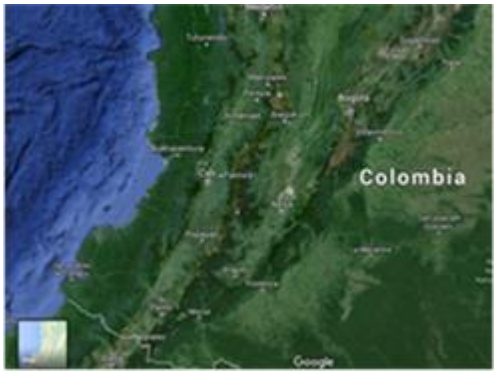
For over two decades narcosubs have set sail from the deserted coast on the north of Colombia (Map 2), from unpoliced areas in the Gulf of Urabá (Map 3), and from the mangroves of the south Colombian pacific coast (Map 4), while some were also found while in construction near populated areas. Each one of those artefacts is built to move between six and ten tons of cocaine, and their construction has demonstrated usability in the different conditions of the Caribbean Sea and the Pacific Ocean. The narcosubs are slower than other transport methods used by drug smugglers, sailing up to 12 knots

[25] Some interpretations of the technical aspects of these machines, however, indicate their long-time use, such as multiple layers of painting, rust, and corrosion.

per hour, but they provide smugglers the capacity for traveling long distances, with increased cargo capacity and stealth.

Map 2. Colombian North Caribbean coast, La Guajira.

Map 3. Colombian Caribbean Coast, Gulf of Urabá.



Map 4. South Colombian Pacific Coast.

Navy Units and Colombian Police have made efforts to capture those artefacts while still in construction, and reliable information has also made it possible to intercept

them some miles away from the coast or in open sea. According to the Navy, each move away from the sea increases the possibility for smugglers to succeed in their journey. As these are unregistered machines, figures about how many have been built, used, and re-used, are difficult to obtain, and some estimate that only 14 percent of narcosubs are stopped (Mackey, 2010), or 20% as estimated by the U.S. Enforcement Agency (Diálogo, 2009), According to the State Department's *2010 International Narcotics Control Strategy Report*, narcosubs may have hauled 423 metric tons of cocaine in 2008 into the U.S., while other point out the uncertain numbers but continuous flux of those artefacts (e.g. Stavridis, 2008).

As with other illicit activities, figures can be contested, and as several academic have pointed out, measurement of illicit flows have an inherently political use (Andreas, 2010; Buxton, 2006; Thoumi, 2005b). Statistics on drug seizure are at the core of the process of shaping the enforcement agencies; they use data in the construction of drug traffic narratives, in the allocation of budgets, resources, or rewards, and as part of the construction of the enemy (Chapter 4). That is not to say that the data is cynically forged or fabricated, but that the very process of collecting, displaying, and using of those statistics should be taken into account when using data provided by state databases.

There are then obvious difficulties in compiling a comprehensive list of all of the smugglers' artefacts. Using seizure data can be criticized on the grounds that such numbers and exemplars only account for 'unsuccessful criminals', those who get caught, but this assumption lead to the interpretation that the LEAs are essentially inefficient. There is not a consolidated number of submersibles and semisubmersibles seized, and as mentioned estimates on the number of narcosubs available to smugglers vary widely, as also does the amount of cocaine transported in these artefacts. Estimates about the number of artefacts built and used by smugglers have helped to consolidate the image of a 'narco-sub fleet' and have provided the base to affirm that

by 2008 roughly 300 tons of illicit drugs were transported using narcosubs[26] as estimated by the Southern Command of the U.S. Navy. While the Colombian Navy estimated that by 2013-2014 roughly 2% of cocaine was transported using submersible or semisubmersible vessels.

Data from the Colombian Navy indicates that by 2013, 83 narcosubs (Figure 13) and 98.2 tons of cocaine had been seized, as well as 22 makeshift shipyards. This number encompasses semisubmersible, submersible, manned, and unmanned artefacts, and shows the increase of the seizure of those artefacts since 2005. But we lack, and probably will continue to lack, the numbers of those that have sank. Most of the narcosubs have been found in the Pacific (approximately 78%, 64 artefacts) while 20% of them have been found in the Caribbean.

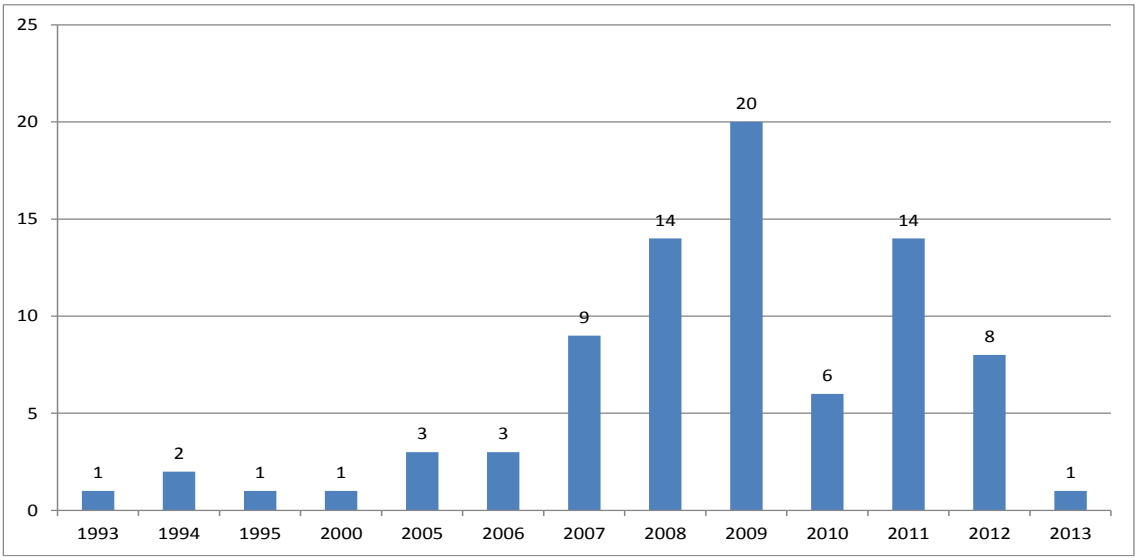


Figure 13. Number of narcosubs seized between 1993 and 2013 in Colombia. Source: Author with data from Armada Nacional de Colombia.

The narcosubs are an interesting case for STS and Innovation Studies because even if we only take into account those vessels captured, there are a high degree of variation

[26] That is to say, half of the potential production of cocaine in Colombia per year.

between them, not just in terms of categories (submersibles, semisubmersibles, towed versions, etc.), but in the variation of their design, and variations in their construction.

Innovation Studies and STS have shown the role of users in the process of innovation, demonstrating the capacities of users not only to introduce minor changes and modifications but to shape habits, technologies, organisations, cultural values, regulations, the behaviour of other practitioners, or the modification of the initial purpose of the equipment (Hyysalo, 2009; Hyysalo & Usenyuk, 2015; Lüthje, 2004; Lüthje et al., 2005). Innovation Studies have often emphasised the mechanisms through which development by innovative users have made their way to the market, often creating new paths (Voss, 2010). Recent work from Hyysalo and Usenyuk has shown the capacity of users to create complex technologies and dominate all aspects of such machines, despite attempts by manufactures to take over (Hyysalo & Usenyuk, 2015). Unruly users have also demonstrated their capacities to innovate, adapting practices in the face of prosecution from Law Enforcement Agencies (LEAs) and the Military, and showing the importance of antagonistic relations in driving technological change (Dolnik, 2007; Jordan & Taylor, 1998; Taylor, 1999).

In this section I will show a variety of submersible and semisubmersible artefacts that travel from the Colombian Coast up to the Mexican Coast, and show the different solutions for solving problems such as floatability, stealth, propulsion, access to materials, a combination of off the shelf solutions, and hull designs that have been adopted by builders, providing drug smugglers with very different machines. The high number of seizures of these artefacts provides an idea of the popularity of this transport method among drug smugglers, whose use continue despite the sanctioning of the 'anti-submersible' law in 2009. In the first three months of 2016, three new artefacts were seized in the open sea, one in a makeshift shipyard ready to be bound, and another in Brazil.

In terms of cargo capacity there is a wide variation in these artefacts. Some can transport 2 tons, while others are designed to carry up to 10 tons of illicit drugs, clearly marking different solutions in their design. Figures 11 to 17 shows their variation in terms of size and cargo capacity. Figure 14 and Figure 15 represent an early model of a semi-submersible artefact with a cargo capacity of 2 tons of cocaine that was captured in 1994. Figure 16 shows a 'fully' submersible artefact with a cargo capacity of up to 10 tons, captured in February 2011.

Figure 14. The Tayrona rear view.
Source: Author.

Figure 15. The Tayrona side view.
Source: Colombian Antinarcotics Police.

Figure 16. Timbiquí Submarine.
Source: Author.

Figure 17 and Figure 18 show the submersible version known as ‘Narcotorpedo’ or simply ‘torpedo’, with a cargo capacity between 2 to 5 tons. Figure 19 and Figure 20 corresponds to a Low Profile Vessel, with a cargo capacity between 6 to 10 tons. Cargo capacity is then an integral feature in the design and construction of these artefacts. In terms of cargo capacities, the images demonstrate the variably of shapes available to drug smugglers. Figure 14 and Figure 15 show the earlier versions of submersible artefacts buildt by smugglers, and Figure 16 shows a more ‘submarine like’ artefact, with a periscope and a custom made submarine propeller. Figure 17 and Figure 18 show two different versions of the ‘torpedo’ the first one with a compartment where a communication system was found. The narcosub in Figure 14 uses a boat propeller. The narcosub in Figure 14 has approximately the same cargo capacities as that in Figure 17.

Figure 17. Narco-Torpedo, Buenaventura.
Source: Author.

Figure 18. Narco-Torpedo, Bahia Malaga.
Source: Author.

Figure 19. Inside of a fully loaded low-profile vessel.
Source: Colombian Antinarcotic Police, press release.

Figure 20. Narcosub displayed at the Buenaventura Coast Guard Base.
Source: Author.

Features that are important in some designs can be easily disregarded in others. A good example of that can be found in the proposed solutions to visibility issues, that is to

say placement of the windows, 'the glasses', the artefact in Figure 21, found in the Pacific while for other artefacts visibility is clearly important as demonstrated by the artefacts shown in Figure 22 and Figure 23. The nonexistence of windows allows the Navy to approach these artefacts without warning, and, therefore, motivated designers to include them. A captain explained: 'Those without a window, you just boarded them from behind and you started knocking on the hull, and when they came out to see what it was (the noise) you would detain them. So that's why they started putting all those windows' (Interview). The most common design places the cabin at the rear and the cargo hold amidships.

Figure 21. Semisubmersible captured in the Pacific with no back windows. Source: Lesmes (2005).

Figure 22. Semisubmersible, cockpit detail. Source: Colombian Antinarcotics Police.

Figure 23. Low profile vessel, cockpit detail.
Source: Author.

Common to crewed narcosubs is the use of maritime diesel engines. Several reports indicate the use of 350hp engines, which are tied to a gear in order to move the propeller. Also common is the use of 'goose neck' tubes in order to ventilate the interior of the vessel. Materials used for the construction of the hull are more varied. Some narcosubs are made of a combination of wood and fiber glass, while others are made of a combination of wood and steel, and some others of only steel. There has been at least one report of the use of Kevlar.

Narcosubs remain a vehicle for transporting illicit drugs. In previous years the sanction of the Law penalizing the building or sailing of submersible or semisubmersible artefacts, led owners or sailors of narcosubs to disguise their vessels as 'tourist vehicles', or as artefacts built as part of a hobby.[27] Strong suspicions as to the illicit use of such vehicles led the Navy to initially propose control over these vessels by means of maritime registers, and to require compliance to the rules of maritime

[27] In at least one case the owner of the artefact was detained but later released without charges when it was alleged that the artefact was used as part of his hobby and that the artefact was built as a part of a tourist company aiming to carry passengers to the surrounding beaches.

authority, demonstrating: flag, name, registration, names of the crew, port of departure, and the maritime authority that issued the departure and port of destination.

Despite warnings of the potential of these vehicles to transport weapons, violent extremists, or weapons of mass destruction (Lichtenwald et al., 2012; Stavridis, 2014; Watkins, 2011), narcosubs discovered until today have not been used for a different purpose than for the transportation of illicit drugs. These associations go in line with the rhetoric of the merge between 'organised crime' and terrorism present in policy analysis and official documents discussing the threats of drug smuggling for the region. These voices stated the potential threat of narcosubs if drug smugglers decided to rent or sell these artefacts to terrorist organisations, or if terrorist organisations were able to profit from obtaining the knowledge to build the vessels. Documents from the Inter-American Drug Abuse Control Commission, signal the need to increase interdiction operations and security in Ports, and that the overall efforts to thwart drug smugglers' use of maritime routes goes hand in hand with anti-terrorist efforts.

One key issue (besides the obvious illicitness of their purpose) that separates these artefacts from other user driven innovations is the fact that builders and owners (or owners of the illicit cargo) are not usually members of the crew. Although builders may take part in the early trials of the artefacts, sailors are usually brought to the departure points while the artefact is being loaded in order to be familiarized with the machine and instructed on its destination. Such sailors are recruited based on previous ties with smugglers and their skills. When referring to reasons for being hired, the captain of a narcosub, in a confession made to Police, said, 'they look for experienced Navy men' (Policia Nacional, n.d.). The fact that crews have nicknamed these artefacts 'water coffins' exemplifies the harsh conditions inside and the high probability of failure. The sailors' abilities and knowledge in solving issues regarding navigational issues and engine failures are key, not only to the fulfilment of their task but also to the safeguard of their own lives. In an encounter between builders and a prospective narcosub captain, recorded by the Colombian Police, the latter recalled being

instructed: ‘take care of the engine, your life depends on it’ (Policia Nacional, n.d.). Experienced fishermen often have the required abilities and knowledge to navigate narcosubs, experience that some have gained from government funded courses, courses taught with the aim of professionalising fishing activities and reducing poverty.

As of 2015 Narcosubs continue to be used as an illict drug transport method. Their varied designs and manufacture practices (materials, shapes) suggest a combination of formalized knowledge in some cases (more on this later), local knowledge, and navigational skills. The latter two are quite common in the areas where the narcosubs are built and sailed from, places where fishermen have traditionally built their own boats and tinkered with engines due to a lack of close repair shops. Navigational skills are also quite common in those areas, and traditional knowledge of dead reckoning navigation methods is complemented by the use of GPS. Several concepts from STS can explain this phenomenon. The ‘pick-and-mix’ strategy by which users create ‘configurational technology’ adapted to their needs (Fleck, 1994), is a process of recombination in which existing components are adopted, modified, and/or recombined to create new forms adapted to the outlaw users requirements, or bricolage (Büscher, Gill, Mogensen, & Shapiro, 2001). This patterns of dispersed peer innovation (Hyysalo & Usenyuk, 2015) through the recombination of existing materials and knowledge paves the way to either the creation of ‘hybrid’ artefacts, represented in two different forms (off the shelf boats covered with fibreglass or other materials) or new designs of narcosubs, traveling as a ‘flexible techno-meme’ that is used by different groups as generic solutions for the transport of big amounts of illicit drugs.

The Evolution of Narcosubs

The narcosubs seized from Colombian drug smugglers from 1993 until 2015, either while in construction or while sailing, demonstrate a combination of materials, designs, and building techniques indicating various approaches preferred by drug smugglers to solve the problem of transporting big amounts of illicit drugs. In doing so outlaw users benefit from the pattern of dispersed peer innovation, in which the design and construction of these vessels, not being bound by standardized procedures, profit from the possibilities of creating their own designs with high degrees of flexibility in exploring the different aspects of the 'techno-meme'. Those involved in the process of outlaw innovation are able to mix local available knowledge of traditional boat building with off-the-shelf technologies.

Whether or not drug smugglers used narcosubs before 1993 will perhaps remain unknown. The history of the development of the narcosubs remains elusive, with different versions milling around. A heroic account of Pablo Escobar's enterprise places the 'invention' of this artefact as a part of his ingenuity in the transportation of drugs, an idea that Pablo Escobar supposedly developed after watching a James Bond movie. In this story a Russian and an English engineer were hired to design the submarines while Pablo's brother took care of the electric circuits (Escobar & Fisher, 2009). Other accounts situate the 'Cali Cartel' as the source of the idea to use submersible methods to transport illicit drugs, who were claimed to have initially tried to buy fully made submarines from the former Soviet Union. Supposedly, under the disguise of an oceanographic research vessel, they transported drugs from Central America to the U.S. (Navarro, 1997). An account of the history of the 'Cali Cartel' places the narcosub as part of an alliance, or as confirmation of the alliance, between the 'Cartel' and the 'Russian Mob'. In this account the builders are two Russian engineers and an American who were in charge of the design and construction (Chepesiuk, 2003; Darling, 2000). In another version of this account an already existing friendship between a Colombian drug smuggler and a Russian was key to the

design and development of the *Facatativa submarine* (Semana, 2003). While in an autobiography a retired drug smuggler also claimed that the 'Cali Cartel' invented the narcosubs, but this was done as part of the link between that group and 'Mexican Cartels' (Montoya, 2007).

A key element plays a role in these accounts, the availability of money. In the Escobar story the decision to build such an artefact was motivated by security concerns: 'It didn't matter how much it might cost, money was never a bar to anything Pablo wanted done', affirms Pablo's brother. While the 'Cali Cartel' attempted to spend up to US$ 5.5 million to buy a tango-class diesel submarine or up to US$25 to build one.

Figure 24. First narcosub seized 'Laura'.
Source: http://covertshores.blogspot.com/2010/06/narco-submarines-torpedoes-and-semi.html

Figure 25. 'Laura' rear view.
Source: http://covertshores.blogspot.com/2010/06/narco-submarines-torpedoes-and-semi.html

The first documented report of the use of narcosubs dates from 1993. On the 22nd of May near the Island of Providence, a semi-submersible vessel about 7 meters long with, according to different accounts, a cargo capacity between 1 to 2 tons of cocaine and a crew of two, named the *San Andres Narcosub* or *Laura* (Figure 24 and Figure 25) was seized. The vessel was captured while being towed behind a powered watercraft, according to reports. Even if not fully submersible, it had the capacity to control its direction and depth. Its speed was slower than 8 knots, and it was designed to be quickly discarded if LEAs approached (Policia Nacional, n.d.; Semana, 2011).

In 1994 three distinctly unalike narcosubs were found in different places in the Colombian Caribbean Coast: one while in construction, one in a shipyard, and a third aground near the coast. The first one was found near the town of Turbo in the area of the Gulf of Urabá. It had a metallic structure and was partly covered with fibreglass, and propelled by one diesel engine and two electric engines, *Figure 26* and Figure 27 (Policia Nacional, n.d.). The Barranquilla narcosub left little trace and it is often neglected from accounts of the history of such artefacts. It was found in a dry shipyard

in Barranquilla while being repaired and was described by the then Commander of the Navy in the Caribbean as ‘some sort of boat with a shell’ (El Tiempo, 1994b, 1994c).

Figure 26. Semisubmersible in the making 1994, front view.
Source: Colombian Antinarcotics Police.

Figure 27. Semisubmersible in the making, 1994, side view.
Source: Colombian Antinarcotics Police.

Figure 14 and Figure 15 display the third model of a narcosub seized in 1994, an almost 10m long vessel that was named *The Tayrona* after the name of the beach on the northern Caribbean Coast where it was found. It was built of fiberglass on top of a hull of wood. For movement it used a 6hp diesel truck engine. The muffler and exhaust pipes were also from a truck in addition to three boat propellers, Figure 28. An arrangement of air boxes and fifty 25 kg lead weights mounted on the hull were used to control floatability. This narcosub also possessed an air compressor that allowed for the interchange of air between the interior of the artefact and the outside, and a power plant. This hybrid artefact carried a maritime camera and monitor that could be viewed by the crew from the metallic beach chair nailed to the floor of the narcosub.

Figure 28. The Tayrona, back view.
Source: Author.

The cylindrical metallic structure reappeared in 1995. That year in a shipyard in downtown Cartagena, the Colombian Navy seized a nearly complete artefact that had an 11 meters long and 2 meter wide aluminium structure and was covered in fibreglass (Figure 29). It had three compartments, possessed a sonar and 'sophisticated communication equipment', and was equipped with a 100hp diesel engine. According to the Navy reports it could be submerged up to 20m and could carry six tons of cocaine. Others estimated the cargo capacity was only 1.5 tons. Those reports also

consider that in order to design this artefact smugglers hired ‘experts’ who produced an artefact with a hydrodynamic design (El Tiempo, 1995a; Ramirez & Bunker, 2014).

During 1996 there were several reports in Colombian newspapers about the use of the narcosubs as a transport method. Intelligence reports based on eye witness accounts suggested the existence of a submarine that was loaded with illicit drugs in La Guajira region and sailed to supply the European Market (Semana, 2003; El Tiempo, 1996).

Figure 29. The Cartagena submarine.
Source: Colombian Antinarcotics Police.

In 2000 a different narcosub design was found in the middle of Los Andes, far from any coast, it was named *The Facatativa* for the name of the nearest town. It was 30m long, or 36m according to others, and 3.5m wide, and approximately 30% to 40% complete. It had three modules and a double hull (Figure 30 and Figure 31). Reports agree on the fact that it was being designed to be a fully submersible, stealthy narcosub. But assessments about its capabilities vary widely. While some highlight that it would have had a range of up to 700 nautical miles (Moore, 2001), others report that it would have been able to navigate up to 2000 nautical miles diving from 10m to 20m (Ramirez & Bunker, 2014). Estimates about its cargo capacity and building cost are also

inconsistent. While some claim that its cargo capacity would have been between 10 to 15 tons, others' accounts affirm that the cargo capacity of that model was of an astonishing 150 to 200 tons, that is to say, almost a third of the potential production of cocaine in Colombia. Its cost was estimated between US$ 10 to US$ 25 million.

Figure 30. The Facatativa sumbmarine, inside.
Source: http://covertshores.blogspot.com/2010/06/narco-submarines-torpedoes-and-semi.html

Figure 31. The Facatativa Submarine.
Source: http://covertshores.blogspot.com/2010/06/narco-submarines-torpedoes-and-semi.html

Although no one was ever captured in relation to this artefact, the discovery of this vessel was considered clear proof of the links between the 'Cali Cartel' (assumed owners) and the 'Russian Mob'. The design was consider to be 'Russian' with its building undertake by 'Russian naval experts with the assessors of American engineers', and according to the Russian security attaché in the Colombian Embassy it was assured that 'without Russian technology, that submarine [would have been] impossible to build' (Semana, 2000). Others state that at least this attempt followed 'Russian' plans and specifications, but without direct involvement of Russians.

Besides *The Facatativa* narcosub, until 2005 all of the vessels with those characteristics were seized near the Caribbean, indicating that smugglers followed the 'traditional' Caribbean smuggler routes when using this new artefact. There are no vestiges of the building and use of narcosubs between the 2001 and 2003, but there are some reports about their use during 2004, with the Drug Enforcement Administration (DEA) affirming that at least four of these vessels were able to sail up to the Mexican Coast and deliver up to 16 tons of cocaine (El Tiempo, 2008b). Incontestable proof of the use of the narcosub appeared in 2005, until then considered only a fringe method of transport. From 2005 on the variation in their design and building places and materials indicates a new stage, with new designs, ending what can be labelled an early stage of experimentation.

The first narcosub of this stage found on the 24th of March 2005 was also the first narcosub found on the Pacific Coast of Colombia, specifically in the mangroves of the Nariño Region. This vessel was built of fibreglass on a wood hull and used a single maritime diesel engine and a single propeller, and had a cargo capacity of between 6 and 10 tons (Figure 32). That same year the first 'narcotorpedo' was discovered by the U.S. Coast Guard as the result of information provided by Colombian Navy intelligence. These artefacts are essentially a cylindrical steel tube with stabilizing fins and a beacon that allows its recovery if LEAs approach. The narcotorpedoes are towed

behind a powered boat and are able to submerge from 20m up to 30m (Figure 17. Narco-Torpedo, Buenaventura).

Figure 32. Semisubmersible in the making.
Source: unk, Provided to author by an ex intelligence detective.

Since 2006 the seizure of narcosubs and illegal shipyards has increased. According to Navy data, just in 2008 fourteen of these vessels were captured, and in 2009 twenty of thse artefacts were seized while en route or while being built. Most of these artefacts use either go fast boat hulls or appropriate their shape in order to create an artefact that is able to submerge over 70% of their structure. In 2010 new attempts to build fully submersible artefacts were discovered.

The majority of accounts about narcosubs present the development of these artefact as independent from other forms of illicit drug transport. Those accounts argue for interpretations of smugglers' artefacts as happening in stages, in which the narcosubs mostly 'replace' other forms of transport, or in a 'generation' with an incremental innovation in propulsion (e.g. from one to two engines or stealthiness, changes in colour or employment of strategies to diffuse heat signature) (e.g. Diálogo, 2009; Lesmes Duque, 2005). I suggest that the path to the design, building, and use of narcosubs is in fact entwined with other forms of maritime drug transport and that,

there are only a few short steps between submersible and semisubmersible methods of transport and go-fast boats and fishing boats. These steps have been provided by the embeddedness of the knowledge available to build such artefacts within the relatively small areas where narcosubmarines can operate.

As explained, the narcosubs seized between 1993 and 2000 varied widely in shape, materials used, and places of building. However, from 2005 the vast majority of these artefacts seized, either while being built or en route to their destinations, were concentrated in three areas of Colombia, two of them in the Caribbean and one in the South Pacific, specifically the northern sector of La Guajira, (Map 2), in the Urabá and Darien areas of the Atlantic Coast, (Map 3), and the on south Pacific Coast, specifically in the Nariño department, (Map 4). These three border coastal regions are characterised by their relative distance from the central government with a weak or nonexistence presence of the state, and are highly unpoliced due in part to the persistence of multiple violent actors (guerrillas and right wings paramilitary groups). Since colonial times these border areas have also been places of import and export of both legal and illegal goods. Specialized groups primarily dominated the contraband of such goods. It can also be argued, following Thoumi (2005), that these are areas where legality does not coincide with legitimacy (Thoumi, 1996). In these areas the services that the state should provide, security and protection, are delivered by a different set of actors.

The Guajira region is exemplary of this, a region with a long history of contraband that predates the modern Colombian state and where until recently illegal activities played an open central role in their inhabitants lives, inhabitants who actively prevented the deployment of state control and even demanded their rights to 'contraband' (González-Plazas, 2008). This was also central in what is known in the history of drug smuggling as the 'bonanza marimbera'.[28] During the late 1960s and 1970s 'professional' goods smugglers established contacts with American marihuana drug smugglers and buyers

[28] Marihuana bonanza.

to distribute the marihuana harvested in the nearby Sierra Nevada de Santa Marta. They provided their knowledge of smuggling maritime routes and hiding places in the Caribbean. The south Pacific region of Nariño and the Urabá region also have a long history of smuggling practices. In short, these are areas characterised by traditional smuggler practices, the relative absence of government, and with no shortage of knowledge about maritime related issues, such as tinkering with engines, locally repairing boats, etc. and the cohabitation of different maritime smuggling methods.

The capture of several rings of narcosub builders and designers also shows how these artefacts evolved as a result of different groups aiming to solve the same problem. The consolidation of the use of narcosubs by drug smugglers as deduced by the increase of seizure of these artefacts from the regions mentioned above from 2005 to 2014 allows for a classification of these artefacts. To this I propose a broader categorization in two main typologies based on the immersion capabilities: semisubmersible artefacts and submersible artefacts. As noted the main difference between the two is their immersion capacity: semisubmersibles can submerge up to three quarters of its structure, using a diversity of strategies to achieve this (lead, stones, etc.), while a submersible achieves full immersion of its hull. Based on its principles for construction this typology can be expanded to encompass the diversity and evolution of narcosubs, in which further differences between materials used, building places, and a series of micro innovations can also be appreciated. In order to build this classification I borrow from Lichtenwald et al. (2012) and Ramirez & Bunker (2014), but while neither make a distinction or make explicit the differences between the Low Profile Vessels (LPV) and the semisubmersibles,[29] I propose that this can be found in its building principles:

[29] In journalistic reports, governmental reports, and even LEAs reports those differences are completely blurred, e.g. an antinarcotics police report only distinguishs between torpedoes and the rest of submersible and semisubmersible artefacts.

I. Semisubmersible:

1. **Low Profile Vessels (LPV)**: These are self-propelled vessels that are capable of lowering their surface profile while controlling their depth and direction, although they not capable of full submersion. Their cost is estimated at US$1 million. They are capable of carrying between 2 and 8 tons, depending on their design. They are built using a go-fast boat or any other small boat that is covered usually with fibreglass (Figure 33 and Figure 34).

2. **Semisubmersible**: Alternatively, Self Propelled Semi Submersibles (SPSS) are self-propelled vessels built from scratch usually using a wood or aluminium frame and are covered with either fibreglass or aluminium sheets. With an increased cargo capacity of between 6 and 10 tons of cocaine. They consist of a wide variety of designs, differing specifically in hydrodynamics, exhaust systems, refrigeration systems, and shape, creating distinctly different artefacts (Figure 35).

II. Submersible:

3. **Torpedo:** Cylindrical shape artefacts with stabilization fins, built of steel. They are not self-propelled and are unmanned. The torpedoes are usually towed by a fishing boat. While towed this artefact is able to fully submerge. These artefacts are able to transport up to two tons of cocaine and their cost has been estimated between US$250,000 and US$500,000 (Figure 36 and Figure 37).

4. **Submarines:** The Submersion capacities of these vessels are contested, but they can be described as artefacts designed and built with the aim of achieving full submersion of the hull. They are self-propelled and use a snorkel and cameras as visual aids. They are equipped with a radar system and other navigational technologies. Its more sophisticated design suggests specialized forms of knowledge. Its cost has been estimated between US$2 million to US$4 million and their capacity cargo is around 10 tons of narcotics (Figure 38).

Figure 33. Low profile vessel, Pacific.
Source: unk, Provided to author by an ex intelligence detective.

Figure 34. Low profile vessel, Caribbean.
Source: Auhtor.

Figure 35. Semisubmersible vessel.
Source: Auhtor.

Figure 36. Narcotorpedo, Bahia Malaga.
Source: Author.

Figure 37. Narcotorpedo, Tumaco.
Source: Author.

Figure 38. Submarine type artefact, Timbiqui.
Source: unk, Armada Nacional de Colombia.

The images above suggest a high degree of variation even regarding narcosubs that fit these categories. The disposition of many of the important features of the narcosubs suggests a process of learning by trial and error, and attempts to find the optimal

solution. Torpedoes and semisubmersibles are a clear example regarding this, even if artefacts fitting these categories do not vary widely in size. The exemplars of torpedoes examined show differences in the disposition of the fins, likely as a result of experimentation with different strategies to guarantee submersion of the artefact while towed, while others also present changes to the ballast systems and weight distribution. A couple of these examples present a sophisticated hydraulic system designed to compensate for forward and backward movement while being towed. Finally, some torpedoes possess a box on the nose in which a beacon is located to help the recovery of the artefact in case it had to be set loose due to the presence of LEAs. Hydrodynamics, exhaust systems, refrigeration systems, coating and material features vary greatly, and it can be argued some reach a high degree of sophistication in the semi-submersibles.

Self-propelled narcosubs also present interesting variations in their propellers, both in their quantity and design, as well as in the materials used and in their procurement. LPVs, semisubmersibles and submarines use between one and two propellers, but there is greater variation in the procurement of their propellers. While some low profile vessels and semisubmersibles use propellers from available manufacturers, new or second hand, being those readily available in near shops, other users prefer custom made propellers. In several instances the Navy and Police have found propellers that due to their characteristics were considered as 'hechizas'[30] that demonstrate variable degrees of skills in their design and construction from artisan work to propellers whose design reveal naval engineer knowledge (Policia Nacional, n.d.).

Characteristically in the LPV and semisubmersible models the cockpit and 'goose neck' ventilation tubes remain visible above water, while exhaust pipes either remain visible in most of the artefacts seized or in some other examples remain below the waterline together with heat exchangers tubes. The ventilation pipes in the 'goose

[30] This a commonly used term to name artefacts as home made in opposition to procure from manufacturers.

neck’ shape that allows the intake of air for the engine room and cabin, vary in their quantity, shape and materials. Some users prefer off-the-shelf technology for the ventilation pipes, either bronze or PVC pipes, while in other models the goose necks are custom made in glass fibre (Figure 39). The air exchange is helped in some cases with the placement of an air extractor. In some instances, builders of narcosubs coat the the exhaust pipes placed on the top with different fibres in order to help reduce heat. Some models possess an intricate pipeline as in industrial double pipe heat exchangers running alongside the vessel to cool the machine room as the ship moves (Figure 40). Some have suggested this later use was developed as an innovation in order to reduce heat signature emitted by the powerful diesel engines thus making the detection by infrared detectors more difficult.

Figure 39. 'Goose neck' exhausts in fibreglass.
Source: Author.

Figure 40. Heat exchengers.
Source: Author.

Together with the reduction of heat through the use of pipes and shielding the exhaust system, two other innovations in those artefacts have been interpreted by LEAs and the Navy as designers' strategies to enhance stealthiness: painting and shielding. The colours used in narcosubs have been assumed to be a scheme to camouflage them in the water, and are said to be carefully chosen by designers in order to match the colour of the sea in which the narcosub is set to operate, making visual detection from above or from navy ship decks more difficult (Bunker, 2010). Various degrees of blue, grey, and sea green are common. Anti-slip paint has also been detected and is used in order to diminish the risk of crew falling in the water when they have to walk on top of the artefact. A common interpretation of LEAs is that fibreglass is used as the material of choice because artefacts built from this material are more difficult to detect with radar (Policia Nacional, n.d.). Clearly designers have attempted to apply different solutions to difficult detection techniques by shielding the narcosubs. Some exemplars do possess an upper lead shielding to help minimize the heat signature and therefore infrared detection means, while in others the shielding is made with different asbestos fibres, and even one recovered vessel was covered with cathodic protection using zinc blocks. In short narcosub builders attempt to reduce the risk of detection though a combination of methods, which further diversify the artefacts.

One aspect that remains rather similar among self-propelled narcosubs is the distribution of the compartments. In self-propelled narcosubs (SSPSs and LPVs) the engine room is placed at the rear of the artefact, with a small cabin space in the middle, and storage space in the front. Fuel tanks are placed in the rear and at the bow (Figure 41).

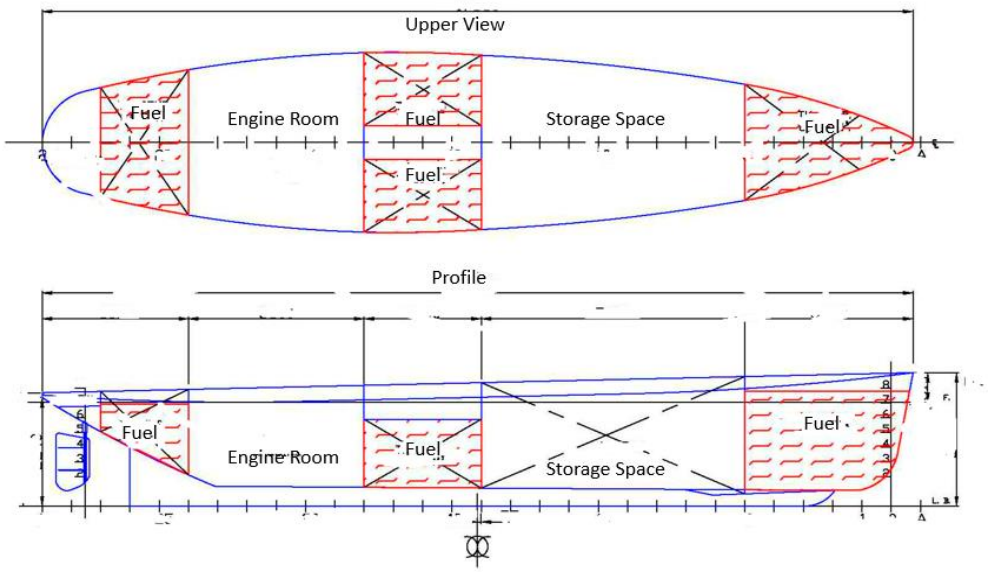


Figure 41. Semisubmersible, blueprint.
Source: Colombian Antinarcotics Police.

Another feature of the narcosub that seems to be present in most of the variants of this artefact is the existence of a valve that allows water to flow inside the artefact and, in fact, sink the artefact and any evidence in case of being detected by LEAs or the Navy. The crew are intended to abandon the vessel wearing life vests or by inflating a small zodiac boat. This practice extends both to artefacts built in the Pacific and Caribbean, and in practice turns an interdiction operation into a search and rescue operation. After the Anti-submersible law was passed this occurrences diminished, as the law permitted visual evidence to be sufficient to prosecute the crew of the artefact for trafficking offenses.

The overview of the evolution of the narcosubs provides an entry point to reflect on the process of innovation in outlaw environments. The narcosubs emerge as a user-driven solution to the problem of transporting big amounts of illicit drugs while evading state action, from an initial stage of experimenting and prototyping to the dynamic of dispersed peer innovation (Hyysalo & Usenyuk, 2015). This has been carried out by different groups with little incentive to collaborate among themselves giving rise to a wide variation of artefacts following two different avenues, submersible artefacts and semisubmersible ones. Being able to configure a complex artefact using a mix and match approach, producing hybrids, in which local available pieces and knowledge are blended with off-the-shelf solutions and expert engineering knowledge resembles some of the patterns of innovation found by Hyysalo and Usenyuk (2015) in their study of the Karakat. As result of this pattern of dispersed peer innovation, where antagonist and non-collaborative relationships are also key characteristics, smugglers and outlaw innovators, as in the process of adapting biological entities in which they face many conflicting constrains both from their internal organisation and the interaction with the environment, are left with many alternative, locally optimal, compromised solutions (Kauffman & Macready, 1995).

I also argue that what diffuses is the 'techno-meme'; in absence of blueprints or established designs, what travels is the promise of stealthiness and sophistication offered by this specific solution. Competition with other smugglers, as well as with the state, also plays a role that promotes the process of innovation. Fleck's (2000) concept of artefact-activity couple further helps us to understand how particular innovators in particular variants of the narcosubs were able, thorough trial an error, to master the building principles of the narcosub and introduce minor variations into their models. The variation and innovation (as much as the interpretations of those innovations), in the narcosub also create changes in a coevolutionary fashion, in which the consequences of the choices of the illicit actors, competing among themselves and against the state, constantly destabilize the landscape in which they act, triggering a situation in which multiple players attempt adaptive alterations, which create new floods of adaptations. In Chapter 1 I suggested that the 'Red Queen effect' may help

to explain this scenario, in which players keep adapting simply to sustain their current level of fitness (Kauffman, 1995).

Building a Narcosub: Underground Knowledge and Outlaw Innovation

From the early years when state agencies, the Navy, and the Antinarcotic Police did not possess clear knowledge of the use of narcosubs in drug traffic, the design, building, and use of these artefacts remained an underground activity. Before 2009 the building or possession or these artefact was not a criminal offense and early narcosubs were built in or near populated areas. Voss (2007) studied how innovation in highly stigmatized, hidden, and illegal environments, in which users often gain some form or 'underground or forbidden knowledge', facilitates some aspects of knowledge exchange while it constrains others due to the stigma of participation. As stated previously, most narcosubs are built in border areas where boundaries between legality and illegality often have a different logic that the one promoted by the state, and where the state sanctioned laws are scare and kinship relationships can function as incentive enough to participate in 'illegal activities'.

Kleemans and de Poot (2008) introduced the concept of Social Opportunity Structure to emphasise the important of social ties, work relations, leisure activities, and life events in providing access to 'organised crime' activities, while other researchers from the criminology perspective have highlighted the importance of possessing certain skills as a factor that may contribute to the involvement of people in 'organised crime' activities, skills that they might acquire in their professional settings (Van Koppen & De Poot, 2013; van Koppen, de Poot, Kleemans, & Nieuwbeerta, 2010).

Little is known about how narcosub designers organize themselves and how designs are decided on or modified. The design, building, and use of the narcosub is sometimes assumed to be the result of 'cartels' who hire 'expert knowledge', such as naval engineers who then recruit builders. This notion is common in journalistic reports, while the idea of 'Transnational Organize Crime Networks' is used in other reports and policy documents to explain the widespread use of those artefacts (e.g. Rico, 2013; Hernandez, Galeano, & Escobar, 2012). Others assume that narcosubs are the result of the application of years of military innovation by the FARC (the main guerrilla group) transferred to 'their' drug traffic enterprises (e.g. Jacome Jaramillo, 2016), or superimpose locality of FARC actions with smugglers' activities (e.g. Hernandez et al., 2012).

A set of documents allows us to take a glimpse at the organisation of a narcosub enterprise. These include the Supreme Court of Justice ruling on the extradition of Colombian nationals to the United States in order to be judged by courts in the US for criminal offenses including narcotics violations,[31] and intelligence reports from the Colombian Antinarcotics Police.

What intelligence reports establish is that in general it can be considered that narcosub builders are often independent groups that are able to contact, or be contacted by drug smugglers in order to build these artefacts according to customers' needs and specifications (Policia Nacional, n.d.). As part of a bargain plea a submarine builder narrates how as part of his enterprise with the organisation he belonged to he carried out and presented blueprints of 'his' narcosubs, and descriptions of the areas where the artefacts could be built and launched. As part of his negotiation with prospective buyers he shared his past experience of success in the building and sailing of these artefacts.

[31] The current Colombian-United States extradition agreement became enforced in 1997.

Benson and Decker (2010) argued for the presence of some specialization within drug smuggling organisations, implying that different members of the organisation possess different skills and individual abilities. Specialization also implies some degree or coordination and interdependence between the different units of the group. The description offered in the official documents shows a highly specialized organisation in which different forms of knowledge converge in order to, not only provide a design and to build it according to those specifications, but to overcome barriers, such as distance and surveillance.

Figure 42. Narcosub building team.
Source: Author, using data from the General Attorney Office.
Arrows only account for main relationship as described in the official documents.

Figure 42 reconstructs the main links in a narcosub builder organisation, and shows the multiple forms of knowledge and relationships that can be found in such an organisation. While some aspects of the design are carried out by 'specialists', such as electrical and mechanical engineers, others are left to people with local knowledge, such as knowledge about fibreglass handling and coating. On the other hand, at least

in this organisation, another individual, in this case the provider of the fibreglass, also plays the role of 'comptroller' guaranteeing that in fact the vessel is correctly waterproofed. Other individuals are in charge of the logistics, and buying and carrying the materials and personnel to the shipyards. Finally, some individuals are hired as crewmen.

The organisation described in the legal files is interesting, because it has two different construction sites, one in Colombia's south Pacific and one on the Ecuadorian Coast. The organisation boss was not actually involved in the construction of the narcosubs, but he was the main source of finance and the owner of the narcosubs, the shipyards, and the drugs. The main builder of the narcosubs is considered also a 'chief' within the organisation. Besides providers of drugs, every shipyard has an administrator accompanied by a chief of security. The description provided does not delve into the process of designing and building of the narcosubs, but shows the participation of people with formalized knowledge, together with others in possession of craftwork knowledge, such as the people involved in the woodworking and the fibreglass construction, some of whom worked in both shipyards. The fibreglass work was supervised by another specialist, who provided expert knowledge and supervision at both sites. This person was not part of the organisation, but the provider of the fibreglass. In the same organisation a mechanical engineer was identified, who was in charge of the design and building of the hatches, steering mechanisms and galvanization of the narcosubs.

Zaitch (2002) showed the presence of some overlaps between kinship structures and friendship structures in criminal organisations that smuggle drugs into the Netherlands. This organisation also shows the different forms of kinship relationships, ranging from friendship, family, acquaintances, and referrals. Kinship relationships are also present in other groups, as it was in the so-called era of 'cartels'. In this circumstance sharing underground knowledge on how to build these artefacts is open to the members or the

groups in these rather informal associations. In addition, builders spend several months sharing small rooms, just meters away from where narcosubs are built.

Builders are hired from the local area, and transported to the areas where narcosubs are being built, which are also the areas where they will depart from. Marquez (2014) has documented the existence of knowledge about building artisanal boats in Caribbean coastal areas, knowledge informally transmitted, and the existence of people with the capacity to create models or to build an artisanal boat given the availability of a model. Narcosubs are built in makeshift jungle workshops in the areas of Urabá and the Pacific Coast, Figure 43 and Figure 44), and the ones found in La Guajira, have been built in tents in the middle of semi deserted areas (Figure 45).[32] In these workshops builders proceed by building the moulds, mixing the resins, fitting together the engines (to which they use the nearby trees as pulleys), and making the flotation and waterproof trials.

As mentioned, these areas are characterised by being barely policed. Narcosub builders that operate in the South Pacific area also take advantage of the tide regime, and the intricate mangrove labyrinth in order to transport personnel and materials needed to build the artefact, as well as to programme the launch of the narcosubs, which implies the deployment of local knowledge. People from local areas also make up the crew, with one of the members, an experienced seaman, taking the role of captain.

[32] Some anecdotal evidence also suggests that builders are transported from their region of origin to a new setting. This is the case of narcosubs found in La Guajira. Two interviews in this area affirmed that a particular artefact was built from people from the Pacific, 'The submarine they found near Esmeralda, that one was built by people from Choco. You see some black folks that you have never seen before. Actually one of them, after they finished, got married in the area and started a shop' (Interview).

Figure 43. Makeshift shipyard in the middle of the jungle.
Source: Armada Nacional de Colombia, press release.

Figure 44. Semisubmersible in the making.
Source: Colombian Antinarcotitcs Police.

Figure 45. Steel hull semisubmersible, La Guajira.
Source: Colombian Antinarcotics Police.

The characterisation of narcosub builders and the description of the set of relationships and context in which they work demonstrate that in order to understand the diffusion of smuggler technologies it is important to understand the forms of underground knowledge that is needed for the construction of narcosubs, a theme that has been neglected in academic literature so far. Including such themes allows to overcome the shortcomings of an analysis in which interdiction is the only explanation for smuggler innovation. I attempt to present a more nuanced description of how outlaw innovators are able to integrate characteristics of complex organisations, such as some degree or hierarchical structure and specialization with informal interactions, in order to create a complex technology, all this in the absence of established arenas of interactions such as in the case of the Karakat (Hyysalo & Usenyuk, 2015) and the early rural cars in United States (Kline & Pinch, 1996). This suggests that in some instances, for outlaw innovation, arenas of interaction and interchange of information are not necessary for the process of innovation.

The Navy and the Narcosubs

A retired captain of the Navy and the first commander of the Coast Guard in the Caribbean narrates the Navy's first encounter with the narcosub phenomena:

> In the 1994 or 1995…I enrolled in an antinarcotics course in Martinique, it was a course taught by the Organisatio of American States (OEA) I went on my own, the Navy didn't pay for it…nevertheless, when we were there, I found out that of all of the Navies there, no one, no one had any idea what was happening…The Argentinians had no idea…the French people, they were teaching the course, they knew something, but only superficially…my team and I with only eight months of experience in the field…we had much more experience than all of them…that day that I travel to Martinique...was the day we caught the first submarine here, they had already used some semisubmarines…and that capture was published in the newspapers…so I bought the newspaper…and it was a two hour class that day, me with the newspaper teaching about the submarine…(Interview).

The use of submersible or semisubmersible artefacts was perceived as a new challenge for the Navy and Coast Guard personnel, one that was augmented as smugglers increasingly moved their activities to unpoliced and difficult to access areas. A Coast Guard Captain, then a lieutenant by the time of the capture of the first narcosubs, explains that 'in that time (1994-1995) we captured two of those, one in Tayrona and the other in Providencia…and since the Coast Guard Unit didn't exist, those people performed their activities in broad daylight' (Interview).

In order to control the use of narcosubs the Colombian Navy developed different strategies to discourage or stop smugglers from using such artefacts. They did so by

creating new uses of old artefacts, by increasing intelligence efforts, and by establishing close relations with lawmakers in order to include a clause penalizing the building and possession of submersible and semisubmersible artefacts in the Penal Code.

Initially the use of sonar was considered a tool to counter the narcosubs, leading authorities to taking advantage of the skills of sonar personnel. Nevertheless, the visualization of narcosubs from the air has been considered a major asset in attempts to identify these artefacts when it is not feasible to catch them before they set sail. The use of airplanes with radar can provide means of detection once an area has been sufficiently confined by intelligence efforts, or they can provide initial leads that are then evaluated and discarded or pursued. A Navy captain explains: 'the detection on the surface…the means…the navigational radars and other types of radars can detect, let's say, just initially a heat signature…or any other technical details…that can be workable…'. The procurement of airplanes for maritime vigilance implied a redefinition of roles between the Navy and Army, who at the same time (late 2000s) were aiming to create their own air branch, according to a Navy Captain: 'We had this problem with the Army, it was necessary to clearly define areas of action…well not ours…theirs…because they don't have maritime patrol airplanes…they could have' (Interview).

Several informers highlighted what the existence of narcosubs has implied for the Navy. On one hand it required innovation in the use of resources: 'the means are the same, but we have to use it in different ways', claimed a Coast Guard commander. On the other hand, to strengthen intelligence as a main strategy as a deputy commander of a Navy base explained:

> We had discussions, well, the first problem is detection. So we gave orders to increase all the efforts to capture those artefacts before they set sail, because,

> when you're talking about transport, the method is the centre. But we decided that the most efficient strategy was to capture them on the shore, because when they're on the sea, it is really hard. And even if you see them, then there is another problem, how do you stop those things? Those closed things, they carry people inside! So you can't just sink them. (Interview).

In 2008 the Colombian Navy contacted several members of Parliament in order to create a law to penalize the possession and sailing of submersible and semisubmersible artefacts, and to increase the penalty if these artefacts were being used to transport illicit drugs. The bill was proposed in September 2008 and passed in August 2009.[33]

As justification for this effort the Colombian Navy presented operational results from 1993 to 2008, stressing the fact that during 2008, fourteen of these artefacts were captured. They also highlighted that the smugglers' strategy when captured was to sink the narcosub. In absence of illicit drugs smugglers turned themselves into castaways, turning an interdiction operation into a search and rescue one. According to the Navy this practice allowed the smugglers to accumulate experience in the use of narcosubs, increasing the likelihood of their use. Crew that was rescued after the sinking of a narcosub, in absence of a penal sanction, could use their experience and attempt to sail another narcosub.

The new law then stated that those persons involved in financing, building, storing, commercialising, transporting, or buying submersible or semisubmersible artefacts are subject to a sentence of between 6 and 12 years, and it defines a semisubmersible or submersible artefact as any artefact able to move in the water with or without its own

[33] In 2008 the US senate approved the Drug Trafficking Vessel Interdiction Act of 2008, with a similar purpose. In fact both laws are very similar with a notable exception: the sentence is doubled if the person convicted is a former member or employee of any state agency. In 2011, The Colombian Navy presented a Model Legislation on Self-Propelled Submersible and Semi-Submersible Vessels to a CICAD meeting, with the intention to serve as a template for similar legislation regarding narcosub threat.

propulsion, including artefacts able to fully submerge or those that cannot. The sentence is higher if illicit drugs are discovered and would be increase if the person is or was a member of any Colombian security or military agency or any other state agency.

According to the Navy, as stated during the interview and in the media, the promulgation of this law was considered a success, and to some this was seen to lead to the displacement of the narcosub phenomena to other countries without a similar legislation and the decrease in the number of crew members using the castaway strategy (Rodriguez Viera, 2013). Several other member of the Navy agreed, with, for example, a Coast Guard Captain stressing the importance of the law in the reduction of the narcosub phenomena:

> We came from the previous years, 2008, 2009…and you have twenty one cases per year…but in 2009, the submersible law appears…and in 2009 its just starting…but in 2010 is already in place…and you see…three, four or five cases…is not that the semisubmersibles have disappeared…they continue to sail…but now…those who want to try…well at least they think twice now…(Interview).

A lieutenant narrates his experience with the adoption of the Law:

> They had it clear before 2009, before 2009 we could capture those artefacts, with people inside, and we couldn't do absolutely anything. I caught 4 people, they were navigating, but without illicit drugs, and nothing, absolutely nothing happened… (…) but after the law in 2009, it was easier for use, because even if they sink the vessel, we, with video evidence, we could say they were committing a crime…(Interview).

Another Captain affirms: ‘well, the submersibles are practically out of the race’. However, in 2015, several narcosubs were captured while en route or on shore, three of them in the Pacific and one on the Colombian Caribbean Coast (CIMCON, 2015), and others in places such as Ecuador and Brazil.

At least since 1993 smugglers have used submersible and semisubmersible artefacts in order to transport illicit drugs, mainly cocaine. In the last few years similar artefacts have been built in Spain, Brazil, Venezuela, and Ecuador. The Office of Homeland Security in the U.S. built their own narcosub, in order to analyse the capacities and develop technological solutions for thwarting such artefacts. The artefact was named ‘Pluto’ and it emulates many features of the Narcosubs, but it was built to be ‘safe’, it didn’t possess the sinking valve. Pluto was tested, in the words of the Homeland Office, in ‘*realistic operational conditions* in order to compile *realistic scenarios*, in an attempt to mimic the *real thing* to suggest procurement of technology and policies’ (The Department of Homeland Security (DHS) Science and Technology Directorate (S&T), 2012).

I have described the Narcosubs as a hybrid, in which the adaptation of sophisticated navigational electronics, traditional boat building, off-the-shelf solutions, and formal knowledge places a diversity of solutions in the hand of drug smugglers. The overview of the narcosub that I have provided shows a continue process of innovation, with outlaw users and designers innovating the design of narcosubs. From the early prototyping phase in the early 1990s, the seizure of these artefacts suggests a shift from the Caribbean coast to the Pacific (altogether with the displacement of drug smuggling routes).

A common thread in academic, policy, and journalistic documents present the history of the development of narcosubs in a logical progression, both from the perspective of others methods of smuggling narcotics and as a history of continuously technical

improvement in the progressive development of the various versions of the narcosubs. I have suggested that in order to have a more appropriate account of the development of the narcosub and of smuggling technologies, the concept of dispersed peer innovation (Hyysalo & Usenyuk, 2015) is useful, in order to understand how non-coordinated actors, without the presence of arenas of interaction, can produce complex pieces of technology.

The narcosub presents a bricolage type of construction, in which outlaw users opt for a mix and match approach in order to produce a highly cost-efficient product suited to their needs. A product that can help them to avoid procurement from manufactures as it makes use of local, traditional knowledge. The narcosub solution travels as a 'flexible techno-meme' that is used by different groups as a generic solution for the transport of big amounts of illicit drugs, as it adapts to different production setting. This techno-meme offers the promise of stealthiness to drug smugglers who are in competition with other smuggler groups and state agents.

There are obvious difficulties in establishing certainties about the process of design, building, and use of submersible and semisubmersible artefacts, with the asymmetry of information being a significant barrier. Nevertheless, borrowing from STS and user innovation research I have showed that this discipline can provide useful insight for the study of *Outlaw Innovation* and provide an analysis that avoids the shortcomings that emphasise a process of pull/push with interdiction as the main driver of smuggler innovations. In this chapter, I have suggested that this can only account for some initial push, but it cannot explain the diversity of artefacts nor the process of diffusion.

The history of the narcosub then produces empirical evidence of how users, and in this case outlaw users can produce a complex artefact, and overcome barriers to their production, such as geographical distance and difficulties to access materials for their construction, and continuous changes in the system in which they are produced. Over

more than 20 years smugglers have produced a wide variety of narcosub artefact, and despite the efforts of state agencies to control these artefacts, their use continues. The evidence presented here then contributes to the literature on user driven innovation.

Chapter 6. How to Control the Sea: Strategies, Plans and Strategic Concepts

In order to plan operations and long-term development the Colombian Navy has had to develop answers to a number of questions: What methods are being used to smuggle illicit drugs? What is the best way to thwart each illicit transport method? What artefacts should be procured in order to catch smugglers? What are the best methods to patrol the sea, and how can operational success be maximised? What are the short-term and long-term consequences of the Navy's actions against smugglers, their routes, and transport methods?

Since the War on Drugs (WoD) was declared by the United States government during the Ronald Reagan presidency in 1982, and with the enrolment of producer and transhipment countries, billions of dollars have been spent on a multitude of efforts aimed at disrupting and dismantling the drug market, thwarting organisations, capturing the 'bosses' of the so called 'cartels', destroying *laboratories* for the production of illicit drugs, and seizing assets acquired with money resulting from the involvement in illicit drug traffic.

The defence of Colombian maritime borders, state territoriality, and state sovereignty have played an important role in shaping the choices made by the Colombian Navy in the WoD. Since the early years of chasing marihuana smugglers, the Colombian Navy - and particularly the Coast Guard as a specialized unit devoted to interdiction operations - has procured vessels, communication systems, developed several plans at different levels, and established agreements with other Navies and countries in order to thwart smugglers from reaching their destination. These multiple solutions are aimed at responding to the question on how to patrol the sea.

In the preparation of these plans the upper ranks of the Colombian Navy have made use of statistics on drug seizures in order to evaluate and make sense of future scenarios. In these plans the Colombian Navy have made the case for the procurement and deployment of the *right* tools and strategies in order to wage the WoD and attempt to integrate the developments of the Navy with broader policy issues, e.g. the fight against narcoterrorism. The plans, and the understandings and visions that come with them, have allowed security forces to create a backdrop through which to measure their operational success. Plans having different operational focuses and responding to different threats are instruments to reveal success and to explain the changes in enemies' plans and strategies.

In this chapter I present some evidence about the key elements of this arena, the arena of command. In this arena commanders deploy their visions of the Navy as a modern and flexible Navy, with a focus on producing tangible results in order to reassert the Navy as able counter-drug agency. I point out that developments do not necessarily follow a pattern of response/counter response, as simplistic conceptions of the interdiction/evasion binary might suggest, but are instead intertwined with ideas about security and border control, success, the role of the Navy, and other values such as flexibility that are important in guiding the actions of the Navy. This is also a broad attempt to detail how the Coast Guard Unit has developed since the year 1994, the year in which the first commander in the Caribbean found 'some offices and four boats' (Chapter 7), to the current socio technical complexity in which different generations of boats, communication systems, and radars have co-evolved with different interpretations of the enemy and strategies of control. In this chapter I also show that as part of these plans, the Colombian Navy has encouraged collaboration, and coped with the difficulties and limitations of such. I present evidence from interviews with senior officers, among them two former Navy commanders, and evidence from Navy official documents.

How to patrol 928,660 km^2 of ocean?

The Colombian Navy has the responsibility of assuring sovereignty over the Caribbean Sea (540,876 km^2)[34] and the Pacific Ocean (339,500 km^2) accounting for 928,660 km^2 of maritime water, 40,875 km^2 of coastal land, 9 maritime borders, and it also has jurisdiction over navigable rivers and some 2,900 km of shoreline.

The Colombian Navy has four strategic goals: 1. Protecting Colombian citizens and the nation's resources, as well as the consolidation of territorial control, 2. Neutralization of Narcoterrorism financial sources, 3. Strategic deterrence, and 4. Providing Maritime and Fluvial Security. In short the Colombian Navy has three main missions: to serve as a deterrence against rival nations (although regular war scenarios seem unlikely, naval exercises often contemplate scenarios of naval clash against Nicaragua and Venezuela, as they are the most expected adversaries on single attacks or combined attacks); to wage a war against left and right wings groups, which often overlaps with the previous; and to stop smugglers from using maritime routes in order to transport illicit drugs. The last two missions are often presented together, as the official document of the Navy equates drug smugglers with irregular armed groups.

While currently maritime interdiction operations are a fundamental part of the activities of the Navy and particularly the Coast Guard, the first operational commander of the Coast Guard in the Caribbean narrates the initial reluctance of personnel of the Colombian Navy to engage in counter narcotic operations:

[34] Territorial and maritime disputes in the Caribbean between Colombia and Nicaragua, and the rule of the International Court of Justice in 2012 diminished Colombian maritime territory by 75,000 km^2. The Colombian government, nevertheless, has not accepted this ruling.

> Then I found the first logical difficulty…and it was…this thing…as I call it…to change the chip…to change from a traditional Navy to have a Coast Guard Unit…so…many of the old officials…they didn't like that…but we know that with the tools and the doctrine of a traditional Navy we had…that we couldn't do what we needed to do…so…we had to change…to adapt to those new situations (Interview).

The admiral in charge of the operational strategy *Closing the Gap* stresses the difficulties of accepting the new role of the Navy, who moved from an entirely *Blue Waters Navy* (Continental waters) to one of *Brown Waters* (Territorial waters), as a reason why there were no clear strategies for controlling smuggling routes before *Closing the Gap*:

> There was some opposition…to the idea of that being a role of the Navy…because…the idea was that the role of the Navy was only to control blue waters, and a Blue Waters Navy is a real War Navy…and if you start working on brown waters you turn the Navy into something else (Interview).

According to the Navy, even if all resources are channelled in order to fulfil these objectives, this multitude of goals implies that the Navy has to prioritize some over other goals: 'Due to this multitude of goals, it is difficult to predict which ones will be prioritized during a specific frame of time' (Armada República de Colombia, 2015). Adding to the multitude of goals, the Navy has to perform these activities in a number of geographical spaces, and in order to face all potential threats and fulfil all the goals, the Navy must aim to acquire capacities that allow both a quick adaptation to every possible menace, that is to say, to acquire flexibility (Armada República de Colombia, 2015a).

The requirements of flexibility are closely tied to the need to adapt to asymmetric wars. The day to day of the WoD resembles crime fighting activities. Even if drug smugglers engage in violence and on occasion use fire arms in order to evade capture, a typical counterdrug operation, , suggests that the use of evasive techniques and stealth are the common strategies of drug smugglers in order to carry out their activities. As discussed in chapter 1, stereotyped descriptions tend to emphasise that flexibility is an important characteristic of drug smugglers, who are said to be able to rapidly change in order to guarantee the success of their goals, while the Military and LEAs agencies are said to be constantly on their tails but unable to really catch up with the innovative smugglers.

Smugglers are then portrayed as highly dynamic and the illicit drug market as in continuous flux. Several metaphors have been used to describe this phenomenon. The 'balloon effect' is a metaphor used to describe how enforcement in one region pushes whole or parts of the illicit traffic from one region to another, that is to say, that interdiction results in geographical displacement of the actions of smugglers (Bagley, 2012; Mejía & Posada, 2008).[35] Trends and trajectories are mapped; a retrospective accumulation of data and localized views are used as evidence for prospective thinking. Whenever a major trend is 'discovered', policies, resources, and strategies of the law enforcement agencies and military organisations are reconfigured, involving the procurement and implementation of new artefacts or the repurposing of existing ones.

It has been affirmed that thwarting air drug smuggling forced smugglers to search for new means of transportation (Decker & Townsend Chapman, 2008).This represented one of the major changes in relation to drug traffic routes and transport methods that implied enormous challenges for both LEAs and the Military, especially the Colombian Navy. This trend was consolidated by the late 1990s, and by the mid-2000s

[35] As pointed out by Reuter (2014) the effects of interdiction efforts should be taken only as part of broad explanations, and there are reasons to assert that the Balloon Effect is a over-simplifying metaphor produced by the invisibility of smugglers actions and the fact that statistics rely solely on seizure data which are not necessarily reflexive of the actual situation.

the Colombian Navy reported that 72% of the cocaine transported using maritime routes leaves Colombia from the Pacific Coast while 27% travel from the Caribbean,. At the same time the Navy claimed that it was the 'national institution that captures the most on an annual basis' (Revista Armada, N 86, 2004). By 2010 the United Nations Office on Drugs and Crime (UNODC) stated that the vast majority of drugs smuggled from Colombia were transported using maritime routes and a large percentage is transported from the Pacific. In her book *Seas of Cocaine,* Perez affirms that roughly 70 to 80% of cocaine is transported using maritime routes (2014).

Colombian Navy personnel make observations regarding this issue: 1. The key strategic location of Colombia, the vastness of the space, and he differences between the two key scenarios, the Caribbean Sea and the Pacific Ocean, with further regional and local differences.

To the members of the Navy the geographical position of Colombia favours illicit drug traffic. According to the deputy commander of the South Pacific task force the location of the country is key: 'Colombia is located in a geostrategic position that favours the drug traffic' (Interview). To others this geographical location also provides the conditions for transnational crimes to emerge, as affirmed by the Caribbean commander of the Coast Guard:

> Colombia…is really in a good geostrategic situation…somehow it is the bellybutton of the world…and for that very location…almost all transnational crimes are going to touch the country somehow…all the routes that come or go to the Panama Canal, they pass over our waters…so, in a way all those crimes are passing over our waters (Interview).

Several interviewees pointed out that the size of the territory over which the Colombian Navy is required to exert control is the main problem. The vastness of the maritime space is then provided as an explanation for the difficulties of controlling maritime drug traffic. A base commander explained:

> Colombia…with the transit zone…that is the Pacific and the Caribbean…this consists of an area the size of the U.S.…and you're set to patrol that area with eight cars, with a maximum speed of 25km per hour…so it is that simple…it is like patrolling the U.S. with only ten, eight, five, six, seven, ten police patrols going at 25 km per hour (Interview).

This also highlights the problems Navy personnel face in regards to performing their jobs. A commander talking about smugglers strategies using maritime routes points out that 'well…it is really hard…because it is not only a matter of detection, to catch them…is another thing altogether…it is like finding a corn seed in a stadium' (Interview).

The Navy personnel point out that their knowledge of the differences between the Caribbean Sea and the Pacific Ocean is a key element in performing their jobs. The interviewees stated that the differences, do not only condition the way smugglers act, but the methods of transport used, as well as the strategies and tools that the Navy needs to deploy. A good commander is one who is aware of such differences. The Pacific changes, the Caribbean does not. The Pacific Ocean has a tide regime that increases or decreases up to several meters a day, a characteristics that the Caribbean Sea does not have. This provides different operational scenarios that contribute to the way officers perform their operations and view their enemies. A view shared by most of the interviewees is that it is possible to match geographical conditions to actions, both for the Navy and for smugglers, as a Navy commander states: 'Nature determines

the way traffickers do what they do…Nature constrains …both the way they commit their crimes…and the way we (the Navy) operate' (Interview).

These differences give the Navy the opportunity to perform different actions, when the tide is low in the Pacific they can go and try to find smugglers logistical centres and makeshift shipyards in the jungle, when the tide is high they perform open sea operations. A commander explains:

> There are operational efforts in the Pacific that sometimes are focused on the tidal change…I mean different efforts when the tide is high or low…it is so much easier when the tide is low, because the troops can go into [the jungle] to search, even more if we have an intelligence report…it is so much easier if the tide is low (Interview).

A former commander of the pacific Coast Guard complements the narrative above:

> There are geographical and meteorological, geomorphological differences…the first one…and that influences the illicit traffic dynamics using maritime routes…is…the tidal regime…the tidal regime in the Pacific changes every six hours…and it changes up to four meters…and once a month even more than four meters…and this doesn't happen in the Caribbean…so here we have an initial difference…nature that influences the way the narco-traffickers commit their crimes (Interview)

A third commander in a Caribbean base agrees:

> Because of the geography…then the strategies that the Navy have implemented in the Caribbean…in collaboration with friendly countries…those strategies are somehow different from the ones (implemented) in the Pacific…we have similar tools in both…but we used them in different ways (Interview).

This tidal changes and the possible different operations that comes with and the resulting operations in those dissimilar conditions also provide various appreciations of the operations. While other officers consider that open sea operations with different units working as the perfect example of *beautiful* operation, a Coast Guard Commander, pointing out a recently captured boat, says: 'this one was captured in the open sea…nine miles out in open sea…that is a beautiful operation' (Interview), as for others a good operations is one in which the smugglers are not even let to set sail.

Commanders provide further interpretations concerning the relation between geographical conditions and criminal activities. Particular regions are tied to specific transport methods used by smugglers, in which the *behaviour* of the sea, characteristics associated with the shore areas and distance from destinations play a role in those interpretations. A commander states:

> They do not commit the crimes in the same way from the mid Pacific (coast) to the south…that from the mid Pacific to the north…they don't'. A local commander, pointing out to a map of the Colombian Pacific Coast: 'well…they organize things…and how do they get to their destinations…here in the Central Pacific and the North Pacific they use small boats (Interview).

The Caribbean scenario, however, is seen as mainly used to perform quick short moves using go-fast boats. This view that different geographies allows different smuggler strategies is also present in strategic documents. The *Closing the Gap* strategy from 2007 points out:

> The Colombian Pacific region has two geographical characteristics that merit the use of different means to resist the criminal activity of the NTOs in this area of the country. The northern Pacific coastline is characterized by rocky cliffs with beautiful bays and inlets, while the southern coastal region consists of a wide tidal floodplain forming a waterborne conduit of dense mangrove swamps and a labyrinth network of streams, channels, and estuaries.

The 2011 (Armada República de Colombia) strategic plan points out the advantages offered by the Pacific Coast to harbour illegal activities:

> This is an area with humid tropical forest, with high pluviosity, dense vegetation, mangroves, and the absence of roads. The terrorist groups use the camouflage offered by the jungle and the riverine tidelands to send drugs on go-fast boats or semisubmersibles.

References to space and geography are then offered as explanations for the difficulties of preventing drug trafficking, but also as a way to simplify smugglers actions. By establishing patterns in which the interdiction/evasion binary is matched with geographical features, the knowledge of the local perspective of commanders and the more distant knowledge and global view of the upper echelons of the Navy offer an over simplified version of the binary. The snapshot views of local commanders are reconciled with the panoramic view of the Navy command as demonstrated in their different plans.

Plans: Means Are Never Enough to Fulfil the Missions

The efforts of the Colombian government to disrupt the drug market have been focused mainly on strategies aimed at reducing the supply of drugs. The main strategies have been the reduction of the coca plant fields through aerial fumigation or manual eradication, the capture of ring leaders, and the interdiction of cocaine. On the other side farmers and a multitude of smuggler rings have attempted to avoid state control through deploying various forms of local knowledge and tactical-logistical knowledge (Martin, 2012). That is to say making use of existing infrastructure such as ports, airports, ICTs, etc. Three years before the installation of the initial Coast Guard bases, meaning the Navy was fully responsible for tackling drug smugglers, the Colombian Government signed an agreement with the U.S Government to control illicit flows. Almost ten years later it published its first strategic approach to control smugglers, while at the same time, the development of strategic plans offered ideas around the goals of the Navy regarding illicit drug control and the actions to achieve control.

Agreement to suppress illicit traffic by sea

In 1997 Colombia and the U.S. signed the 'Agreement between the Government of the United States of America and the Government of **Colombia** to suppress illicit traffic by sea', signed at Bogota February 20. The agreement allows the U.S Navy and Coast Guard to patrol maritime areas of the Colombian Caribbean and the Pacific. The agreement set the conditions for cooperation between the Colombian Navy and the U.S navy in carrying out combined maritime interdiction operations and:

> Regulates the boarding and search of private or commercial vessels of the nationality or registry of one of the Parties, which are found seaward of the

> territorial sea of any State, and which either of the Parties has reasonable grounds to suspect are involved in illicit traffic.

And also:

> Reaffirming their commitment to fight effectively against illicit traffic by sea through continued mutual cooperation in technical, economic, and training and equipment matters; Recognizing also the need to strengthen bilateral procedures involving boarding and search of vessels which are suspected of engaging in illicit traffic by sea.

This agreement was instrumental in providing the Colombian Navy and the Coast Guard Unit with tools to professionalize their approach concerning activities related to interdiction operations. This agreement was also instrumental in the diplomatic relationships between Colombia and the U.S. insofar as it helped to demonstrate the Colombian disposition to control the illicit flows of narcotics. This agreement was therefore an important step towards recognizing that the Colombian government was removed from the list of countries signed by the US government as non-cooperative with the WoD, in the process known as *certification*[36]. The agreement initially set out that U.S. naval vessels could perform patrol within the 200 miles of economic maritime area and the 12 miles of Colombian territorial sea. In 2010 the Colombian Navy pointed out that the agreement facilitated the seizure of 800 tons of cocaine between 1997 and 2006.

[36] The certification is a unilateral decision of the U.S Government, specifically the executive branch. As a matter of internal policies, the U.S Government established a series of legal mechanisms through governmental and congressional procedures that require the president on a yearly basis to provide his/her judgement on the efforts of different countries regarding issues affecting the security of the U.S, such as nuclear security, terrorism, and narcotrafficking.

According to members of the Navy the agreement was key in improving resources and capabilities to control the sea. It provided the resources that the Colombian Navy did not previously possess. A rear admiral who participated in the elaboration of the agreement pointed out: 'that agreement was really good, because it provided us with tools, most of it, money, which we didn't have' (Interview). As a result of this agreement the Colombian Navy was responsible for the persecution of smugglers' boats while the U.S. Navy and U.S Navy Coast Guard was responsible for closing possible escape routes. A Navy commander explains: 'They had the tools, we didn't, so we made an alliance…and with the little resources we had we chased the smugglers and they (U.S Boats) made a closure outside our territorial waters' (Interview).

A central element in the negotiation process of the agreement was the question of how to patrol the sea, but more important for members of the Colombian Navy was the issue of sovereignty of borders and especially maritime borders. As an admiral states:

> When the maritime interdiction agreement was signed between Colombia and U.S. …let's go back…actually the U.S wanted Colombia to authorize the entry of the U.S Navy into our territorial waters…the twelve miles…but Colombia said…wait…we can't allow you to do that…but we can make an arrangement…you do not enter our territorial waters and we guarantee that we will control them (Interview).

Borders and territorial concerns are also voiced by the admiral in charge of the *Closing the Gap* Strategy, in which control of territorial waters is both directed at smugglers efforts and U.S. attempts:

> This strategy was born…if we wanted to control the sea…not to have voids…cause if you have voids others could fill them…the idea from the U.S.…it was that we were incapable of doing that (…) and they wanted to control our territorial seas…they always wanted us to negotiate the

> agreements…through that we granted them the possibility of patrolling our territorial seas…so…it was also a matter of sovereignty (Interview).

The agreement also represented the full entry of the Colombian Navy into the WoD and a confirmation of its capacity as an able player in the WoD. While results in terms of seizures are represented as the indicator of success, it is also important to note the implications that the signing of the agreement had on the identity of the Colombian Navy. Interestingly, as is emphasised by a senior members of the Navy regarding the effectivity of the agreement, not only in terms of the results, but in terms of the capacity of the Navy as an able interlocutor:

> Until that moment, we worked practically alone…and the Agreement with the United States in 1997…which was one of the best agreements ever reached between Colombia and another country…and it allowed the beginning of permanent cooperation and the exchange of information….and it didn't happened overnight….but it was the result of a process of creating trust between personnel of the different Navies (Interview).

The agreement also served both as a way to differentiate a *Colombian way to operate* from a *binational way to operate.* The *Colombian way to operate* consisted of focusing on the efforts to control the jurisdictional waters (blue waters) and shores, the performance of Maritime Interdiction Operations as described in chapter 8. While the *binational way to operate* implied a combination of resources, mainly for the detection and tracking of suspicious vessels, with emphasis placed on the importance of warship vessels and aerial platforms with electronic detection and tracking capacities, such as the one displayed in Figure 46.

Figure 46.Maritime Interdiction Operation, binational way to operate.
Source: Lesmes (2005).

The signature of the agreement was fundamental in boosting Colombia's involvement in the WoD and especially in the strengthening of the Coast Guard Unit. A retired admiral explains:

> To me the signing of the agreement was what finally motivated the transfer of ships from the Navy Fleet to the Coast Guard and the acquisition of boats…boats to be specifically assigned to function as Coast Guard or at least close to the Coast Guard stations (Interview).

Colombian Navy Operational Plans and Strategic Concepts

In July 2003 the Colombian Navy presented the Strategic Naval Plan of 2003-2006. This plan was followed by the Strategic Naval Plan of 2007-2010 and the Strategic Naval Plan of 2011-2014.[37] Those plans correspond to presidential terms and follow the main objectives of the National Development plans and the goals of the Ministry of Defence, who set short-term objectives. Since 2006 different dependencies of the Navy and the upper echelons of the Navy have presented different plans of diverse term spans, such as the 'Development Plan for the Coast Guard Unit' in 2011, and the Orion Plan (2011) which proposed to modernize the Navy fleet. In short, the Navy plans developed at different levels in relatation to the role of the Navy as a player in the WoD. It was not until 2006 that the Colombian Navy presented its first operational strategy, entitled *Closing the Gap*, which was in place until 2015 when it was replaced by the *Naval Network Against Drugs*.[38] Those plans have been attempts to mobilize discourses around technological solutions and the possibility of rationally deploying technological solutions to control the illicit flows and smuggler artefacts.

Operational Plans, 2003-2014

As highlighted in chapter 3, the budget of the Colombian Navy grew as a result of the finance resources from the Plan Colombia. Most of those resources targeted the improvement of the Navy's capacity to perform maritime interdiction operations. The U.S Defence and State Departments contributed with US$89.3 million to improve coastal and riverine interdiction operations between 2004 and 2008.[39] Despite the

[37] Although interviewees, specifically senior officers, affirmed the existence of previous 'Naval Plans', it was not possible to identify or to obtain such plans.

[38] The Naval network is defined as 'a combination of efforts, capabilities and information that incorporates concepts as fusion centres. Their main objective is to collect all the information generated by different agencies so as to produce leading intelligence to support planning and operational development, as well as to simplify the legalization process in order to promote the achievement of integral results through the participation of national and international agencies, judges and district attorneys'.

[39] United States Government Accountability Office, 2008

increasing budget there have been concerns about the lack of appropriate resources to provide widespread coverage over both the Pacific and Caribbean Coasts. The strategic plans summarize the Navy's short-term goals regarding how resources should be allocated and provide a description of the priorities of the Navy. These plans provide insights into 1.) What are the main tasks of the Colombian Navy, 2.) Who is the enemy, 3.) How the enemy should be faced, and 4.) How resources should be deployed.

While the 2003-2006 strategic plan describes the Navy's efforts to solve what are considered the main threats presented by Narcoterrorist Organisations (NTOs), subsequent plans have make attempts to address both NTOs and to prepare the Navy to the future scenarios, arising from the defeat of NTOs. The enemy here is defined as the Narcoterrorist Organisations[40] and the task of the Navy is to: 'Defeat the narcoterrorist organisations that transgress in the areas of Maritime, fluvial and terrestrial responsibilities of the Navy' (Armada República de Colombia, 2003). The priority set by the 2003 naval strategic plan was to win the war against the Narcoterrorists. Since 2006 the strategic concerns of the Navy have moved between internal enemies and the need to modernize their fleet in order to catch up with similar strategies of regional states, pointing out that the Navy's recent investments have been motivated by their involvement in the WoD. The 2011 plan continues to stress the dual mission of the Navy, to control the NTOs and to serve as a credible deterrence force. The 2011-2014 Strategic Plan, nevertheless, stresses the fact that the fight against illicit flows is central to the Navy's mission: 'One of the most exigent activities that the National Navy carries out is the fight against narcotrafficking'. Reference is also made to the *Closing the Gap* strategy that stressed the goals of those activities: 'Closing the gap that narcoterrorists have established in our seas and shores to finance terrorist activities affecting the Nation' (Armada República de Colombia, 2011).

[40] Left wing guerrilla Groups such as FARC-EP, and ELN, as well as various right wing paramilitary groups, and emerging band remnants filling the void of demobilized Self-Defense Armies during the Uribe government since 2003.

A key element of the Navy's plans from 2003 to 2011 is the idea of flexibility as a central feature of the Navy. The 2003 Plan states: 'The Navy should have an effective fleet that guarantees success, but it should be a flexible one that is able to quickly adapt to different operational environments' (Armada República de Colombia, 2003). The stress on flexibility and adaptability is very much at the forefront in subsequent naval strategic plans. The 2007 Plan states: 'Flexibility and an adequate, planned and coordinated use of the tools will allow the Navy to confront Narcoterrorism simultaneously in several scenarios' (Armada República de Colombia, 2007a). The 2011 Plan stresses the complexity of the operational environment and aims for a navy 'capable of using the naval power in a flexible manner, quickly adapting to ever changing situations and to the dynamic actions of the enemies of national security' (Armada República de Colombia, 2011).

The 2003 Strategic Plan emphasised communication and intelligence gathering as the main weaknesses of the Navy, and stressed the need to make attempts to create a new and modern navy, the navy of the future, in which information gathering and processing would be the first task. The 2007 and 2011 Plans highlighted the key role of Maritime Interdiction Operations, but both made proposals to participate in controlling not only the flows of illicit drugs but performing actions to control other stages of the illicit drug traffic market. The 2007 Plan claimed that apart from 'eliminating the flows of drugs and illegal supplies' through interdiction operations, the Navy should participate in operations aimed at '[neutralizing] groups or individual members by means of [capturing] or killings.' It also stressed the destruction of laboratories and seizure of supplies used for processing cocaine. The 2011 Plan pledged to continue the fight against 'narcoterrorists organisations', involving the Navy in the control of 'drug trafficking in all the stages of the illicit drug market' (Armada República de Colombia, 2011).

As I have highlighted, Strategic Plans are designed to correspond with the broader strategies of the central government and align with the Ministry of Defence's broader

goals. The plans of 2003, 2007, and 2011 highlight the central role of the Navy in the WoD and call for the increased participation of the Navy, including not only the Navy carrying out maritime interdiction operations, but also increasingly their participation in controlling other stages of the drug market.

Strategic concepts: Closing the Gap

The operational strategy *Closing the Gap* (2006) is presented as the second stage of the involvement of the Navy in the WoD, the first being the Maritime Agreement (Armada República de Colombia, 2015b). This plans places the fight against illicit drugs, defined as the fight against Transnational Criminal Narcoterrorists Organisations, at the core of the Navy's strategy, in which concerns about the borders and security are merged.

Throughout the extensive and diverse Colombian geography a convergence of geopolitical factors occur that is exacerbated by the transnational character of the criminal narcoterrorist organisations (NTOs) operating in our country and their new trend towards globalization. This situation presents new challenges within more than one million square kilometers of maritime, riverine, and land areas under Colombian Naval Forces responsibility which must be addressed in order to contribute effectively to guarantee the security of people living in Colombia.

Closing the Gap develops a program of maritime, riverine, and territorial control and interdiction with the specific objective to combat the production and storage of narcotics and deny narco-terrorism the use of maritime, riverine, and land areas as routes for illegal trafficking of narcotics.

The Strategy contemplated the use of naval, aerial, riverine, and terrestrial power in order to control the flows of illicit drugs. This strategy was structured around strengthening intelligence and intelligence cooperation with other Military and LEAs agencies, placing emphasis on carrying out operations with a clear focus or objective. The Strategy *Closing the Gap* also looked to boost the effectiveness of the Coast Guard, building new stations as well as the procurement of new boats and radar systems (Figure 47). In short, the Strategy *Closing the Gap* proposed the rationalization of resources by planning operations firmly based on intelligence information and the combination of the different resources of the Navy, with an emphasis on boosting units expected to face the flows of illicit drugs in the so-called blue waters, riverine waterways, and coastlines. According to the Admiral, head of the Colombian Navy and primary individual responsible for the Strategy, when the plan was being developed the enemy was considered to be: 'small and fast ships, mostly everywhere'. The aim of this program was to create a shield to impede smugglers from setting sail and reaching the open sea.

Figure 47. Current and projected Coast Guard stations in the 2006 strategic concept Closing the Gap.
Source: Armada Nacional de Colombia, Closing the Gap (2006).

This Strategy clearly states the need for the Navy to adapt to the requirements of an asymmetric war, with a focus on controlling narcotrafficking. This was set to be achieved through 1.) Force strengthening, 2.) More effective application of force, 3.) Increased surveillance and reconnaissance, 4.) Increased cooperation, and 5.) Increased interoperability, in different operational environments including the Caribbean Sea, the Pacific Ocean, and rivers. This plan calls for the 'recovery, modernization and procurement of units and equipment' (Navy, 2007).

Closing the Gap aimed to combat the different strategies used by smugglers to transport drugs. It required redirecting all efforts of the organisation towards the efficient employment of the Naval, Coast Guard, riverine, and infantry units to deny the Criminal Organisations the use of these different spaces. This Plan presents a complete review of the 2006 Navy assets, pointing out the type of tasks for which the vessels and aircrafts could be deployed in order to participate in Maritime Interdiction Operations. In this Plan, missile frigates, submarines, and other components of the Navy fleet were repurposed in order to participate in operations against drug smugglers.

Closing the Gap shows the disparities of resources deployed by the Navy to face smugglers actions. Figure 48 shows the complex sociotechnical arrangement that the *Closing the Gap* plan aimed to deploy in the capture of smugglers' artefact, including satellites, aircraft, war vessels, several stations, patrol vessels, and interceptors vessels.

The strategic plan *Closing the Gap*, is 1.) Tied to the early history of the Coast Guard's role in the WoD, 2.) Presented as a clear response to the threats faced by the Navy and the Colombian State, and 3.) Turned into a vision that guided the rationale behind the building of the Navy.

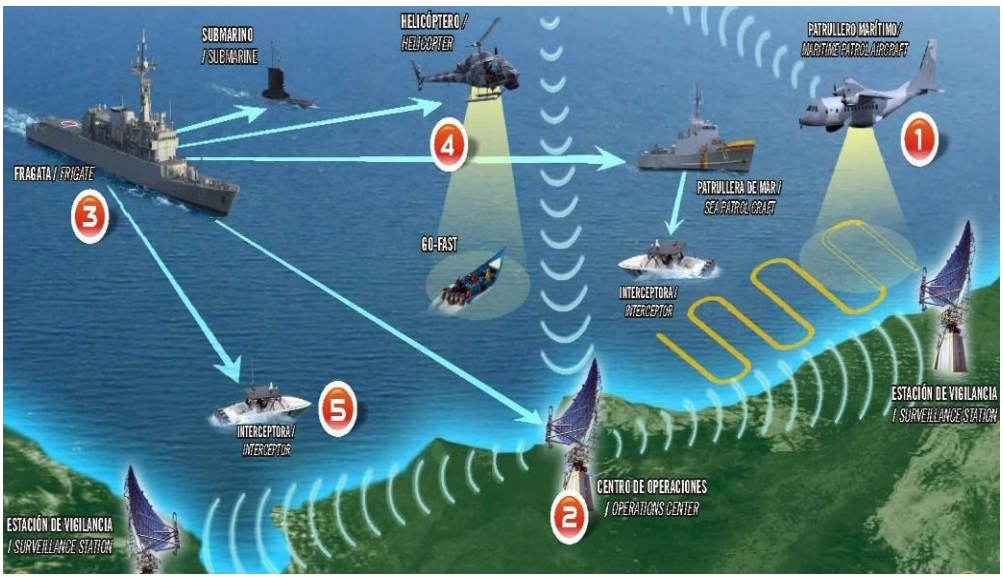


Figure 48. A Maritime Interdiction Operation according to Closing the Gap. Source: Armada Nacional de Colombia, Closing the Gap (2006).

Closing the Gaps also built on early ideas around the development of the Coast Guard Unit. In 1992 the first commander of the Coast Guard, Admiral Matallana,, projected a ten years development plan for the Coast Guard, that mainly implied the building of several coast guard bases along the Caribbean and the Pacific Coasts. A Navy Captain affirms the idea behind the *Closing the Gap* plan:

> I think that appeared early on, with the initial Coast Guard Development Plan by Admiral Matallana…he was the founder…well not the founder…but he actually developed the Coast Guard Unit starting in 1992…he conceived the Coast Guard…he's the father of all of that…and what he thought in 1990…to 2030 will still be valid (Interview).

The admiral, who replaced Admiral Matallana as Coast Guard Chief explains:

> Well…that was Matallana's idea…he was the one who designed where all the coast guard stations should be…the timetable for their construction…all of that

> changed with the time…but he was the one who made the first analyses of the operations…who designed where the different stations should be located…the characteristics of those stations…what types of radars, etc. (Interview).

By the time of its development the *Closing the Gap* strategy was seen as the necessary step to articulate the efforts of the Colombian Navy. An admiral pointing out the role of the Strategy stresses the lack of a clear vision of Navy efforts previous to the *Closing the Gap* strategy. According to him: 'The previous efforts were completely dispersed…we had the objective of fighting narcotrafficking in the sea…but we had no strategy…and a strategy allows one to see not only the *what*...how are we going to fight…but what we *need*' (Original emphasis, Interview). The *Closing the Gap* strategy is portrayed by the upper echelons of the Navy as the logical step of the Navy's fight against illicit flows. The admiral who followed up the development of the strategy stresses this idea: 'It was completely logical, because if you have a big problem…and the responses are not structured…you have to create a strategy to solve that code' (Interview).

Although *Closing the Gap* was promulgated as a clear road map to control illicit flows, it was not necessarily seen by all members of the Navy as a plan, but as something that could only be achieved under very specific circumstances. A Navy Commander states: 'It is a concept difficult to achieve…it is extremely costly…we keep working towards it…but we know we have other development plans both for the Navy and the Coast Guard' (Interview). Another Commander points out: 'The Strategy is ideal…*Closing the Gap* is ideal…but you can't have all the tools at your disposal'. Other members of the Navy consider the possibility of achieving a total control of the maritime space, given that the Navy concentrates its efforts in fighting smugglers: '*Closing the Gap* is possible…but is possible only if we…I mean the Navy…and the Colombian Government…don't have to fight terrorists anymore' (Interview).

I argue that an important function of both strategic plans and strategic concepts, such as *Closing the Gap*, is to situate the Navy as a key player in the WoD. This includes stressing the vision that the organisation is an able counter drug agencies, using several indicators and presenting a list of operations (such as the destruction of laboratories, the capture or killing of numerous ring leaders) that is to say, successful operations, as further proof of the effectiveness of the Navy. While, on the other hand, stressing the difficulties of performing the task of obtaining absolute control over the illicit flows by emphasizing the vastness of the maritime spaces under the Navy's control, particularly given the descriptions of the enemy as ingenious. 'The NTOs have found an ideal space in the jurisdictional Colombian waters, in which they deploy their ingenuity and their criminal capacities to traffic illicit drugs, arms, ammunitions and explosives' (Armada República de Colombia, 2007a).

While *Closing the Gap* had made practical proposals for the creation of new coast guard stations and the procurement of new artefacts, strategic plans fall short with regard to practical details. I argue that this is the result of both the difficulties of translating the everyday experience of Maritime Interdiction Operations and the difficulties of directing the procurement of vessels due to a lack of financial resources.

Collaboration and competition

The multiple dimensions of the WoD, particularly when seen as an extension of terrorism, present scenarios for inter- and intra-agency competition and collaboration. The Coast Guard Unit performs co-joint operations with other military and LEAs agencies, including the Army, Air Force, Colombian Antinarcotic Police, the Attorney's Office, and before its demise, the Administrative Department of Security (DAS). The Coast Guard has also collaborated with other branches of the Navy, such as the Navy Fleet and Navy Infantry and, as seen previously, with other countries.

Grissom (2006) affirms that the process of innovation of military organisations can be affected by issues of competition and collaboration intra or inter different branches of the military. Collaboration between different branches of the military in Colombia was actively promoted as a key element of the 'Democratic Security Policy' of the Uribe Government between 2002-2010 (Porch & Delgado, 2010). The promotion of collaboration between the Colombian Army and Colombian Air Force has been deemed fundamental to the efforts of the Colombian Government aimed at weakening the guerrillas. The Navy has made efforts to show how collaborations with LEAs have also been important in their determination to stop drug smugglers' actions. Nevertheless, several tensions are present when issues of prestige, identity, and recognition of achievements mediate the collaboration between military/military and military/LEAs in the WoD in Colombia. Specialization, experience, knowledge, and results are then key factors mediating the collaboration/competition between different players in the WoD and among the members of the Navy and the Coast Guard.

These tensions affect both short-term adaptations of the Navy and long-term co-evolution of the different players involved, on the two sides of the binary in the WoD. Interaction between senior officers and lower ranking officers is an important aspect of learning. Officers and NCOs acquire knowledge from formal training and experience. The experience of older colleagues, relayed to NCOs through conversations during informal forums or participating in operations together, is important in the creation of NCOs' unique set of knowledge about the enemies' tactics and how to face them. This continuous interaction between individuals creates not only 'individual learning' but organisational learning, making possible the creation of new patterns at the macro-organisational level (Eve Mitleton-Kelly, 2003). The sharing of knowledge of Coast Guard personnel is mediated by issues of prestige, seniority, and the ethos of secrecy, in which the possession of secrets plays the role of both increasing the prestige of those who have the rights to possess them and, as the same times, as a justifiable barrier that prevents the sharing of knowledge. Information here then, plays a role in an 'identity contest over legitimacy and credibility' (Rappert & Balmer, 2015).

Competition expressed in the language of individual achievement also plays a role among the Coast Guard personnel, and has an impact on the careers of officers and on the macro goals of the Coast Guard Unit. A lieutenant narrates the practice of publicly displaying success on a board:

> We are assigned to units, to specific boats and each boat has an identifier number, and to each boat they (commanders) attached operational results, and they publish the results on a board, where everybody can see them, so you can see how your own folder is getting bigger, and you start to feel proud of your work and to receive recognitions and rewards (Interview).

Several functions of the military and LEAs in the WoD are clearly limited by the traditional role assigned to each unit. There are, nevertheless, three spaces/activities in which the work of several military and LEAs may overlap, and where issues of collaboration and competition mediate the outcomes of each one. The emphasis during the Uribe Government on interagency collaboration, including the collaboration and sharing of information and intelligence, is one of them. The second one is the area in which several military and LEAs may act, specifically coastal areas, in order to capture drug smugglers or seize drugs. The third one is the collaboration with foreign military especially the U.S.

A U.S. 1991 report on the involvement of the military in the WoD highlights several of the initial difficulties with collaboration between the military and LEAs. These included different perceptions of carrying out an operation and 'entering into action', equipment mismatches, the treatment of information, and different perceptions about secrecy and classified information and unresolved issues of authority and hierarchy (Ahart & Stiles, 1991). Some of the same problems can be identified in the relationships of collaboration and competition between the Colombian Military and LEAs.

A retired intelligence agent pointed out the difficulties of sharing information in co-joint meetings:

> You arrived to such meetings and everybody would be looking at the other, to see who started talking, but the police never wanted to show their information, and we didn't want to show ours, and then the Navy took our information and carried out the operation in the open sea. They asked the British for collaboration and they had the means to achieve the 'event' (Interview).

However, LEAs or the military can also overestimate the difficulties of an operation in order to claim the event as their own, a navy commander recalls an operation in which the Police in order to claim an event attempted to pursue an operation near the shoreline:

> I commanded an operation and the guys returned with 270, 280 kg, and I knew from experience that there had to have been more, but then I received a call from a police man, really scared…If you put a guy who doesn't know how to swim, you put him on a boat, and he's going to be scared, they tried to carry out the operation and almost drowned, instead of calling us, we could have just gone and done the deal (Interview).

Interviewees pointed out that there is a risk in sharing intelligence: if their organisation provides another one with intelligence and reliable information to carry out an operation, then the organisation that received this information may carry out the seizure, claim the success and results, and report it as their own.

This coincides with the view of regional forums regarding the difficulties of sharing information and intelligence (Group on Maritime Narcotrafficking, 2003):

> Information and intelligence are not usually shared among and within countries in a timely, proficient manner in order to create effective and efficient counterdrug operations. The sharing of information and intelligence is limited among agencies/countries for several possible reasons. Among them are the fear of compromising operations or sources, no direct contact between officers that would foster trust, lack of communications, institutional rivalries, lack of bilateral or regional agreements/arrangements, lack of a secure means of sharing the information, limited knowledge of the operational capacity of others, and lack of understanding of the needs of others.

Efforts made by the Uribe government were reflected in the goals of the Navy to create coordinated operations with the Police and other inter-agency activities. The integration of Police units with the Navy and Coast Guard can be appreciated in the anti-drug joint task force lead by the Navy, but with the broader aim of achieving not only military success but carrying out a social program integrating other state agencies. The integration of the police and military was initially received with apprehension based on the traditional distrust between the institutions. A deputy commander remembered the difficulties of having police personnel in a Navy base: 'When the Police started to arrive…here…to Tumaco…the brigade was really…really…reluctant…that is to say, it was really hard to break the paradigm by having Police men inside a military Unit'. This also offers opportunities for the Coast Guard and Navy personnel to differentiate themselves from the Police: 'to them is difficult, you go and asked them, we got an operation let's go, and for them is difficult to face the sea, so they say, no, no, you can go, we'll wait here, because is years of training going to the sea, they're police' (interview). This highlight the importance of issues of identity and competition among the different players, and especially among Military and Police.

During this period collaboration between Colombian LEAs and Military and U.S. Agencies, especially the Drug Enforcement Administration (DEA) and the U.S. Navy

provided new opportunities for competition. Kenney (2007) points out that the relationship between the Colombian Police and the DEA created the possibility for the Police to become 'more competent in identifying, infiltrating, and disrupting trafficking networks than they have been in the early 1970s'; the same can be said about the relation of the Colombian Navy and the U.S Navy. The maritime agreement allowed the Colombian Navy and the Coast Guard to improve their record on successful operations. Operational results due to the collaboration between the Colombian Navy and the U.S. Navy are highlighted both in the media and navy documents (i.e. El Tiempo, 2001).

Co-operation between the US Navy and the Colombian Navy is a fundamental for what Griffith (1994) calls *geonarcotics*[41]. This was staged in different moments of transfer of knowledge and artefacts. The Mentioned 'Dolphin' and later the 'Midnight Express' interceptor boats were obtained by the Colombian Navy via donations of the US government and as mentioned, early training in the conduct of Maritime Interdiction Operations was also provided by the US government. Carrying out joint operations have been also important for the navy results. Some of the most successful operations were conducted as result of human intelligence and collaboration between different agencies, e.g.. the operation 'under the sea' that lead to the capture of 22 people involved in the design, construction and sailing of narcosubs artefacts in the Colombian pacific was the result of the infiltration of the smugglers organisation by a Colombian infantry man, approached by the organisation to sail one of the submersible artefacts (Administration., 2011).

Collaboration with the US navy required a process of overcoming mistrust. The agreement allowed officers of the navies to command vessels of the other country during interdiction operations, which in practice also mean trusting the decisions of the other. A second challenge was the development of a common operational language.

[41] Defined as the relations of conflict and co-operation among national and international actors that are driven by the narcotics phenomenon.

In short, the collaboration with the US Navy have helped the Colombian Navy and Coast Guard in establishing their role as a key player in the WoD. At an individual level taking part as commander during joint interdiction operations by participating in an international task force reinforced the prestige of the officers.

Two decisive events have been crucial for the short history of the Coast Guard Unit, first the interdiction agreement with United States (Agreement Between US and Colombia to Suppress Illicit Traffic by Sea, 20 February 1997), and second, the formulation of the strategic plan *Closing the Gap* in 2006. Even if those plans were not specifically focused on the role of the Coast Guard, in practice more of the interdiction responsibilities were assigned to this unit. The strategic plan closing the gap consolidated the idea of the Colombian Navy as key player in the WoD.

Intelligence

After describing the interceptor boats and their experiences during interdiction operations (Chapter 8) all but one of the interviewees pointed out the importance of intelligence information for their operations. In the previous chapter I mentioned the importance of *events* in the everyday life of officers and NCOs and showed the relationships between the perceptions of the enemy and the actions of the members of the Coast Guard. In this section I do not attempt to describe the process of intelligence gathering nor to describe the workings of the Navy Intelligence Unit,[42] but to stress the importance of intelligence in relationship with the strategies of patrolling the sea and in talk of success.

[42] Although attempts were made to interview members of the intelligence unit and clearance was gained, in the end gaining access to members of the intelligence unit was unsuccessful.

As highlighted in chapter 7, before the creation of the Coast Guard Unit, the Navy carried out counter drug operations, but not necessarily as a result of deploying fleets of ships to pursue smugglers. Rather, the Navy's operation came about as a result of detailed intelligence information that allowed the positioning of frigate or corvette type vessels to stop smugglers using trawlers or fishing boats in traditional smuggling corridors. The idea that tactical and strategical intelligence plays a key role in the consolidation of the Navy and the Coast Guard as players in the control of flows of illicit drugs, as part of a larger attempt to control the sea and to secure border is presented in the official discourse of the Navy as expressed in their plans. The Naval Strategical Plan of 2011 states as a key objective of the Navy: 'Improving the capacity of obtaining information, via human or electronic sources, as well as strengthening the process of analysis and diffusion of information and intelligence' (Armada República de Colombia, 2011). The same plan stresses the importance of acquiring technologies and reinforcing international agreements as key to the process of information gathering.

In order to achieve operational results, and develop sound operations such as the capturing of smuggler artefacts (narcosubs, go fast boats, trawlers, etc.) and/or operations against smugglers and illicit smuggling rings and members of both left wing or right wing armed groups, the Navy makes use of both human and technical intel, as well as coordinating with other agencies. In performing these actions, the Navy is implementing the ideals and fulfilling the goals proposed in strategic and operational plans that, as mentioned, stress intelligence at different levels (tactical, strategical, and operational) in order to achieve success in all operations. As highlighted in the previous section, intelligence gathering is a moment in the process of constructing the shape and capacity of the enemy, in which the gathering and analysis of information is both a tool to achieve results and a source of producing images about the enemies' structures and actions, which is ultimately affected by these images.

The Navy has developed a network of a variety of collaborators, including other law enforcement agencies and local informants, and has developed strategies to infiltrate drug smuggler rings. Infiltrating a drug smuggler ring can be a good way to achieve *events*. Nevertheless informants are not necessarily aware of the goals of the Navy, and therefore occasionally provide information that could lead to an operation but not necessarily to an event, such as informing about the departure of a smuggler artefact, but one that was not carrying out drugs at the moment of capture. Two interviewees narrate operations carried out following the receipt of information supposedly about narcosubs that later turned out to be regular boats hidden in the jungle. The trustworthiness of the informant is also key, in which the success of a previous operation resulting from information provided by an informant is seen as a sign of the reliability of the sources. Determining when information and intelligence is then accurate enough to consolidate an intelligence package is a key moment for an officer and his/her staff, one that might lead to the attainment of an event (Chapter 8).

Maritime Interdiction Operations are then, intelligence based operations, and in this sense the aim is to control the sea through the development of specifically targeted operations. This intention can also be seen in the transformation of the Navy's practices to control the sea, which have moved from patrolling (the blending of the sea approach, guaranteeing a continuous control for a limited period of time of a limited space, assisted by the detection tools of ships and the autonomy of airplanes) to the carrying out of intelligence based operations (targeting specific movements of people and artefacts). After years of conducting traditional patrolling in areas considered to be traditional smuggling routes, the Navy, and specifically the newly formed Coast Guard Unit, started to guide their operations solely based on intelligence information. The point at which the practice of interdiction is tied to the practice of intelligence is summarized by a Coast Guard Commander:

> Everything we do…the main aspect is the intelligence…yes…that is something that is clear…for us to access these organisations…we have to have…really

> strong intelligence…like the one the Navy has…technical intelligence…communications interceptions…cell phones…other communication equipment…satellites (phones)…we also have some 10% of success that is just luck (Interview).

Another commander states: 'Well…yes…you can't be just around…we have routine patrols…but it is just routine…but to find something out there? You have to be really lucky…so it is so much easier when you have a guide…something that tells you…hey…look there, to that point' (Interview). Here issues of geography, resources, and events are clearly connected.

Success, achieving results, and events are central to Coast Guard efforts, and intelligence is key in assuring this, as the previous commander continues: 'You just can't go from here to there…yes, well…maybe one day you find something…but if you have a focus, based on intelligence, well you're going to have better results' (Interview). And according to some members of the Navy, the control of the sea, thwarting smuggling efforts, should be done solely using intelligence: 'What is ought to be be…is [intelligence based operations] 100%...of that, that is what is ought to be' (Interview).

Carrying out intelligence base interdiction operations is seen as a way to maximize results given the shortage of resources, a retired rear admiral states:

> As we didn't have the resources…we had to plan the operations…with intelligence…you can't go out to the sea and wait for the fishes…because they won't come, it is not to go out to burn gas, to spend money…if you go to an operation it is because you have at least a high degree of knowledge of the possibilities for success (Interview).

An admiral, commander of the Navy states: ‘Intelligence is first of all needed to save resources… an operation without intelligence means throwing away money…with intelligence the operations are carried out in a cheaper way’ (Interview).

The First Commander of the Coast Guard in the Caribbean held similar views on the importance of intelligence based operations, resources, and success: ‘You have to work a lot with intelligence…information…so you don’t make unnecessary efforts…if you don’t, if you don’t work with information…the effort is lost’ (Interview).

Thus, for the Coast Guard personnel, success in carrying out MIOs is clearly linked with intelligence based operations. In doing so, interpretations of the role of the Navy and the Coast Guard and how to patrol the sea are transformed from establishing, albeit intermittent, control of space to the control of clearly determined targets.

Chapter 7. The Coast Guard Unit

The open sea, near midnight. Several miles from the coast two Colombian Coast Guard vessels chase a go-fast boat, presumably loaded with tons of cocaine neatly packaged in several bags. They feel the tension of being at a disadvantage because they don't know how the smugglers will react. Thus, they have to wait for the smugglers reaction to being chased by two *new* coast guard boats. They feel the adrenaline bursting on their veins. They have the information about the name of the boat, its point of departure, and approximately how much cocaine it is transporting. What is the new young commander going to order? Is he going to forego the pursuit? Is he going to order the Coast Guard to follow at full speed, as they think they should? Now they feel somehow safer using this 'new' boat, the *Midnight Express*, where there is more shelter if the smugglers decide to shoot, but will this new boat be true to its promise? Will it turn as fast as they need it to? Will it help them to catch the smugglers? Are the boats easy to manoeuvre at high speed? They are using these boats for the first time in an interdiction operation, though of course they have made several trials. But, there have not been enough trials because resources are scare and they cannot waste money on gas during such trials. What will the smugglers do? Will they try to zig-zag, or will they try to crash the boats? They decided the latter, colliding twice with Coast Guard boats before throwing away the cocaine. Then they headed to the shore, resulting in bad luck as the smugglers end up tangled in a thick bush of thorny plants, and are caught by the Coast Guard.

The events detailed above are an account of the first time the Coast Guard personnel used the *Midnight Express* boats to catch smugglers as recounted by a Navy captain, who had the opportunity to be among the first members of the Coast Guard to use the new boats.

Drug smugglers are said to have innovated in the use of different routes and transport methods (Caulkins et al., 2009; Decker & Townsend Chapman, 2008), and this capacity for almost boundless innovation is assumed to be at the core of the drug traffickers' success. A wide array of smuggling methods have been extensively documented, especially in journalistic reports highlighting the ingenuity of Colombian drug smugglers (Escobar & Fisher, 2009; Semana, 2011). Since it began its involvement in the War on Drugs (WoD), the Colombian Government, with the support and encouragement of the U.S. Government, has developed several strategies to thwart smugglers' efforts. These include creating specialized law enforcement units, such as the Colombian Antinarcotic Police, and extending the involvement of the military to take control of different stages of the production and transport of illicit drugs.[43] Those 'Atypical Military Instruments', as Moloeznik (2003) characterises them requires both the Colombian and Mexican Military to carry out operations for which they are not necessarily trained and which are beyond their traditional missions.

In this chapter I present an overview of the history of the Coast Guard Unit, specifically the procurement of interceptor boats between 1994 and 2013. I also present evidence that rather than being a result of the accumulation of formalised data or 'factual' evidence, the procurement and use of boats and operational strategies has been shaped by the knowledge and experience of local commanders and their perceptions of interdiction 'events' (as will be described further in chapter 8). This chapter, together with most sections of the following ones, deal with the arena of practices where the knowledge and experience of local commanders and their perceptions of interdiction events shape the technological and practical choices of the Navy in regards to the WoD.

[43] The participation of the US military in interdiction operations was sanctioned in 1989 National Defence Authorization Act for Fiscal Year 1989.

Some Offices and Four Boats: The Creation of the Coast Guard Unit

While The Colombian Navy has participated in counterdrug operations since the early 1980s, mainly in thwarting marihuana smugglers in the Caribbean Sea, full-on involvement only came with the creation of the Coast Guard Unit. This in turn implied that at that point operational success started to be measured in terms of seizures of illicit drugs, and military trained personnel became involved in law enforcement operations.

Statistics on drug seizures confirm the use of maritime routes and particular transport methods from Colombia to consumer and transhipment countries as the main practices used by drug smugglers (Map 5). In the early 1990s, the Colombian Government decided to boost the role of the Navy in the WoD with the deployment of the Coast Guard Unit, which although established since 1979, did not possess, boats or personnel. This Unit became devoted mainly to maritime interdiction operations to thwart smugglers efforts.

When created in 1979[44] none of the fourteen functions postulated for the Coast Guard Unit directly implied the enforcement of counter drug policies. Later, the '*Directiva Presidencial N 5 from the 28 of December of 1991*', established that the Coast Guard Units were in charge of 'carrying out operations in the fight against illicit drugs, guiding their efforts to eliminate the illicit traffic of drugs through actions in order to fight against the full chain of illicit drugs, precursors, transformations, processing, transport, distribution, treatment, and consumption'.

[44] COLOMBIA, Decreto no. 1874 de 1979, Mediante el cual se crea el Cuerpo de Guardacostas, *Diario Oficial No. 35319,* de 1 de agosto de 1979.

In 1992 the first 'Development Plan' for the Coast Guard was designed, entitled the 'Development Plan for the Coast Guard of the National Navy.' This plan made provisions for ten years and included the construction of primary and secondary bases all along the Caribbean Coast. Since 1991 the office of the Coast Guard had been located in an old music hall, which the first operational commander of the Caribbean Coast Guard described as 'some offices and four boats' (Interview). The Coast Guard unit went into operation in 1994 with the establishment of the first Coast Guard base in Cartagena, on the Colombian Caribbean Coast, and the building of the Buenaventura base in the Pacific Coast. The new offices in Cartagena, were officially inaugurated in 1995.

The Coast Guard is a branch of the Colombian Navy and is directly attached to the Chief of Naval Operations. The Coast Guard consists of four departments: Planning, Projects, Security, and Operations and Administration. In order to carry out their operations the Coast Guard is divided into three commands, Caribbean Command, Pacific Command, and Amazonian Command.

Map 5. Direction of Illicit Drug Flows.
Source: Colombian Navy, Naval Operations Directory, Statistics 2012.

The Coast Guard initiated operations with ten minor units of boats quickly reassigned from other posts belonging to the Caribbean Fleet (then branded as the Atlantic Fleet). Most of them were discharged or repurposed within a few years. These boats were a mixture of maritime patrol boats and logistic vessels, ranging in operational age from 10 to 30 years when assigned to the Coast Guard.[45] Personnel were assigned from different dependencies of the Navy. In 1995 the Colombian Navy received 10 rapid reaction *Dolphin* boats from the United States Government to be used by the Coast Guard,[46] opening up a period in which such specialised artefacts were used by the Coast Guard in order to carry out counter drug operations.

By 2010 the Coast Guard had two first order stations in the Caribbean, one in Cartagena and the other in Santa Marta, five second order stations along the Caribbean (in Barranquilla, San Andres, Turbo, Puerto Bolivar and Coveñas) and two third order stations (in Ballenas and Punta Espada). It possessed nine small surface boats, twenty *Dolphin* boats, seven assorted interdiction boats (Lobster boats), and twelve *Midnight Express* boats. The Pacific area consisted of one first order station (in Buenaventura) and two second category stations (in Tumaco and Bahia Solano). These three stations in the Pacific included six coastal patrols boats, nine *Dolphin* boats, four *Midnight Express* boats, and six assorted interdiction boats.

The Buenaventura Coast Guard Base in the Colombian Pacific started operations with ten *Dolphin* boats of 8.2 m length. Counter drug operations were carried out combining the small *Dolphins* with bigger surface boats. In 1999 two *Lobster* boats, were integrated into the Pacific Coast Unit. These boats were 10.6 m long. In 2007, they added two new boats, *Midnight Express* boats. These boats are equipped with four

[45] A couple of these boats had even seen action during the Vietnam War as part of the U.S. Navy and were donated to the Colombian Government. The majority of those vessels were quickly dismantled or repurposed to others duties, such as training boats or logistics boats, following the introduction of proper interdiction boats.

[46] Together with four Landing Craft Personnel (Large) 9+ tons, 10+ meters. and one LCM8 34+ tons, 22+ meters.

220hp engines that are used to combat the speed of smugglers using go-fast boats. In 2008 the Pacific Unit was improved by adding two bay control units of 12.1 m long.

The Pacific plans continued with the establishment of the Tumaco Coast Guard Base on the southern Pacific Coast in 2004. This base was constructed with the support of the U.S. Navy, consisting of an office building and a dock for minor units. Initially two *Dolphin* boats were moved from the Buenaventura Station and two new Lobster boats were assigned, later joined by two *Midnight Express* boats in 2006. In 2006 a new base in the Pacific was inaugurated, in Bahia Solano, which started with one official and four NCOs, together with two boats from the Buenaventura Station.

Finding the *Right* Boat: The Coast Guard Unit's Rapid Reaction Boats

The rapid reaction or interceptor boats play a central role in the Coast Guard's interdiction operations. These are the boats used to hunt and approach the smugglers. Beginning with the *Dolphin*, between 1994 and 2014 the Colombian Coast Guard used a range of different Patrol boats. The boats that have been used as interdiction vessels have been obtained from several sources: donations from the U.S. Government, procurement from the local naval industry, repurposing seized smuggler boats, the development of boats between the Navy and Navy Shipyard, and procurement from the international market.

Until 2013 the Coast Guard and their auxiliary fleet were mostly second-hand purchases and donations from the U.S. In addition to interceptor boats entering into action between 1994 and 2013 the Coast Guard also: 1.) Modified old boats to increase speed; 2.) Used captured smuggler boats that they repurposed to be used during interdiction operations; 3.) Designed and built their own boats (the *beast* and the

Orca), 4.) Received donations or procured new boats from the U.S. Government. Most of these were aimed at achieving higher speeds in order to match what was perceived as the main threat, the go-fast boats and their increasing cargo capacity, camouflage, and speed. As such the procurement of these boats was the result of localized efforts.

From 2013 onwards, the Coast Guard made attempts to formalize a procurement process, establishing needs based not only on current, localized threats but also in order to maintain more permanent control of maritime areas, as was stated in the 2013 Coast Guard development plan. Table 1 shows the type and figures of the different patrol vessels registered by the Coast Guard Unit in 2014.[47] In this section I will present an overview[48] of the history of the acquisition of patrol vessels, and discuss the relation of the Coast Guard personnel with these vessels and how localized views of enemies' activities affected the procurement of interceptor boats. Most of the stories narrated by members of the Coast Guard Unit present a similar pattern, an initial moment in which the boat assigned is considered a suitable tool, a second moment of discomfort with the vessel due to modifications, damages, or perceptions of the enemies' boats, and finally discarding or repurposing the vessel to be replaced with a 'more' suitable one.

Type	Origin Country	Condition	Adquistion	Year	Quantity
Dolphin	U.S.A	Second-Hand and New	Donation	1994	20
Lobster boats/Andromeda class	Colombia	Second-Hand and New	Repourpose, local industry	1995	15
Interceptor/Go-Fast	Colombia	Second-Hand and New	Repourpose, local industry	1995	17
Orca	Colombia	New	Local Industry/Navy Shipyard	2003	15
Midnight Express 39	U.S.A	Second-Hand and New	Donation/Procurement	2005	15
SAFE Boats Defender 380X	U.S.A	New	Donation/Procurement	2013	5
Renegade Patrol Boat 38	U.S.A	New	Procurement	2013	10
EDUARDOÑO 380 Tipo B	Colombia	New	Local Industry	2013	24
SAFE Boats Apostle 410	U.S.A	New	Donation/Procurement	2014	7

Table 1. Colombian Coast Guard Rapid Interceptor boats 1994-2014.
Source: Elaborated by Author from diverse sources.

[47] These quantities correspond to the number of boats acquired and registered. It is worth pointing out that several of the boats are not currently in use, or are used intermittently and no longer for the initial purpose of pursuing smugglers, such is the case of the Dolphin and Orca.

[48] By the time of the fieldwork the Coast Guard Unit was receiving and starting to deploy the boats proposed in the 2013 Development Plan.

The *Dolphin*

The *Dolphin* was the first proper patrol boat used by the Coast Guard Unit to chase smugglers. The firsts *Dolphins* were donated by the U.S. Government and later others were built in Colombia.[49] A *Dolphin* is a fiberglass boat that is 7.81m long, 2.60m wide, with a maximum speed of 40 knots. It is propelled by two 200hp outboard engines, and has no armor.[50] The *Dolphin* was widely used during patrols, maritime interdiction operations, and search and rescue operations, and currently some of these initial boats are displayed as monuments in Coast Guard bases (Figure 49 and Figure 50). By the time the *Dolphins* were deployed in the early 1990s smugglers were already using GPS, while member of the Coast Guard had to make their own attempts to acquire GPS, either by buying or using seized ones.

Figure 49. Dolphin boat, displayed at the entry of the Coast Guard Unit in Buenaventura. Source: Author.

[49] The Company in charge of building the Colombian version of the *Dolphin* was Eduardo Londoño e Hijos Sucesores, S. A. Eduardoño, S.A., a company based in Medellin with offices in Bogota, Buenaventura, and Cartagena. This company mostly built small boats in polyester and PRFV, between 4 and 13m long, to be used in transport, fisheries, and sport activities, until commissioned by the Navy to construct the *Dolphin*.

[50] The *Dolphins* were also used by maritime infantry and Antinarcotic Police and equipped with a 1x12.7 mm or 2x7.62 mm automatic gun.

Figure 50. Dolphin boat, Displayed at the Tumaco Coast Guard Base. Source: Author.

The *Dolphins* were mainly used as a bay control vessel. Some members of the Coast Guard Unit consider that for some time the *Dolphins* were a reliable tool: 'The *Dolphins* were useful…really useful in interior waters…but to go out in the sea…so…to go to the open sea, they were not so good there…they weren't designed to do that…the engines were too small…not designed to be used in the open sea' (Interview). As deployed by the first operative commander of the Coast Guard in the Caribbean, these vessels had the mission of controlling the main bays. Bay control was perceived as a big step in controlling illicit flows, as commented by a retired captain: 'The *Dolphins* were bay boats…there it is where all the things [illicit flows] set off…so if you control the bays…well you're controlling a huge part' (Interview). Regardless of their intended use, as a bay or riverine vessel, during the mid-1990s Coast Guard personnel were able to use them to chase smugglers in the open sea. At that time, in certain conditions, the *Dolphins* were able to compete with smugglers' go-fast boats and lobster boats, as a Navy captain, then a fresh lieutenant, narrates: 'Those [smugglers] used to set sail full of gas…with 1200 kg of cargo…well those hulls could go up to 30, 32 knots…which was about the same as the *Dolphins*…but they

[smugglers] sail with full cargo, full gas, supplies, spare parts, so, they were really heavy' (Interview).

Besides matching smugglers' speed, the Coast Guard personnel had to face the differences between the Pacific and Caribbean Seas, which affected the manoeuvrability of the *Dolphin*, which was affected by the different length of waves in the two seas. A Coast Guard captain, who sailed a *Dolphin* in these diverse conditions, when asked about sailing that vessel in the Caribbean and in the Pacific, summarized this thus:

> The difference is overwhelming…here in the Pacific the sea is really calm…it is a relatively calm sea…well there are tough moments…it turns out terrible…it can be like a bull fight…but normally, 95% of the time…it is really calm…so that boat here…they behave *really, really good*…whereas in the Caribbean, it is a good boat, a 32 feet boat[51] …but due to the length of the waves in the Caribbean… a 36 or a 38 foot boat would be ideal (Interview).

In order to match the speed of smuggler artefacts and to overcome the difficulties regarding the length of the waves, the Coast Guard personnel decided to lengthen the vessel, extending the size by 0.6 to 1.2 m, and making trials to check the manoeuvrability of the boat after the changes. The Coast Guard mechanics were in charge of these modifications, cutting the boat in two and adding a custom made fibreglass piece. The life span of these vessels was initially only seven to ten years, however, due to continuous tinkering with the hull and engines, their life span was stretched to nearly double this in some cases. Coast Guard personnel were in charge of the fibreglass work and repair, as well as in charge of replacing and modifying the

[51] According to the technical description of the *Dolphin* it is a 26 foot boat, thus the captain may have been referring to the longer version of the *Dolphin* modified by the Colombian Navy.

engines. In all, these modifications provided the *Dolphin* with what an Admiral described as: ‘better stability and better speed’ (Interview).

Despite gaining speed through modifying the hull, the *Dolphins* were not able to match the speed achieved by go-fast boats from the mid-1990s onwards. A retired captain, who was the first commander of the Coast Guard in the Caribbean narrates the difficulties, even of the U.S. Navy, in catching smugglers using go-fast boats:

> I was in San Andres…and the *Gringos* detected a go-fast…and they sent a landing boat…and obviously, a landing boat is useless for that…so they sent a helicopter and nothing…so the guys actually reached another island…the *Gringos* tried to put the blame on us, but fortunately there was an airplane from the Air Force…that took pictures of all of what the *Gringos* did to capture those guys and nothing! (Interview).

During the mid-1990s, some smugglers were able to increase the speed of their artefacts and the *Dolphin* were no longer useful in pursuing smugglers as pointed out by the previous captain: ‘The *Dolphin* became completely useless to control narcotraffickers…because if a go-fast set sail…reaching…the *Dolphin* was reaching more or less 30 knots…the go-fast could reach 50 knots per hour’ (Interview). A rear admiral, then commander of the Cartagena Base comments: ‘They [smugglers] were using 500hp engines…and…or course…they [smugglers] were reaching 50 knots of speed in the sea…and we, well…we just didn’t have those capacities…sure, we had the helicopter…but even so…they escaped’ (Interview).

The Beast, the Orca and Smuggler Boats

In 1997 the Navy Chief of operations, given the continuous reports about failed operations due to the difficulties of matching smuggler artefacts' speed, decided that the Navy should construct its own *rapid interceptor boat*. The rear admiral entrusted to a group of naval engineers the drafting of a prototype, which was then reviewed by an external boat designer to finalize the design. The initial design proposed a boat that could achieve up to 45 knots, but was easy to manoeuvre and capable of being launched or picked up by corvette type vessels or frigates, and included as a novelty the use of GPS. The boats had a weight of 1500kg and a range of 200 miles, and most importantly the boats were set to cost half the price of the off-the-shelf models (Restrepo, 1997).[52] This rapid interceptor boat was designed to be employed in the Caribbean Sea.

The rear admiral in charge of the project narrates the decision making process:

> We had to find a way to fight the threat in a more efficient way than that which we were doing…and logically…that's why we got to the…decision that the best we could do…was to build our own boats…with better capacities in speed…and that's what we did (Interview).

The process of designing and building these boats, from the moment the decision was made until the boats were commissioned to carry out interdiction operations, took about six months.[53] The four *rapid interceptor boats* built were able to achieve a speed of up to 60 knots per hour and to spin on their own axis. It was soon nicknamed *the Beast* by Coast Guard personnel, it was the first time they were able to achieve such

[52] Each boat cost 40 million pesos in 1997, compared with 80 million pesos for a similar model off the shelf.
[53] The design and building process took five month, with a month of trials and adjustments.

speeds: ‘Can you imagine!...it was…that thing can go up to 60 knots…and all the people were *really* happy…for us it was a beast’ (Interview). However, the rear admiral was soon transferred and the project was abandoned.

Another approach during the late 1990s involved the use of *Eduardoño Lobster* boat hulls, Figure 51. According to Navy reports smugglers were using a range of *Eduardoño Lobster* hulls varying between 8.2 m, propelled by two outboard engines with up to 25 knots per hour, to 10.9 m hulls with three to four engines.[54] At this stage the Coast Guard personnel started repurposing smuggler seized boats in order to carry interdiction operations. The First Commander of the Coast Guard in the Caribbean explains the transition from the *Dolphins* to the *Eduardoño* boats:

> So…we basically started with the *Dolphins*…and then we started to make a new development…and it was…as we were capturing…and those were 31.5 feet…which is a good hull…we realize that their behaviour in the sea was even better than…than…the *Dolphins*…and that is when we started a process with Eduardoño (Interview).

A captain complements:

> We had these boats…the *Dolphins*…the one that you see at the entry…well…as we were facing drug trafficking…we were noticing that the *Dolphins* were useless…that the smugglers ride on *Lobster* boats…so every *lobster* boat we can lay our hands on…we put on the Coast Guard stripes…and

[54] As noted in chapter four, smugglers also used to a wide array of artisanal vessels, build in makeshift shipyards.

> we started to operate on them…and soon we started to achieve results (Interview).

The same experience is narrated by the Deputy Commander of the Pacific Task Force:

> Back in the 90s…this is a story that I lived…well…we started…using those hulls against them…we received those boats…we painted them grey…and started using them against them…and that is a 32 foot hull…which is so much better than a 29 foot one…and they are really good hulls…and how we used them? Mostly just as they were…the hull, the two engines…paint…gas…and go (Interview).

Figure 51. Eduardoño hulls seized by the Colombian Navy and repurposed to carry out interdiction operations.
Source: Author.

At this time the preferred hull to do the job of pursuing smugglers is precisely the 31.5 foot *Lobster Eduardoño* hull. Several captains, fresh lieutenants by the time the Coast Guard started using these vessels, praise the characteristics of the *Eduardoño* hull. One

captain explains: ‘Of the boats that we have used, none of which were designed having military applications in sight…and the one I could say…were kind of good…were the *Lobster* boats, but the original, the *Eduardoño*’ (Interview). The same appreciation of that type of hull is voiced by another captain:

> Well…I would never put myself on one of those things [pointing out to a makeshift go-fast boat]…do you follow? I would never go to the sea on one of those artisanal things…if you say to me…do you see that *Eduardoño Lobster* boat that is turned to *^”%&… I say ready, because I know it would work, but a boat that is not original? Never (Interview).

The use of smuggler boats as part of the Coast Guard efforts is justified in several ways. A lack of resources and the perceptions of being defeated are expressed as the main concerns. The First Commander of the Coast Guard in the Caribbean Sea articulates some of these ideas, when discussing the use of smuggler boats: ‘Well…it was important…we had to use the same as what they were using…otherwise we would have been in bad shape…it’s like many diseases…that you have to fight with the same disease’ (Interview). While the Deputy Commander of the Antidrug Task Force states:

> I remember…when I started in the Coast Guard…I started chasing go-fasts…without knowing how to…we only had those big bay security boats…and the narcotraffickers had their go-fast boats…and you only see their wake (…) so…if we got any information…we caught the boat…*brand new*…no owner…or the owner never appeared…we painted it grey…we hopped in…and went on to chase the other boats (Interview).

In previous paragraphs, modifications of the hull only mention a livery change, but captured smuggler boats were also often modified to overcome smuggler artefacts. The First Commander of the Coast Guard in the Caribbean recalls:

> The same boats that we capture…well, first we used them as they were…later we started modifying those boats, adapting them, improving them. If they had three engines…we added another one, and the like.' And later also: 'Well lots of the boats we had in the beginning…were the ones we captured…and then we used them…but not only used them…but improve them [laughs] (Interview).

Further attempts to modify the hull, introducing improvements for personnel well-being such as chairs or rooftops or communication equipment, diminished the capacities of the *Eduardoño* hulls. A captain narrates the results of the modification of that hull, which I quote at length because he describes the five moments of the process: the arrival of the boats, the initial success, subsequent modifications, failure of the modifications, and expectations from the Navy and disposal of the artefact:

> Oh…yes…the [year] 1997…we acquired the famous *Eduardoño* boats…and yes…they were superb…but then later we realized….every time you try to place anything on the boat, the centre of gravity…it turns completely unstable…so it wasn't that good…was it? And it was the same boat that we had recommended to be bought…because it was superb! The best at the moment!...but as soon as they tried to place a tent…and they put a radar antenna…a radio antenna…it lost stability…so you went out to the sea, on those things…and that thing tended to sink!...they're still around…they removed all the antennas…all the things [laughs]…and in conclusion…they're no good for &*(%^…they do not work, they lost stability…and I'm talking about the very basic stuff. (Interview).

By 2002 a new attempt to build a rapid patrol boat was commissioned to Cotecmar[55] (Science and Technology Corporation for the Development of the Maritime and Fluvial Naval Industry). Coctmar is the Navy shipyard founded in 1998, when the Colombian Navy reacted to a failed attempt to privatize the first Navy shipyard CONASTIL, which was the property of the Navy from 1968 until the mid-1980s and that declared bankruptcy in 1989. Partners of this new Navy shipyard included the Ministry of Defence, the main national public university (Universidad Nacional), a local university (Corporación, Universitaria Tecnológica de Bolívar), and an engineering specialty university (Escuela Colombiana de Ingeniería Julio Garavito. Cotecmar is a non-profit company which is mainly state owned. The shipyard began activities in 2001 and in 2002 received instructions for two interrelated projects that involved the design and building of small boats of high speed: the *Orca* boat for the Coast Guard Unit; and *Patrol River Boats* for the Marine Infantry Unit. The *Orca* boat was set to replace the *Dolphin* boats and the *Eduardoño* hulls.

In the process of design of the *Orca* boat, the navy personnel and Cotecmar designers met in order to clarify the requirements of the boat, which was to perform MIOs in coastal and jurisdictional waters in both the Caribbean and the Pacific. In that sense, speed was considered the main variable in the process of design of that artefact (Webinfomil, 2003). The final design was a fibreglass hull of 11.8 m long, 2.6 m wide, with three 200hp engines, 500 nautical miles of range, and a five person crew, reaching speeds of up to 40 knots when fully loaded or 60 knots on a smooth sea (Degree 2,

[55] Corporación de Ciencia y Tecnología para el Desarrollo de la Industrial Naval, Marítima y Fluvial.

0.10–0.50 height of the wave)[56] with no cargo (

Figure 52, Figure 53, and Figure 54). The design of the *Orca* included improvements in the well-being of the sailors, such as ergonomic chairs, a resting room, and a bathroom. Designers estimated savings of up to 50% between the *Orca* and similar off-the-shelf boats. The building process of each *Orca* was approximately 150 days. Trials were performed in April of 2003 and a month later the boats were appointed their first missions.

Figure 52. Orca boats.

[56] international sea and swell scale.

Source: http://americamilitar.com/armada/131-buques-patrulleros-de-costa-de-la-arc-p10.html

Figure 53, orca boat, front view.
Source: http://americamilitar.com/armada

Figure 54: Orca boat.
Source: americamilitar.com.

Trials of the *Orca* were carried out by Coast Guard personnel with experience of high speed pursuits in early 2003 and provided hints of several problems with the vessel, and the foreseeable problems of carrying out interdiction in the vessels. A captain who

participated in the trials explains: ‘during the trials…we saw that it is a raked bow…in V shape…but it is raked…so whenever you jumped over a wave you hit the next one…so…yes…the boats were of no use to interdiction in the open sea’ (Interview).

The *Orca* boats were deployed to perform interdiction operations; two members of the Coast Guard narrate their experiences:

> They had a design flaw…and that’s what made them fail…you just have to see the short bulwark…so it is impossible to surf over the waves in the open sea…or even move at high speeds…if you go too fast…the waves…they pass over you…and they were not too strong...in some of them the frames ended up broken because of hitting the waves…so at the end, the few that were not damaged ended up around the bay…but they’re incapable of interdiction…or you may sink (Interview).

Another experience confirmed some of the difficulties of carrying out high speed interdiction operations using the *Orca*:

> On one occasion…to the poor (the orca)…first in a chase a wave basically tore off the cabin…we later put that on a *Lobster* hull…we tried to reinforce where you put the engines…to see if it worked…but it wasn’t worth it…the frames just broke…and the water keep pouring in…they weren’t useful for the mission…so it was better to replace it with *Lobster* hulls…which are better at the job and are far cheaper than those monstrosities (Interview).

Those characteristics were not only identified by members of the Coast Guard during the trials and when chasing smuggler go-fasts, but were also perceived by smugglers during interdictions which they evaded. Two stories corroborate the abilities of smugglers to identify the characteristics of their persecutors that allowed them to make decisions leading to evasion:

> I was in the first interdiction we made with…two boats…two *Orcas*…the Captain X…he had to go wide…so he was wide…we were…he was wide and I was inside…the Captain of the other boat, a *firpol 38*[57]…it is a good hull…well the guy just got close to Captain X…rin…rin…it was during the day…rum, rum, rum, rum…the guy saw the Captain's boat…I know this because the guy told me…we could catch him later…the thing is…the block started to make waves…and waves until the boat sunk dove…and with the hit…the windows just broke…all…and that was the interdiction…it flooded (Interview).

> I remember…here near Buenaventura…we caught some guys…so here it is…the other side of the coin…so the guy told us… 'we were worried and we started throwing the drugs….and then we saw the boat…it was running really smooth,' the guy told us: 'that boat was running really smooth…but when we saw it…20, 30 mt…we saw the bulwark was really low…and thought, I can break this thing…and so I started zigzagging…until your boat sunk dove'…so…it was the guy who told us how easy it was to drive that boat away (Interview).

In short, the *Orca* boat, despite being designed to carry out interdiction operations and to develop high speeds, could only achieve those speeds in particularly calm sea conditions. The ones that were not damaged beyond repair currently are deployed to perform routine patrols in Cartagena Bay.

[57] Colombian company that designs and build fisher and recreational boats.

Midnight Express

A new interceptor boat arrived in late 2005 and was introduced in 2006. Mentioned in the 2006 strategic concept *Closing the Gap* as the replacement of the *Dolphin* boats,[58] the new boat, the *Midnight Express*, was a 39.2 foot long, 9.6 foot wide, fibreglass vessel fitted with four 220hp engines, which could develop up to 50 knots of speed in smooth sea conditions (Figure 55). Partly acquired via the *Plan Colombia* as a donation from the U.S Government,[59] the rest was funded by the Colombian Government in various instalments. Four of these vessels were received in 2005 and they were set to operate in the Caribbean. Ten more arrived between 2008 and 2009 to be assigned to different bases in the Pacific and Caribbean (Ministerio de Defensa, 2008).

Figure 55. Midnight Express boat.
Source: Author.

The *Midnight Express* boats were introduced to the Colombian Navy, together with training courses for officers in interdiction operations, as a suggestion from the U.S

[58] No mention of the Eduardo;o or the Orcas.
[59] Together with a reliance type boat, discarded from the U.S Coast Guard were it was on service from 1968 until 2001, renamed as Valle del Cauca, and refitted, to realize patrol duties in the Pacific Ocean.

Government as part of the *Plan Colombia,* These boats were described in the official newspaper of the Navy in a promotional tone: 'The new generation of interceptor, provided with the best sensors and high speed' (Armada República de Colombia, 2005). The commander of the Pacific Coast Guard when describing the procurement of the Midnight Express states: 'The Americans told us…look…we have this, do you want them? Yes, yes, we didn't know the boat, but we said yes, we can use it…and we were really in need…so that's how we end up with that…but they turned out pretty good' (Interview). The speed and the detection capacities of the *Midnight Express* was considered a strategic advantage for the members of the Coast Guard. A lieutenant narrates his experience with the *Midnight Express* boat as:

> Well in its prime…the *Midnight Express* boats really offer us an advantage…they had an exceptional speed…obviously…us with *Lobster* boats with two engines of 200hp and they already with go-fasts with 5, 4 engines…so for example…you could even dispense with other units, the patrol vessels…at some point the *Midnight Express* had better radars than the fleet…so you could go on your own (Interview).

Despite the detection and speed advantages provided by the *Midnight Express*, some commanders became weary of their performance and decided not to employ them during interdiction operations. The Caribbean Coast Guard commander explains: 'Lots of people didn't like that boat…they didn't like to use it in the sea…it didn't provided the reliability…a captain was pursuing a boat…and suddenly our boat started to lag and he couldn't catch the boat'. Maintenance played a key role in upholding the *Midnight Express* expectations, the boat was considered a good tool, but one that needed to be handle with care, as explained by the same commander: 'The *Midnights* are *really* good…but they are like a Ferrari, if you do not give them good maintenance…they lose reliability' (Interview).

The *Midnight Express* boats were modified by Coast Guard mechanics in order to solve some of the boats' reliability problems as encountered by the Coast Guard when carrying out interdiction operations. Reinforcement of the frames supporting the engines, and in some boats changes in the structure such as the placing of a door in order to make up for the absence of a water pump to expel the water falling inside the vessel, were common alterations. [60] Maintenance was, in other cases, not enough to sustain their use during interdiction operations. In a visit to the workshop of the Coast Guard in the Pacific a mechanic offered a catalogue of the problems found in the *Midnight Express*, including engines detaching from the hull, breaks in the hull, and corrosion.

As previously highlighted in 2013 the Colombian Navy procured several new types of boats both from the local Market, *Eduardoño* 380, or from U.S. Companies: Renegade Patrol Boat 38, SAFE Boats Defender 380X, and SAFE Boats Apostle 410. The decision to buy those new boats, was contemplated in the Coast Guard Development Plan and was accompanied by a reassessment of the procurement strategies used until 2010.[61] This was seen as a 'continuous evolution' of strategies needed to be replaced by a 'home reorganisation', as the Navy Commander in charge of the Development Plan put it.

While the strategic plans and Navy documents often refer to the procurement and repurposing of boats to be deployed during MIOs as responses to operational requirements, the story of the interceptor boats shows that the localized view of Coast Guard personnel played an important role in decisions to use new boats and specially in the modification of the boats to respond to local threats. The next quote supports this idea:

[60] Excess of water inside the vessel during high pursue operations was also highlighted as a problem.
[61] The Plan also included the procurement of eleven radars.

> You start feeling…when you say…a [smuggler] boat just slipped away…and you think…what happened?...it was going at such a higher speed than mine…and what else…maybe it was just not the speed…it was my speed and suddenly my boat just broke…so you start thinking, looking…how people feel…and you say…we have to solve this (Interview).

When visiting Coast Guard bases you notice many similarities: usually at the entry a *Dolphin* boat will be displayed, on the near dock possibly a couple of *Eduardoños* (bought or repurposed) share the space with a *Midnight Express*, and recently with the new defenders or *Apostol* boats. In the workshop nearby a *Midnight* is being refitted, an *Orca* is used close by in training new recruits, while some other *Orcas* share the warehouse with some other discarded hulls. This display offers a glimpse of the story of the process of procurement and use of the interceptor boats. Already discarded boats that were considered not too long ago to be effective tools sit alongside vessels being modified or refitted which are set aside the the new generation of boats.

The story of the interceptor patrol boats also challenges widespread versions of the interdiction/evasion binary as equated with inflexibility/flexibility as an explanation for the competitive advantage of smugglers (Chapter 1). As explained, several Coast Guard projects intended to match the capacities of smugglers took less than six months to conclude, while refurbishing engines to improve speed or replacing engines took less than this. The story of patrol boats also allows reflection on the role of discourse around success in the WoD. Together with the patrol boats and detection tools, for the Coast Guard personnel sound intelligence is also key to achieving successful operations.

In 1994 the First Commander of the Coast Guard Unit in the Caribbean Sea complained that the goals of the Navy to stop smugglers from using maritime routes to transport drugs faced important challenges. The Navy did not have enough resources

to control the Caribbean routes, which was compounded by a lack of regulations to limit boat owners from modifying their boats. Thus smugglers were able to modify their boats in order to increase the speed of their boats and cargo load. The same captain confirmed that smugglers were building their own fibreglass boats, usually with double hulls or fake gas tanks where smugglers concealed the illicit cargo. Smugglers also carried their cargo to open seas where the drugs were then transferred to cargo containers. The Capitan complained; 'The Coast Guard Unit has three sea patrol vessels, 2 small patrol vessels, and 10 small boats (*Dolphin*) intended to cover an area of 1650km2. This is obviously insufficient to carry out the duty of controlling both goods smuggling and illicit drug traffic' (El Tiempo, 1994a).

As stated in the introduction, even before, when this commander took charge of the Cartagena base, he found that the Coast Guard was just *some offices and four boats*, and that the personnel had no instructions or knowledge of how to perform the mission of thwarting smugglers. Twenty years later the tools used by the Coast Guard may seem completely different, but it is possible to hear the echo of the voice of the first captain in the voices of the new generation of Navy personnel: the lack of resources or limited resources is argued to be the main difficulty in fighting the WoD. A commander, when discussing the *Closing the Gaps* strategy, points out: 'The thing is that we had lots of difficulties…we can make minor investments…but it is difficult to achieve...because it is costly…that is the ideal thing [Closing the Gap]…but we have never been able to complete it' (Interview).

There are both decisive differences and similarities between these two experiences. While the similarities are provided by the common experience of not possessing enough resources for the control of smugglers, the striking differences are portrayed by the technological transformation of the Coast Guard and Navy's interdiction practices due to the introduction of and attempts to implement different strategic plans, boats, communication systems, etc. I argue that there are two temporalities with two different responses to the question of how to patrol the sea: The one given in the plans

and visions of the Navy, in which the implementation of new technological artefacts and systems follow the logic of the powers of rationalization of military activities, which often place these developments in the near or distant future. The second is given by the day to day activities of the Coast Guard personnel where issues regarding their relationship with technological artefacts are mediated by issues of deploying available resources or tinkering with such artefacts in order to achieve the capacities needed to face what is perceived to be the main threats.

It can be argued that the story of the patrol boats used by the Coast Guard also constitutes a process of learning how to procure technologies. The procurement of boats, the formulation of operational strategies, is mediated by the (necessarily imperfect) assessment of technological artefacts designed and used by the Smugglers (Chapters 4 and 5).

The story of the procurement of boats is a mixture of attempts to develop a local military industry that could benefit from the local experience of the Colombian Navy and local pressures to achieve results. Matching smugglers, the perceived capacities of smuggler artefacts, was the main drive behind procurement efforts that took place from 1995 until the aforementioned Coast Guard Development Plan of 2013 in which an experienced Coast Guard commander was able to coordinate a process of procurement that responded to the different needs of the Coast Guard that surpassed the need for high speed transport in the open sea. Between 1995 and 2013 the use of go-fast boats and the increasing use of speed in order to evade control motivated the Navy to explore alternatives to catch with smugglers. This included them developing their own plans for designing and building their own boats, and using captured smuggler boats. The story of the Coast Guard patrol boats follows a similar pattern. Early impressions of effectively matching smugglers' capacities, followed by discovering problems with the artefact and their abilities to match smuggler vessels, and finally discarding or repurposing those vessels.

Chapter 8. Maritime Interdiction Operations: Evasion is a State of Mind

For a few years during the mid-1990s the main tool of the Colombian Coast Guard for maritime interdiction operations, was the 7.81 m boat known as the *Dolphin* (Chapter 7), or more commonly, the 'Colombian' version of the Dolphin (Figure 56 and Figure 57). This boat could sail, according to technical descriptions, at a speed of up to 40[62] knots. The Dolphins were the first proper boats acquired by the Colombian Navy in order to attempt to thwart smugglers' efforts to transport drugs using maritime methods.

Figure 56. Dolphin Boat.
Source: Author.

[62] Several respondents have different recollections of the actual speed of the *Dolphin*. This is probably associated with use. In the early years some reported that the *Dolphin* achieved 45 knots, while in later years 35 knots was reported. The *Dolphin* was designed and build by Mako Marine as 216B type.

An experienced Captain, who was a fresh lieutenant at the time the Coast Guard began activities, narrates the experience of the first year's operations against smugglers on board the *Dolphin*:

> In that time they just told you to find a GPS or buy your own…and go my brother…just carry a battery in the pocket…and see how to come back. (…) In that time you could end up far away from the coast alone, and you could end up carrying out the operations alone…there were no cell phones…there were cell phones but they were really expensive…or there was no cell phone coverage…so you just blessed yourself and sailed…today…seventeen…eighteen years later…we have changed our way of thinking…our way of carrying out operations (Interview).

This story is important to illustrate the technologies and practices used by Law Enforcement Agencies (LEAs) and the Military - in this case the Colombian Coast Guard Unit - but it also is important in highlighting a comparison between the more recent state of affairs regarding maritime interdiction operations and older operations. In this account there are elements relevant to understanding the dynamics of the interdiction/evasion binary. One side of the binary is made up of the practices, artefacts, plans, and actions of the LEAs working to stop the flow of illicit drugs, while on the other side the smugglers plans, devices, actions, and strategies are oriented towards evading state control. Also, to introduce the idea, that the initial binary opposition can, in some instances, by the existence of local relationships, operate in terms that create continuum rather than dichotomies.

In this chapter I will focus my attention on the practice of 'Maritime Interdiction Operations'. I present evidence to show that interdictions practices draw on, and are the result of the interplay between a local and a centralized view of smugglers' actions as well as definitions of who smugglers are (Chapter 4). I also question the widespread

dichotomy which portrays smugglers as flexible vs Military/LEAs as bureaucratic, I argue then that this is the result of an asymmetric view that overestimates the benefits of the 'small networks' and does not take into account the advantages the Military/LEAs have in regards to the production of organisational learning and, most importantly, the everyday practices of the members of the Military/LEAs.

Figure 57. Dolphin Boat.
Source: Revista Armada N. 48.

Temporary Measures of Success: Events

The seizure of drugs during interdiction operations and indicators associated with these activities, such as the capturing of narco-traffickers and their artefacts, are constantly brought to the fore to highlight the importance of the Navy and the Coast Guard in the WoD. While the Navy as a whole presents cocaine seizure statistics as an important indicator of their operational results and their continuous 'success' in the WoD, for the men and women of the Coast Guard this implies that their operational success is in turn measured in accordance to the overall objectives of the institution:

> Well…my operational results are measured by the number of kilos that I chase...my work is measured on the number of kilos…it is that simple…and I have to fulfil…the commanders say to me…you have to fulfil this goal…and that's how the game is played…and that's how we keep fighting to catch every guy…the cat and mouse game…they go out…we go out after them…and that's how they measure my performance…but I also have 14 other functions…but there's no goals regarding those. (Interview).

For local commanders and the personnel under their command these seizures are turned into 'events', and these events are important for boosting their careers and prestige, and that of the institution. Events play an important role in the bureaucratic struggle in terms of how LEAs and MOs position themselves as key players in the WoD. The importance of these events in terms of institutional prestige is expressed by an Antinarcotics Police Commander, when he explains how for him it is important to know that not only the illicit cargo will be seized, but also that the 'event' will be attributed to them:

> If I know there is a boat full of cocaine, if our intelligence tells us that there is a boat, that is going to go with 200, 300 kilos, wherever, I prefer to tell the *Gringos*, and they will catch it, because if I told the Navy, they'll catch it and they will say it was their operation, but if the *Gringos* catch it, I can say it's mine (Interview).

These 'events' are important on a day to day basis because the performance of commanders is measured by the amount of illicit cargo they are able to thwart, as a Regional Commander explains: 'If you don't catch 800 kilos a week you're screwed' (Interview). These events provide prestige and help advance the careers of officers (e.g. officers competing with each other to see who will catch the faster boats or discover the 'latest' smuggler innovation). While statistics are important at the

institutional level, 'events' are important for Navy Officers because involvement in (successful) events provides prestige, helping them to build a personal narrative of historical success. Among these events, the capture of narcosubs is regarded as one of the most important.

Maritime Interdiction Operations: Policing the Sea

Spaces are socially constructed; permissible forms of actions are clearly delimited and non-conforming forms of behaviour are disciplined (Hudson, 2004). The interdiction approach, that is to say, actions aimed at apprehending smugglers or illicit drugs, applied to drug trafficking is a way of disciplining unruly users of socially constructed space. This is based on the idea that increasing the cost of transport will make drug traffickers give up on their intention to smuggle cargo and abandon the business altogether (Echeverry, 2004; Kawell, 2001).[63] According to Mejia (2016) the interdiction approach adopted in 2006 yields far better results than other forms of controlling illicit drug traffic. For smugglers, at this stage, adaptation and substitution is more difficult, and money lost is considerably larger than in earlier stages of the drug traffic chain.

The participation of a military organisation and military trained personnel in law enforcement activities implies further uncertainties among the Coast Guard personnel about the 'goals' of their institution. In an interview a local commander explaining the need to perform policing activities noted that: 'We have the most militarized police and military doing police work'. This means that Coast Guard personnel need to comply with procedures for which they are not initially trained and which are often seen as another difficulty to overcome in performing their activities. A regional

[63] Interestingly in 1991 a document from the U.S. Army and U.S. Air Force considered that the main goal of the Military in the WoD would tend to add to other policies in their effects on the drug market (Ahart & Stiles, 1991).

commander, discussed a recent event in which personnel under his command were involved in an interchange of firing with smugglers:

> We have big strengths…but also great threats…and one of those big threats…is that we have to motivate people and say…be ready…the procedures have to be in agreement with the law…if not it is useless…is useless to achieve results…we cannot go over the procedures…because we have lots of eyes looking at us. (Interview).

In short, in order to fulfil the new operational requirements for success, Coast Guard personnel also have to be trained in legal procedures and accept the participation and collaboration of Law Enforcement Agencies such as the Police and the General Attorney's Office in their operations.

Maritime Interdiction Operations (MIO) are well-established practices of navies. They have been defined as 'operations to divert, disrupt, delay, or destroy an enemy's surface capabilities before they can be used effectively against friendly forces, or to otherwise achieve objectives' (Smart, 2015. p, 730). More generally, the term Maritime Interdiction is applied to different operations where the military or LEAs from a legitimate state proceed to board and inspect a suspicious vessel. This definition allows us to understand the role of the military in controlling the many insecurities that they must deal with below the classification of warfare: piracy, people smuggling, terrorism, and the illicit traffic of weapons and guns. In order to face non-traditional threats, navies need to transform their goals in terms of the procurement of technology, innovation, and learning. An interesting case of the adaptation of a navy in order to face asymmetric wars, is the Sri Lanka Navy, which had an important role in defeating the Liberation Tigers of Tamil Eelam, better known as the Tamil Tigers (Smith, 2011).

The specificity of MIO in the case of Colombian include: 1.) The symbolic use of the (many) borders (Chapter 6); 2.) The characteristics of the 'enemy' mean that these operations are in fact, enforcement operations; and 3.) The reconfiguration of the idea of success. Drug interdiction operations in the United States target the entry of illicit flows, exemplified by the goals of the National Drug Control Strategy (NDSC), which is to 'shield America's air, land, and sea frontiers from the drug threat' and by achieving interceptions of at least 30% of illicit drugs to discourage smugglers from doing their business (Decker & Townsend Chapman, 2008; also see Ahart & Stiles, 1991).

For the Colombian Navy, MIOs are the main tools used to diminish the export of illicit drugs, and thus to reduce the cash flows of the DSOs.[64] A Maritime Interdiction Operation, for the Colombian Navy, is the practice of 'thwarting smugglers efforts at using Colombian jurisdictional waters, coastal sectors, and rivers to perform their illegal activities or using maritime transport methods for carrying drugs to other countries' (Lesmes Duque, 2005). The concept has a central role in the Operational Normativity of the Navy.[65] Interdiction operations are a control tool, and their aim is to reduce smugglers' earning and deter smugglers from carrying out future actions. It is considered a 'defensive' operation as 'the idea is that only with our presence…with the lights…with the signs…these will people stop…' (Interview). The Coast Guards learn the procedures for MIO as part of their training. A MIO requires the deployment of an advanced technological system in conjunction with sensorial capacities. An acute sense of smell, even in the open sea can be key to pinpointing a smugglers vessel: 'We couldn't see anything, it was already dark, and we couldn't hear. But because of the

[64] The U.S. Navy in its Naval Operational Concepts establishes two different concepts for Maritime Interdiction Operations: '***Maritime Interception Operations:*** monitor, query, and board merchant vessels to enforce sanctions against other nations such as those embodied in United Nations Security Council Resolutions and prevent the transport of restricted goods.' And Interceptions operations, which are operations carried out by LEAs mainly the Coast Guard Unit (U.S. NAVY, 2010). To the OTAN a Maritime Interdiction Operation 'encompasses seaborne enforcement measures to intercept the movement of certain types of designated items into or out of a nation or specific area '(NATO, 2005).
[65] COMANDO ARMADA, Disposición 016/ 06 de COARC, Normas de Procedimiento Operacional.

smell we knew we were close, when we were about a kilometre away we started to smell the chemicals, we knew we were close' (Franklin, 2009).

The responsibilities for carrying out a MIO are distributed across different levels of the Navy: the Naval Operations Chief Office (JONA in Spanish), the commander of the operational theatre, the commander of the base or bases participating in the operation, and the commander of the operation:

> The chain of commanders receives the information and decide whether it is 'good enough' to set up the operation. Then the commander of the operation receives the intelligence package…and there within that package, we have the time variable…so…having the time variable…and of course all of the other information…the operation itself is programmed…the proper operation to which the intelligence package refers (Interview).

An intelligence package may provide only part of the information needed to design and carry out an operation, providing the objective of the operation and approximate location.

Maritime Interdiction Operations are key actions in which competing complex socio-technical systems display their tools/knowledge, creating the conditions that further help the two sides of the binary to co-evolve, and where those interactions further affect the ecosystem in which they act. A particular form of understanding the co-evolution of biological entities can be a useful device for understanding this particular form of co-evolution: the host-parasite red queen co-evolutionary dynamics. The red queen hypothesis describes a scenario in which the success of different players is based on the premise that in order to match or exceed the other, all participants have to constantly move in a continuous arms race of defence and counter-defence (Barnett &

Hansen, 1996; Baumol, 2004). Like in Lewis Carroll's book, in which Alicia and the Red Queen have to run quickly, and not really getting anywhere.

Host-Parasite is one of the many explanations for selection and adaptation. In this theory, host and parasite co-evolve. The selection process favours host genes resistance to the parasite, to defend and reject the parasite, but the parasite is also under pressure to overcome that resistance. This form of co-evolution which involves antagonist interactions often leads to a dynamic arms race (Jablonka & Ziman, 2000). Predator-prey, host-parasite compete and new adaptations in one species triggers the selection of the other species, triggering further counter adaptations in the first one. The result is a persistent change in both species, the accumulation of 'improvements' in both the host and the parasite (Goater, Goater, & Esch, 2014). When referring to biological theories, I do so only for their metaphorical value. As this research demonstrates, the Colombian Navy does not simply respond to smugglers' threats, but they are also shaped by organizational politics. Furthermore, smugglers do not only seek to overcome LEAs' capabilities. Therefore, on both sides there is more going on than simply a race between the two sides, something that neither current studies of criminal networks not theories of co-evolution fully explain.

Other metaphors of parasitic relationships have been applied to the social sciences. Serres uses the idea of the parasite as a device to explain both the asymmetrical situation of 'taking without giving' and the fundamental dependence of host and parasite (Brown, 2002). Serres' notion of the parasite is used by Martin (2015) to explain the relationship of smuggling activities and container mobilities, where the parasite is not an unproductive figure, rather it is productive in the sense that it stimulates the complexity of container security by triggering a set of innovations and inspection practices.

A successful maritime operation produces 'results', quantifiable results, expressed in the capture of smugglers boats, smugglers, and cargo. This configures a set of practices

that both create an idea of how a successful operation must be carried out, while at the same time undermining the existence of the reality that allows the very presence of those who achieve success. This represents a sort of paradoxical action in which to differentiate among what is created, what is destroyed, and what remains becomes difficult, an action in which creation and destruction cohabit.

In this ever changing environment, drug smugglers have used and innovated transport methods (Chapter 4 and 5) and the Navy has created plans and procured technologies in order to face smugglers' techniques (Chapter 6). In this chapter I describe some features of the MIO carried out by the Colombian Coast Guard. I describe the MIO as the moment in which different forms of knowledge, images of the enemy and the enemies' capabilities, and collaboration between different agencies are performed.

The Practice of a Maritime Interdiction Operation

In order to carry out a Maritime Interdiction Operation, commanders need to negotiate and balance several factors: reliability of the information or intelligence, availability of means, knowledge and experience of personnel, descriptions of the enemies' artefacts, information about the conditions of the sea, rules and standard procedures, and legal requirements. The vision of the ideal interdiction operation is exemplified graphically in the *Closing the Gap* operational strategy (Chapter 6), and is described by a regional commander as one in which:

> You got a ship, you got a rapid reaction boat, or a group of rapid reaction boats, you got an airplane doing the intelligence, you got intelligence information, so you know where exactly they're going to sail from, so once they sail, you got the ship, covering the area with its radar, pin pointing the smugglers boat, and

the rapid reaction boats start the persecution, the plane follows the smugglers boats, provides us with the vectors, until your boats make the interdiction (Interview).

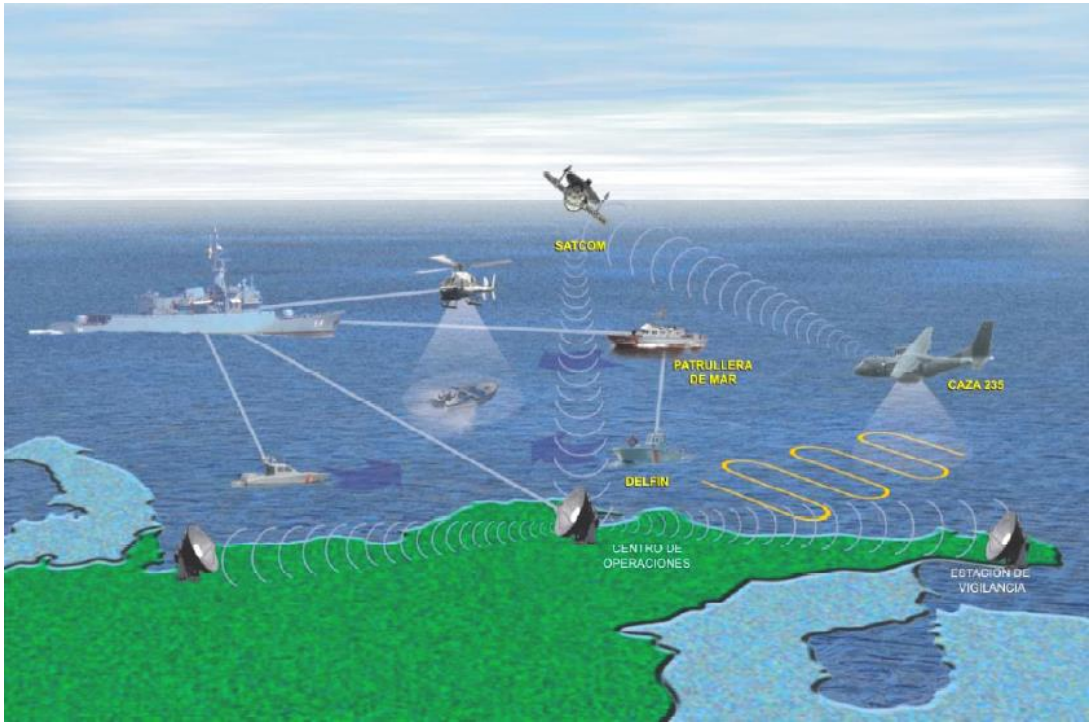


Figure 58. Ideal Maritime Interdiction Operation.
Source: Lesmes Duque, 2005.

The socio-technical system needed to achieve this vision has been put in place as a result of different learning experiences, learning how to procure technology, learning when and how to interdict, learning when to change strategies and adaptations to perceived smuggler changes, and adaptations to the macro-environment. In an interdiction operation, commanders and NCOs combine different kinds of knowledge, tacit knowledge/sophisticated local knowledge and formal knowledge (standards and procedures). A successful commander is often described as one that not only has the right training, but also has the right knowledge. A commander must know not only how to carry out an operation, but also must be aware of the cues that indicate when

to stop the operation. A Navy officer explains some of those moments in which a commander needs to stop an operation and a series of cues that could lead to this:

> There are last minute issues…those issues can indicate that it's better to abort a mission…because there's more danger than initially thought…because something broke…because something couldn't be checked…(…)…and there are some check points that can assure that the operation may be a success…and there are some points of no return…where success is guaranteed…but we have seen in the case of too many young officers...who, wanting to obtain results, jump over those point (Interview).

Maritime Interdiction Operations occur in a highly complex setting, where conditions are hardly predictable.[66] Commanders in charge of operations need to make several decisions in a short period of time, assessing their strengths, the possibilities of success, and characteristics of the enemy. A combination of different forms of knowledge and experience are important while carrying out a Counter Drug Maritime Operation, as one of the respondents described, they are 'arts and science' (Chief of the Coast Guard Unit).

In what follows I present a description of an MIO as carried out by the Coast Guard. This account was developed using descriptions provided by several interviewees. In doing so, I point out that the different innovations in these operations are the results of the interplay between the local view of commanders and the macro strategies set by the Navy, and that MIOs and the procedures after and before channel what is ultimately perceived by the Navy (State). It is here where the view of the individual and the organisation merge.

[66] Even if intelligence reports are able to produce accurate information about location and cargo, they can hardly predict how smugglers are going to react especially if they are armed.

A MIO starts with information from a reliable source or from work of the Intelligence Unit, human intelligence or technical intelligence. Here 'historical intelligence' also plays a role, that is to say, an evaluation of the reliability of that information based on previous occurrences. A critical mass of information, good enough to establish an 'intelligence package' contains information about the type of vessel, crew, approximate time and site of departure, and cargo. Different smuggler artefacts require different types of information (Chapters 4 and 5). The commander must be sure of the reliability of the information in order to plan for contingences. The commander evaluates the intelligence package. Once it is decided that the information is enough to properly launch a MIO, the planning stage begins. Commanders need to learn to plan their actions in order to safeguard the operation, and to plan their actions and the actions of their subordinates in a way that correspond with judicial procedures. Thus, according to a commander, 'We have had complicated operations…with interchange of fire out there in the open sea…we have lost people…they have lost people…but if the intelligence package and the planning is weak…well…that's where juridical procedures may arise…and you have to clearly present your objectives and the manoeuvres you undertake' (Interview). Here secrecy is important, a strict protocol regarding who should know what information is followed in order to avoid smugglers being informed of Navy operations. Units are always ready to operate; the 'infrastructure is open 24/7'. The operation is not launched until the commander is assured of a high rate of success. The commander works out the time needed to operate, the characteristics of the area where the operation is going to be carried out, and any security issues.

The commander then decides which boats and officers are going to carry out the operation, requests boats from other units or bases, or requests collaboration from other LEAs or the military if needed, and matches information with interdiction assets. The use of supplementary units, such as helicopters or planes, are subject to availability. Once the boats are launched, usually two rapid interceptor boats (a primary boat and a secondary boat) pursue the smugglers' vessel. The boats can be launched from a Coast

Guard base or from a bigger unit in the open sea. An ocean searching radar from the sea fleet, the base, or if possible from an airplane guides the operation.

The movements performed by the smugglers provide an idea of the direction. The commander and his staff then triangulate possible points of encounter and direct the boats towards them. When the smugglers' artefact is visualized by the crew of the rapid reaction units, a series of synchronized movements are performed by the Navy boats in order to approach and block the movement of the smugglers' boat. Until this point there is continuous contact between the officers in charge of the operation and senior officers at the base, but once officers in the rapid boats visualize their target, they take command of the chase. Those synchronized movements are also used to avoid smugglers' evasive actions and to get as close as possible in order to initiate the third stage of the MIO. Sailing rapid reaction boats plays a central part of the training courses, where Coast Guard personnel begin to learn different aspects of those boats, such as speed and balance. Here, many decisions have to be quickly taken: 'under difficult conditions, you have to make decisions…really tired…under stress…under fear…but you have to take the right decision…and commander ha to trust his knowledge…and how do you take the right decision?...well, that is easy…training, training, training' (Interview).

Interdiction boats get as close as possible in order to perform the next stage of the MIO, to signal visually and verbally to request the smuggler's artefact to stop. Smugglers may decide to stop or to evade. Evade here is a 'state of mind'. Navy personnel consider that smugglers will try to evade at any moment. Navy personnel may also wait for a designated sniper to be in range to shoot at the smugglers' boat. Smugglers may decide to continue performing evasive manoeuvres, use speed, waves, the darkness, in order to avoid capture. They may decide to turn back, abandon the boat and cargo, and run into the jungle where catching them is difficult. Coast Guard personnel will try to get as close as possible, and now the verbal signals are replaced by warning shots. Again smugglers may stop, retaliate, or continue. If the last option

is taken, a sniper shoots at the smugglers' boat engines, with the sniper positioned in the middle of the boat, where the boats' see-saw movement is less acute. The sniper does not look ahead, does not look at the smugglers, and does not look back, he only looks down, where the engine is located. This operation requires a continuous communication between the machine operator and the sniper, a back and forward shouting, 'Out (of range) Out, Out, there!'. The driver will try to maintain the optimum distance so that the sniper can make a clean shot.

When smugglers stop (or are forced to stop), Coast Guard boats approach and proceed to board. If drug smugglers are carrying a large amount of illicit cargo it will be easy to spot. There will be big bags, carefully packaged to avoid the sea water damaging the expensive cargo. An NCO, probably trained to perform the next task, takes a sample of the white powder and applies a reactive agent. If the mix turns blue, it is beyond doubt, they have achieved an 'event'. If the cargo is not bulky, Coast Guard personnel perform an inspection. Visual clues often give information about where the illicit cargo may be hidden. For example, an uneven size of the gas tank, an excessive or 'suspicious' number of chairs, a section recently painted or new screws, etc. may indicate where the drugs are stored. Often smugglers are smart, the cargo is not visible, there are no visual cues, and they claim to be fishermen. They may also claim to have been scared as their reason to refusing to stop. The officer decides whether to trust intelligence or to trust the 'fishermen'. The boat is towed back to the Coast Guard base. A drill then becomes integral to the operation. An NCO pierces a section of the boat, and if nothing appears he pierces another section until something pops up along with the shavings: a white powder.

Local enforcement authorities, already aware of the operation process the capture of the smugglers and the seizure of the boat and cargo. A press release is written and sent to local and national media. Here, however, the smugglers may evade again if weaknesses in the procedures carried out by the Coast Guard personnel can be used by the smugglers' lawyers to successfully defend their clients and to reclaim their freedom

and that of their boat. For the Coast Guard personnel the presence of lawyers means only one thing: the need for proof of the involvement of captured artefacts or people in drug traffic activities despite the absence of illegal drugs or any other evidence.

In a matter of hours, days, or weeks from the initial intelligence about the actions of smugglers to the capture and handling of the smuggler a complex socio-technical systems is deployed to demonstrate its suitability for the job it was assigned to. Coast Guard personnel then have the duty of preserving all the data corresponding to the MIO, as they need to produce and maintain records of all counter drug operations. The data produced is used by the attorney's office in order to formalize penal charges. It is also used by the intelligence office in order to pursue new leads. This data is also used to produce standardized methods of inspection, early alarm systems, statistics, as well as an evaluation of the operations. This set of activities responds both to the day to day necessities, and the creation of long term plans and accountabilities, knowledge of the smugglers' transport methods, Vessel types, (e.g. speed, camouflage, position, and/or route), suspected activities, risk assessment (number of people on board and suspicions of weapons or other sources of risk as well as the assessment of their own capacities, e.g. speed), and knowledge and experience of the crew. This information is used to develop 'historic intelligence', to view the changes in smuggling practices, to construct the image of the enemy, to assess the military's own practices and training, to evaluate the 'behaviour' of new boats, and to portray an image of a valuable organisation in the WoD.

Innovation in the Practice of Maritime Interdiction Operations

Comparing the early days of the Navy's involvement in the WoD and how current MIOs are carried out, it is possible to detect important changes in the ways that operations are performed. Innovations may help reinforce the role of the Navy as an able player in the WoD, setting criteria for both success and failure.

The first Coast Guard operations consisted of attempts to control maritime area 'corridors' known as main transport routes for smuggling goods and illicit drugs. This approach was consistent with activities carried out by the Navy to control territorial waters by preventing the intrusion of unauthorized ships from other countries into Colombian waters, which was the traditional role of the Navy. However, after training from the U.S. Customs Agency[67] and the U.S. Coast Guard,[68] and improvements in 'human' and 'technical' intelligence were made, the Colombian Coast Guard began a process of learning how to carry out MIOs.

By 1997, previous practices were completely abandoned, such as the practice known as 'to blend the sea'. A deputy commander explains the practice:

> To patrol the sea…and a week can go by…and you see nothing…but you're there with the boat…patrolling…that's what we called 'to blend the sea'; this early tactic has been abandoned…well…'to blend the sea'…that is something we don't do anymore…because we need to focus our resources (Interview).

In 1997 a new step was publicised by the Navy, 'creating a unique form of interdiction, with the placement of interception units in focal points', and also the development and acquisition of new boats to counter the perceived innovations of the smugglers. This

[67] Interestingly, while the Colombian Coast Guard Unit was receiving training for field operations from the U.S. Government, the Colombian Elite Antinarcotic Tactical Group received training from the British S.A.S.

[68] It is also worth pointing out that while the U.S. Customs and U.S. Coast Guard are proper Law Enforcement Organisations, the Colombian Coast Guard is part of the Colombian Navy.

included the use of fast boats with speeds up to 50 knots. Those innovations, designed with the intention to deter smugglers from the use of the so called go-fast boats, appeared to be a success. In 1997 the Colombian Navy reported 26 successful special operations against go-fast boats (Revista Armada N 73, 1998).

Go-fast boats were then the main target of the Coast Guard, as these boats were sailing from unpoliced areas of the Caribbean Coast and the Pacific Coast, although some smugglers attempted to hide in plain sight, launching their boats from small coastal towns. The realization that drug smugglers were using submersible and semisubmersible artefacts (Narcosubs) in order to transport illicit drugs is considered another step in the arms race between the smugglers and the Navy. While the idea of a MIO to catch a go-fast was already well established, and the competition concentrated on achieving speed, on both sides, the entry of the narcosubs implied further changes in the MIO.

Although the speed of narcosubs is only up to 10 knots, the Colombian Navy considered that the best approach to catch these artefacts is to catch them while they are still on the shore, in the makeshift workshops where they are built (Chapter 5). This implied a further move, the Navy needed to strengthen their Intelligence Unit if they wanted to achieve successful 'events'. Nevertheless, recent captures of narcosubs have taken place in the open sea, demonstrating that the Navy has developed the capacities for interdicting such vessels once they set sail. However, the fact that some smugglers are able to build narcosubs, does not mean that all smugglers do, and so the sea continues to be polluted with diverse smuggler artefacts. In the representations made by the Navy smugglers movements are reduced to linear ones, forwards or backwards. In absence of complete knowledge about the enemies' actions, both sides need to continue to move, as in Lewis Carroll's fable claims, to stand still, both sides need to be adapt.

Entanglements in the binary Interdiction/evasion

As I mentioned, academic literature stresses on the differences between the two sides of the binary interdiction/evasion, making an emphasis on the organizational arrangements or each. Such studies underplay, first, the hidden reality of illicit flows, while illuminating their multiple representations (Gootenberg, 2009) and second, the emphasis put in the 'separation of legal and illegal trade (and by definition mobility) masks the entanglements between the two' (Martin, 2015, p. 80). I argue that there ways to achieve a critical account, signalling that despite the existence of different notions and meanings regarding borders and authority in each side of the binary, this concept foregrounds a set of dispersed, contingent and unbounded encounters between the two sides that does not reproduce the binary opposition. There are multiple points of encounter that dissolves the binary, and that entangle the two sides, further enhancing the symbiotic relationship. First, bribes offered to Navy personnel or their direct involvement in drug traffic, second, locality and local relationships, third, uses of artefacts (Chapter 7).

As stated by Thoumi (1999) the Colombian institutions have been traditionally vulnerable to corruption, and the concentration of illicit drugs in Colombia have further enhanced corruption. Members of different LEAs and Military in Colombia have been captured for their involvement with drug smugglers. In the case of the Colombian Navy, members of the Navy, both Officers and NCOs have been caught because of providing drug smugglers with detailed information about Navy actions. Just as I was about to perform an interview to an officer, the officer, commander of a base pointed out he was arriving from an interview. In the interview with national media, he had to clarify, regarding recent capture of several NCOs, that the Navy was aware of the illicit behavior, and that he was quite conscious of the stigma on the members the Navy because of the behavior of some 'rotten apples.' Other members of the Navy have been captured because of his direct involvement in drug traffic even using the flagship to transport drugs (Semana, 2004). Finally, members of the Navy, retired or active have been captured because of the participation in the design and building of narcosubs (chapter 5), something that the anti-submersible' law of 2009

took into consideration, as a Navy commander puts it when discussing the penalties imposed by the law:

> 'And a third level...even harder...it is when the person... is... or has been public servant...because unfortunately...(he asked to himself) who are the ones who are...those who...are involved in the part of naval architecture?...well some Navy officers...those are the people who know how to sail in the sea' (Interview Navy Commander).

A second entanglement is given by the locality and the development of local relationships. I will mention two here. The first one is provided by the continued encounters between the members of the Navy and the local lawyers defending drug smugglers. As noted before, the involvement of solicitors is taken by the Navy personnel as proof that the people captured in counter-drug operations had indeed, involvement with drug trafficking networks. Furthermore, as part of their duties as witnesses, Navy officers routinely, they have to interact with such solicitors and as one officer stated 'You get to know which people is involved in drug smuggling, and they get to know who are you.' (Interview). As result of those encounters, and continued interactions, the distance between the two sides of the binary is further diminished, having an effect on the perceptions of effectivity of the Navy actions, first, by discouraging Navy personnel, 'You capture them...spend time and effort doing that...and then you see...you see them in the streets in a couple of days...' (Interview). Second, in regarding with personal safety and goals, 'You have to do your job, but you're job can't be too good because the smugglers will get an eye on you...but it has to be good enough, so your superiors are also happy.'

Asymmetrical Views on Flexibility

While the idea of 'improvement' and 'evolution' in regards to drug traffickers transport methods is present in the media, as shown earlier, some Navy officers' describe drug smuggling technologies as moving in cycles, whereas others see a

process of constant improvement and development. Different accounts of the same process could lead to different decisions regarding the technical requirements of the boats and other needed equipment. Those narratives collude with continuous changes on the Navy's side. The binary is continuously in flux and is highly unpredictable. In this circumstance flexibility and adaptability are key to the survival of the players (smugglers can be captured, smuggler rings thwarted, commanders removed if they do not achieve results).

The Navy and smugglers have often been distinguished by the dichotomy between flexibility and inflexibility, which some see as explaining their relative competitive advantages (Chapter 1). The flexibility of smugglers is counter-posed to the bureaucracy of the state and the military and LEAs. This is considered a key element in describing the 'lack of catching up' of LEAs with drug traffickers (e.g. Kenney, 2007). I argue that this dichotomy arises when the descriptions of the drug market are made from a focal/central point of view, where the metaphors used to describe the drug market are unidirectional, are attached to cause and causality, and define what it moves and what is moved. This dichotomy also adopts the view that organisational routines are a source of inflexibility and inertia (Feldman & Pentland, 2003). I also argue that these descriptions only take into account the 'advantages' of the small institutions and not the advantages of big institutions. Bouchard and Ouellet (2011) argue that there is in fact little correlation between size and the failure of smugglers networks, and that smugglers rather than trying to 'keep things small' should 'keep things as small as necessary'.

Golden and Powel (2000) point out that the difficulties in defining the term flexibility, which is both multidimensional and polymorphous. Furthermore, the idea of flexibility has positive connotations (De Leeuw & Volberda, 1996). Smugglers have been consistently redefined as 'networks' (Chapter 1), and this conceptualization poses advantages over concepts such as cartels in providing nuanced interpretations of the phenomena and explaining some reasons for its endurance. In doing so, traits of

network arrangements, especially the flexibility attached to 'Network Flexibility' - understood as the ease with which a network rearranges itself - replace nodes if they decline, while maintaining the logic of the network (Urry, 2003) is set to apply also to 'smugglers networks'.

The ideas of flexibility also play a role in the discourse of the Colombian Navy (Chapter 6). It is necessary for them to adapt their organisational settings to what they perceive to be the evolution and dynamism of the drug traffickers. Openness to change has been promoted by Navy Officers as one of the key factors that will help them to win the WoD. The Commander of the Navy in 2006 stated: 'All organisations are dynamic, including military organisations. This organisation should adapt to the strategy, therefore every time there is a strategic change, it is necessary to re-design the structures of the organisation' (Revista Armada, 2006).

Innovations in MIOs show that Navy personnel are able to respond and adapt to smugglers' innovations. A good example of this adaptability is represented in the early days of the Coast Guard. Unable to match the speed produced by smugglers' fast boats that easily out did the *Dolphin*, Coast Guard personnel quickly started to use captured smuggler artefacts in MIOs. A captain narrates such occurrences: 'We catch those boats, brand new engines, the owner never showed up, we painted them grey (the colour of the Coast Guard Units) and we used [the boats] against them' (Interview). The many possibilities opened up by collaboration with other LEAs and the military, may also be perceived as a way to increase flexibility.

Another important element to take into account when comparing flexibility/inflexibility is the high degree of autonomy of Coast Guard Commanders in the open sea.[69] Finally, in their day to day activities, Navy Officers transform, repurpose, and adapt the tools at hand with little regard for waiting for orders from their superiors. For example, they use for interdiction the boats seized from drug

[69] A trait that is common in all navies around the world.

smugglers without permission from superiors; or change or 'improve' their boats with the tools they have at hand: 'The ARA (a boat) started with a 100hp motor and it broke, so we said let's put a 150hp on to see if runs and yes it did, but it also broke, so we said it started to run faster with the 150hp so let's try with a 200hp and see what happens, and yes it worked and there you see it' (Interview). As shown in this last excerpt, mechanics have a high degree of autonomy in tinkering with boats, changing parts to improve speed, as well as improving conditions on board boats.

Time and resources are scarce and interdiction operations are high risk operations (let alone the fact that an interdiction operation can easily turn into a rescue operation). While the Colombian Coast Guard has been investing in the codification of knowledge of interdiction operations (e.g. through training courses at the Coast Guard School, different types of knowledge that can hardly be codified are put into work while carrying out such operations.

The interdiction approach as pursued by the Coast Guard responds to a different set of pressures. In focusing on the capture of go-fast boats carrying 'big amounts' of illicit drugs and narcosubs in the open sea or on the shore, the Coast Guard reaffirms: 1.) That their visions about smuggler actions are correct, 2.) That the set of technologies and practices are appropriate, 3.) That the Coast Guard is an able and a reliable player in the WoD, and 4.) That they are capable of adapting to key technologies deployed by smugglers. Strategies that have resulted in promotions for older officers, can be perceived as good enough for new officers, and technologies or innovations that do not provide 'success' in the short term can be abandoned before reaching their potential. But, also, while most of what has been described in this chapter responds to 'day to day' activities and learning by experience, it is necessary to take into account the importance of the broad Plans and Strategies, as well as policies of control and broad ideas of security.

I have suggested that the use of metaphors that express causality may lead to an asymmetric view of the phenomena. I pointed out the contributions of academic literature on more nuanced explanations of drug traffic organisations, moving away from the concepts of centralized cartels to that of the flexibility of 'networks', counterpoised with the inflexibility and the bureaucracy of LEAs and the military, as suggested by my description of the practices of Navy personnel. This asymmetrical view highlights the many advantages of the small, 'flexible illegal network', usually leaving aside disadvantages of the small organisation, such as accumulation of knowledge and a lack of information. It is important to remember that still much of the transport of illicit drugs is carried out using custom built or off the shelf boats. This view takes the military as a whole, and overlook the many changes of personnel, alliances, etc, that the size (and obviously their legal status) allows them and how this impacts changes. The Coast Guard (and the Navy) is an interesting case in that officers have a high degree of autonomy that permits them to make decisions often without consulting with superiors, which, for example, led them during the mid to late 1990s to 'change the flags' of captured smuggler boats and use them against them.

Chapter 9. Revisiting the Binary Interdiction/Evasion

In the previous chapters I have shown how the Colombian Navy, specifically the Coast Guard Unit, has innovated in order to create measures to match (or counter) smugglers' transport methods through implementing new strategies and adapting various vessels. I have demonstrated how solutions and strategies are envisioned in the arena of command and how technological choices and practices are implemented in the arena of practices. Collaboration and competition among members of the Navy and between the Navy and other state agencies also play a role in shaping their choices and practices. The bureaucratic politics model is a useful template to understand these dynamics. I have also showed how the dynamic of dispersed peer innovation may explain how smugglers innovate. In short, both state players' and smugglers' actions imply a constant reassessment of the interdiction/evasion binary.

The current organisational arrangement of the Colombian Navy is no doubt the result of decades of their involvement in counter drug operations. The specialization of the intelligence unit, the creation and strengthening of new units, the establishment of new bases and procurement of new technologies are all the result of a process of generating plausible futures as well as creating 'facts' about the present. These transformations, big and small alike, entail visions of both the enemy's history and plausible trajectories as well as the assessments of their own resources and possibilities. The Colombian Navy creates visions of technological development based on several factors: interpretations of the development of others navies, technological fixes, histories of previous experiences, and interpretations of enemies capacities, which entails defining who the enemy is. Each of those factors enter into the picture with their own forces but they are necessarily bound together. These plans represent attempts to respond to the questions, how to patrol 928,660 km^2 of territorial waters with the available resources, what other resources are needed to do the job, and what are the ultimate objectives by which we should measure the performance and effectivity of the plans.

In the process of replying to these questions the plans and strategies involve a series of interpretations about the technical capacities of drug smugglers.[70] Interpretations are collected through different forums and they express the tensions between highly local and contingent knowledge and other forms of formalized knowledge and expectations.

I argue that despite the state's efforts to achieve global views and provide global responses to the illicit flows, the actions of the Coast Guard personnel are mostly the result of their localized views. During the short periods they are posted in the bases, the officers and NCOs need to learn about the local threats and to use local available resources to counter such threats. Learning is a key aspect of the role of local commanders. Nevertheless, learning is subject to limitations in which intra/inter competition and the culture of secrecy are prominent. Under these conditions, sharing knowledge even if stimulated and actively encouraged from above (by the central government and Navy commanders) it is often difficult to implement. Commanders (need to) conceal information from subordinates about the planning or outcomes of operations, due to fears of leaks and because of a culture of secrecy that surrounds a strong emphasis on seniority. On the other hand, knowledge about how to patrol the ocean, how to interdict, and specifically how to achieve *events* is also gained in informal forums, where subordinates can learn from the experience of senior officers and NCOs. Despite the best efforts of the Navy and Coast Guard to formalize and transfer knowledge to Coast Guard personnel, interdiction is still part 'science' and part 'craft' as an experienced Navy commander explained. This demonstrates what scholars from STS have stressed regarding the difficulties of capturing and disseminating 'sticky knowledge' (Pollock & Williams, 2008). Learning for the Coast Guard is, thus, a process of adapting their actions in order to thwart smugglers actions,

[70] The Colombian Navy also has responsibility over 12,660 km^2 of navigable rivers. In order to perform control this area the Navy possesses a riverine force that has its own specialized training centres and their own practices for the procurement of technology. Riverine forces also play an important role in the control of illicit drugs and they are involved in the Colombian conflict in a different way.

which demonstrates their value as an able counter drug unit. In this sense learning is political.

The Caribbean Sea and Pacific Ocean waters serve as the canvas on which the complexities of the interdiction/evasion binary is played out, with multiple movements constantly tangling and untangling. This space is populated by a multitude of smuggling rings attempting to evade state control and a multitude of state agencies attempting to stop smugglers from departing or reaching their destination (in this I include not only the Colombian Navy, but the Colombian Police and other LEAs, and international LEAs such as the DEA). This can be seen as a *Red Queen scenario* in reference to reference to the paradoxical world of Lewis Carroll's Red Queen in *Through the Looking-Glass and What Alice Found There*, in which in order to even stay place both sides have to constantly move in order to remain in the same place. The metaphor suggests that facing intense direct competition organizations will attempt to gain competitive advantages, thus creating an imbalance in their environment. In turn, rival organizations will also develop theirs to match rivals and improve their performance, the process self-reinforces, and as a result, competitive advantages are only temporary (Barnett, 2008). For the WoD implies that there is a constant discontinuity created by both smugglers and LEAs innovations, in which both sides innovate to stay in the game.

In this sense it is possible to affirm that both smugglers and enforcement agencies co-evolve. The two sides of the binary, nevertheless, respond to different motivations for innovating. For smugglers the promise of a high monetary rewards may be sufficient motivation (although this may not be the only motivation) to innovate or to attempt to evade state control. On the other hand, enforcement agencies need to constantly demonstrate their value as an able counter drug player, and individual commanders and NCOs may receive rewards in the form of decorations, promotions, etc. after

successful operations. While the academic literature on organised crime and drug studies have stressed the competitive advantages of smugglers inscribed in a general pattern of response and counter response, I argue that the metaphors and explanations in use are mostly asymmetric and do not fully capture the co-evolutionary antagonists relationship.

At the centre of the Coast Guard's actions as an able counter drug unit are learning and adaptation. Learning how to control illicit flows, learning how to procure technologies and learning how to practice interdiction. For both sides of the binary, being able to succeed in their goals implies using a combination of different forms of knowledge. Drug smugglers innovations are aimed at gaining stealth by innovating through concealing methods, generating more speed on their boats, and by designing and building artefacts. The Coast Guard has innovated in methods of interdiction and through the use of different technologies in order to thwart smuggler efforts.

Smugglers and transporters of illicit drugs manage to combine different forms of knowledge in order to innovate smuggling transport methods. They do this through combining off-the-shelf technologies with local adaptations, and also combining traditional forms of local knowledge, such as dead reckoning sailing, and fishermen's and goods smugglers' information about unpoliced areas and maritime routes. The Coast Guard and the Navy, on the other hand, need to combine different forms of knowledge with broader organisational goals and visions. Local commanders and NCOs need to gain quick knowledge of the main threats (smuggling methods) in the areas where they are deployed, and at an institutional level the Coast Guard must attempt to consolidate such information, which will later be displayed (often in the form of statistics, but also through displaying captured smuggler vessels) as proof of success.

The transformation of the Colombian Navy from a traditional *blue waters navy* into a military organisation with police functions implies the transformation of their practices. Their practices have changed from patrolling the sea in order to generate, albeit, temporary control of *known* or traditional smuggling routes (mostly historical good smuggling routes in the Caribbean), to carrying out interdiction operations based on intelligence, which includes even carrying out operations to capture smugglers on land and carrying out police duties in violent scenarios.[71] The retention of successful adaptations plays an important role in the personal goals of both local and regional commanders. Carrying out intelligence based MIOs allows officers to launch operations only when they are able to attach a high degree of success to them, when according to their assessment of the operation, the risk of failure is low, guarantying the achievement of an *event*. This is held by the Navy as the best strategy, because it allows the maximization of scare resources. I argue that this is also a process of reducing uncertainty. By performing MIOs based on intelligence Coast Guard commanders are able to combine their knowledge of the local conditions of the sea and their experiences of previous smuggler actions in the area, with (more or less) accurate information about smugglers' localization and plans. This permits the local commanders to generate an assessment of the enemy's capacities and resources that need to be deployed in order to achieve an *event*.

The Colombian Navy has been able to deploy a sophisticated network of both human and technical intel, specifically since 2006 due to the creation of the Navy Intelligence Unit, which became a separate office just one level below the general command of the Navy. This Unit holds the same level of importance as offices such as the Chief of Operations or Chief of Planning. These changes confirmed the importance of information gathering and intelligence in this *new navy* as referred to in the Strategic Plan of 2003, when information started to be considered a key element in the Colombian Navy's role in defeating so-called narcoterrorist organisations. The information provided by this office has given the Navy the capacity to plan operations

[71] For example during my fieldwork in Buenaventura, personnel from the nearby coast guard station was deployed in security duties in the city due to a recent wave of rival gang killings.

in order to capture highly valuable targets and to participate in dismantling or disrupting smuggler rings. The Colombian Navy is then able to present themselves as possessing knowledge about both the patterns and directions of illicit smuggling flows, as well as detailed tactical knowledge about how, when, and where specific smugglers are due to set sail or approximate coordinates of rendezvous points or makeshift shipyards. However, smugglers also make attempts to gain insights into Navy operations, often by trying to bribe officers and NCOs so as to have accurate information of Navy ship locals or advancements on investigations.

Focusing their efforts and resources to produce *events*, rather than focusing on other forms of patrolling the sea, has helped the Navy, and specially the Coast Guard Unit, to disrupt several smuggler rings using maritime routes, such as when the Coast Guard captured two individuals responsible for the design and building of semisubmersible artefacts in 2008 (El Tiempo, 2008b), and also by seizing important quantities of drugs on the shore and en route to their destinations.

The actions of Coast Guard personnel is subject to a constant trade-off between formalized knowledge acquired during training, personal experience, access to information, local and global views of the phenomena, and local and central goals. When transferred to a new base, officers receive a *brief* about recent and current threats, what the most likely methods of transport used by drug smugglers are, recent 'behaviours' of illicit flows, and the current state of Coast Guard assets. These briefs are the result of recording smugglers' actions in the area, as well as the minutes of meetings realized by staff after interdiction operations undertaken by the Coast Guard in the area. This information is complemented with information gathered through informal forums and experience. Being able to gather, handle, and deploy such information to perform MIOs and to make sense of smugglers' movements is integral to the base commanders' job and for how success is interpreted. Although there is no formal threshold over commanders' performances expressed through the quantity of cocaine seized, recent experiences are used as informal baselines for gauging success.

Nevertheless, I argue that success in carrying out maritime operations, in seizing smugglers artefacts, in capturing smugglers, or the less tangible effects of Coast Guard actions such as discouraging smugglers, is a paradoxical action. This is because the Navy's successful actions in stopping and discouraging smugglers creates a new unknown reality, and produces diverse interpretations of the results. By capturing a group of smugglers or smuggler artefacts, Navy personnel will inevitably be faced with new flows of illicit drugs that will occupy new spaces and often the same spaces as the one removed. Creating a paradoxical reality in which it is increasingly harder for both smugglers and the Coast Guard to differentiate between what it has created, what it has destroyed, and what remains.

The above is key to understanding how the two sides of the binary co-evolve, and how these interactions further affect the ecosystem in which they act. When smugglers set sail they must confront the risk of already having been identified by state agencies, or that in the course of their journey the Navy will detect them. While for the Colombian Coast Guard the capture of smuggler artefacts leads to re-interpretations of what the capture means. Here the Navy makes attempts to reconcile the localized view of the Navy Commanders with that of the central views. This is visible when a *new* transport method is captured and in periods when a particular transport method *disappears* from the scene. Local commanders and central commanders should make decisions about how to understand those occurrences. Do they imply that resources should be spent on targeting this *new* transport method? A good example of this was the discovery of parasitic devices attached to cargo container boats in a port on the Caribbean, which led to questioning whether resources should be allocated to conducting underwater searches through the training and deployment of a scuba diving team. Does a reduction in capturing a particular method of transport mean an actual decrease in its use, as in the case of the narcosubs, or have they just become more difficult to detect?

Both the success of smugglers and the success of the Coast Guard are temporary. In chapter eight, I demonstrated the capacities of Coast Guard personnel in facing

perceived changes in smuggler behaviour. Coast Guard personnel learning from their experience and from failed MIOs, particularly where the speed of smugglers' boats made it difficult to capture them, were able to modify their boats and procurement practices in order to equal the capacities of smugglers. Even when designing and building their own boats, Navy personnel were able to produce a response in less than six months, and even quicker when they adopted smuggler boats into their own fleets. Here then, even with the further adaptations of smuggler artefacts in order to increase speed (through adding more engines or improving hydrodynamics or aerodynamics), the Coast Guard was easily able to match the skills of the smugglers through local commanders and mechanics tinkering with boats in order to acquire better capacities.

The data presented in chapter seven about the history of patrol boats and in chapter eight about the changes in interdiction operations aimed at seizing narcosubs, indicates a similar pattern. In the first case, in order to achieve what is perceived to be the major advantage of smugglers, speed, local commanders and personnel, as well as central command, made improvements to their own fleet in order to achieve similar or superior speed. In the second case, the Navy changed their strategy and focused their attention on capturing submersible artefacts that were still on the shore. Also when facing the narcosubs, the Colombian Navy was able to establish contacts with members of the Senate to create the necessary legislation in thwarting those artefacts. I argue that, focusing solely on the temporal advantage of smugglers fails to provide a complete overview of the dynamic nature interdiction/evasion scenarios. Such a view only produces snapshots of a broader picture. For example, by creating a strategy to capture narcosubs based on intelligence and before smugglers set sail, the Colombian Navy was able to stop several of these artefacts despite the vessel's characteristics or improvements introduced to it by smugglers.

Coast Guard personnel were also able to exploit the success of smuggler ventures in order to disrupt future endeavours. This is done by learning how to pick up cues from the areas where they are deployed, and learning from previous operations. Navy

personnel are able to distinguish signs that may contribute to the capture of a smuggler ring. In some poor areas simple details such as who bought a new refrigerator or had an expensive party, may serve as an initial lead. Another important factor about locality is displayed by references to a local form of knowing, *Malicia indigena*, which might be defined as a way to interpret one's surroundings and to be aware of possible wrongdoings by being able to think as the *other* does.[72] Details such as why a *Lobster* boat is carrying more gas than what is needed for a fishing run, or why a 'transport boat' is equipped with powerful engines and communication devices, or why suddenly a humble fishing boat is trying to comply with all regulations, are noticeable characteristics for those employing *Malicia indigena* as they recognize these details as connected to potential illicit intentions. In order to be able to disrupt smugglers actions, those in charge of information gathering and processing need to be able to make sense of smuggler slang, or be aware of different activities in the areas as smugglers attempt to disguise their conversations about planning or advancing smuggler runs as part of local activities, as demonstrated in these examples: 'it's a good fishing season', or '[there are] too many sharks on the ocean'. By knowing the regular behaviours of the locals, these local activities may provide the Coast Guard with an understanding to use such phrases as leads for operations.

As pointed out, the *malicia indigena* have both negative and positive connotations. In the case of the Navy, having the traits of *malicia indigena* is seen as positive and serve to NCOs and Coast Guard Personnel, to both, understand the resources used by smugglers and shorten the distance between them and Officers. The tension between the use of *malicia indigena* and formal knowledge was during fieldwork, expressed several times. A civil servant from the Ministry of Justice stated 'we should not use that term, and we should teach the police and navy personnel not to use it, how are we going to go to an international meeting and say, we capture this because of *malicia indigena*, it doesn't make sense' (Interview).

[72] This trait also appears in my fieldwork with Antinarcotic Police that I did not report on in this thesis. Policemen often interpret their success in discovering novelty smuggling methods as a result of deploying *Malicia Indigena*.

The Colombian Navy attempts to make sense of smuggler movements (or at least to make public displays of such knowledge), by creating images of what the enemy is, and by attaching temporal and geographical patterns to smugglers' behaviours. Central discourses of who the enemy is (e.g. 'Narcoterrorism') are coupled with long term interpretation of smugglers' 'behaviour' in the field and this is tied to geography. Although this is not necessarily the same as the view of Navy personnel in the field in which the localized view of commanders coupled with their experience may produce different versions of smuggler 'behaviour' such as 'going for the basic', 'returns to earlier forms of transport', or 'innovating in forms unknown to the Navy'.

Smugglers also benefit from local knowledge, as shown in chapters four and five. The process of building a narcosubs is often carried out by employing natives with knowledge of fibreglass handling, maritime engines, woodwork, etc. In doing so, they take advantage of knowledge acquired by such people when carrying out legal enterprises. In remote areas where access to workshops is highly difficult, and where off-the-shelf vessels and spare parts are difficult to obtain local fishermen routinely tinker with engines[73] and build their own vessels. The crew is also recruited from among locals and experienced seamen, taking advantage of existing social ties, and it is not uncommon for there to be kinsmen among the members of a crew.

The way in which the dynamics of the interdiction/evasion binary have been traditionally narrated places the initiative on the side of the drug smugglers. The characteristics of drug smuggling organisations are presented as having a clear advantage. Their smallness, secrecy, flexibility, are all used as explanations of how the binary plays out in favour of smugglers. This set of explanations is also present when interpreting the *evolution* of smuggling technologies, in which smuggling vessels are, according to this account, constantly being improved, or a set of new artefacts replace

[73] During fieldwork when conversing with a retired drug smuggler, he was tinkering with a rusted engine trying to rescue some pieces. He complained about the waste of new engines when doing trips.

or become the preferred method of drug smuggling. I argue that this interpretation is the result of the collision of localized views and *events* with a unifying view of smuggling organisations, in which the actions of particular groups are held accountable for changes occurring in distant places and among independent groups.

Several interrelated arguments are then brought to the fore in order to explain the 'competitive advantages' of 'organised crime groups' within which drug traffickers are prominent. In short these explanations merge organisational flexibility, networked organisational strategies, and innovation. Already in 1994 the United Nations in the preliminary document introducing the *World Ministerial Conference on Organised Transnational Crime* held in Naples, Italy, from 21 to 23 November, affirmed that organised crime 'can only be met if law enforcement authorities are able to display the same ingenuity and innovation, organisational flexibility and cooperation that characterise the criminal organisations themselves' (United Nations, 1994). The Report of the International Narcotics Control Board for 2001 also affirmed that: 'For a drug trafficking organisation, the network structure has distinct advantages over the traditional hierarchy: it has a well-protected, dense core of organisations or people connected to a looser periphery by a multiplicity of links' (International Narcotics Control Board, 2001, p. 2). Concerning Colombian drug smugglers it has been argued that the new smugglers are often: 'more educated than the former traffickers, and have developed several strategies, methods and techniques aimed at making the business more dynamic, sneaking away from law enforcement' (López Restrepo & Camacho Guizado, 2007, p. 26). Finally, for Kenney (2007, p. 106) the 'real advantage in competitive adaptation is informational, not temporal. Traffickers know when, where, and how they are going to carry out a crime, law enforcers do not'.

Small, relatively flat organisations are said to produce more flexible actions and be highly adaptive. I argue that those interpretations underestimate the resources and capacities of big organisations. The Colombian Navy is able to produce fairly accurate information about rendezvous points, the size of the loads, smuggler artefact, etc.,

carried out continued operations over long periods of time, and they have the ability to deploy a set of procedures and artefacts in order to thwart smugglers' actions. For smugglers, even when performing evasive moves (such as in cases when 'go-fast' boats are able to out run Coast Guard boats or when narcosubs are able to disguise their heat signature) usually once they are detected the Coast Guard is able to carry out sustained operations until they are able to capture the suspected vessel. Even in conditions where a commander is not able to deploy all the resources available, Maritime Interdiction Operations are almost never a one to one affair. Once smugglers are detected, the asymmetry of resources favours the enforcement agencies. Furthermore, comparisons between decision making flows in which flexibility/inflexibility and a slower decision making pace is attributed to law enforcement due to their larger number of layers between upper command and people in the field do not take into account the high degree of autonomy of base commanders in making decisions about which operations to undertake and how to tackle them. The high degree of flexibility once an operation is set up and in day to day activities on the local bases (such as activities involving mechanics tinkering with vessels in order to improve their capacities), are often a result of their own initiative or a discussion with immediate superiors.

The Colombian drug market is a highly complex scenario, where a multitude of groups alternatively compete or collaborate in order to get their share of earnings from inflated prices of a prohibited good. This is complemented by a long history of territorial disputes and violence. It has been assumed that since the early 1990s the preferred method of wholesale transport used by drug traffickers has been the sea. Traffickers use different routes and methods in order to transport drugs using cargo containers, trawlers, go-fast boats, and custom-made vessels such as narcosubs. It is also widely assumed that prices of the illicit cargo increase with transport, and transport often accounts for a high percentage of the cost for the owners of the illicit goods. The role of the Colombian Coast Guard is to detect and capture drug smugglers and drug smuggler artefacts that are using or attempting to use maritime routes to transport illicit drugs. In twenty years this Unit has been transformed from 'some offices and four

boats' to an array of stations (nine in the Caribbean and three in the Pacific), commands, patrol boats, interceptors, and radar systems. In twenty years, from 1994 until 2014, the Coast Guard has been able to capture countless smugglers and artefacts. For example only in 2007 this Unit carried out 35 maritime interdiction operations leading to the capture of 40 smugglers and 21 vessels including one narcosub and nine tons of cocaine. The deployment of these resources has created obvious incentives for smugglers to adapt and innovate.

Several policies have been put into place by the Colombian Government in order to disrupt the drug market, mainly aimed at reducing the supply of drugs. Reduction of the coca plant fields through aerial fumigation or manual eradication, incentives offered to farmers to replace coca fields, the capture of ring leaders, the destruction of *laboratories*, the interception and regulation of chemicals used in the production of cocaine, and the interdiction of cocaine en route to their destination. This in turn has implied that different state agencies must compete for the attention of the state in order to create policies and secure budgets to carry out their activities. For example, during the 1980s and early 1990s the Colombian Police carried out their policies by targeting top members of drug trafficking rings as a strategy to end drug traffic from Colombia.[74] Since the early 1990s the Colombian Navy has highly benefited from the process of the militarisation of the WoD, which has increased their budget and their participation in the WoD.

The existence of many counter drug measures and different agencies, which display their achievements and demonstrate the effects of those achievements, have helped the government in accomplishing its goals in the WoD. The Colombian Navy continuously claims its success, as well as exploits the uncertainties that arises from those successes. On the one hand, The Navy displays figures accounting for their

[74] An widely accepted interpretation affirms a couple of years after the death of Pablo Escobar and the end of the Cali 'Cartel, around 300 smuggler groups existed in Colombia (López Restrepo & Camacho Guizado, 2007).

accomplishment, such as being the most successful state agency in terms of cocaine seized. As highlighted, the Navy presents their results in the form of body counts (Andreas & Greenhill, 2010). For example, the new article released during the 188th anniversary of the Colombia Navy presented a list of 'outstanding operations' listing the amount of cocaine captured, the capture of narcosubs, the number of smugglers captured, and the like. The same sort of indicators are found in the editorial of the Navy official magazine and reports to the Ministry of Defence and other relevant offices. On the other hand, the Colombian Navy has requested to continue 'Closing the Gap' that smugglers continue to use. In short, the many measurements presented by the Navy as proof of success are also mobilized as proof that more resources need to be deployed.

The set of paradoxical results mentioned earlier also plays a part in the interpretation of results. If somehow the Navy manages to effectively close these gaps, this would put stress on the resources assigned to the Navy. The interdiction/evasion binary is, then, essentially a symbiotic relationship. As pointed out by Andreas there is a 'paradoxical, double-edged, and even interdependent relationship between the business of smuggling and the business of trying to thwart it' (Andreas, 1999, p. 86). Smugglers benefit, not only from the prohibition of drug trafficking and the inflated price that it brings, but from interdiction operations carried out against other groups that allows for the further negotiation of prices. If controls are tougher it implies higher risks of capture, which can be negotiated to increase the prices of transporting the illicit cargo. The Navy benefits from the existence of smugglers and their innovations in order to reinforce its place as an able counter drug agency.

While their participation in the WoD has enable the growth of the Navy and their continued importance in counter drug policies to be recognised by the central government, concerns about the 'real' role of the Navy persist. Those concerns were initially expressed in regards to the possibility that carrying out policing duties could lead to a loss of identity of the Navy, as well as what was considered by the older

generation to be the real purpose of the Navy, deterrence and/or defence against foreign countries. Indeed, despite possessing a unit whose main focus was conducting counter drug operations, until 2005 the Navy lacked strategic goals related to their role in the WoD. This transformations was led by admirals who, since their initial days as part of the Navy, have participated in counter drug operations, and who witnessed or assisted in the boosting of the Coast Guard Unit. Finally, the multiple roles of the Navy are stressed in the strategic plans and strategic concepts, where counter drug operations are articulated as targeting threats to territorial sovereignty, not necessarily as counter drug operations. As such, the official discourse of the Navy considers smugglers, not as law offenders, but as a threat to national security. Discourses about the role of the Navy in the WoD and its procurement of technology are articulated as a response/counter-response pattern, usually based on the interdiction/evasion binary, but sometimes with interwoven discourses about security and border control.

Keeping the Coast Guard as part of the Navy has facilitated several aspects of counter drug operations, such as reducing the costs of infrastructure and training. This also means, however, that the Navy personnel that manage to acquire a high degree of dexterity in carrying out counter drug operations may be transferred to a different unrelated post, unable to transfer valuable lessons to newcomers.

I argue that a more nuanced interpretation of the directionality of the interdiction/evasion binary is possible. As Wacquant puts it, 'binary oppositions are prone to exaggerate differences, confound description and prescription, and set up overburdened dualisms that miss continuities, underplay contingency, and overstate the internal coherence of social forms.(1996, p. 124-125)' A new interpretation would take into account both the way smugglers produce and deploy their artefacts and the way the Coast Guard personnel acquire and deploy theirs, but also the intersections between the two sides. I agree with Kenney when he affirms that enforcement cannot act upon smugglers that they do not know, but the same can be said about smugglers, who often attempt to perform their journeys without knowing that they are under surveillance. It has also been argued that smugglers often change their transport method when discovered by enforcement agencies, or that they move from one region

to other, or that smugglers can even attempt to change their methods before being detected in order to avoid detection. In chapter five I argued, that the process of innovation in the case of narcosubs demonstrates that pull/push explanations do not necessarily explain how outlaw innovation is produced, and I argued that a more appropriate account of the development of the narcosub and of smuggling technologies could be provided by the concept of dispersed peer innovation.

Conclusions

Based on interviews and documentary analysis this thesis presents a study of the artefacts and practices developed by Colombian drug smugglers and the Colombian Navy in the War on Drugs (WoD) between 1994 and 2014. Specifically it explores the dynamics of the interdiction/evasion binary. The research included a detailed analysis of the practices of the Colombian Coast Guard Unit since 1994 and how these were shaped by the concerns of the central government and multilateral agencies regarding the increasing use of maritime routes by smugglers of illicit drugs.

The preliminary question focussed on the claim, frequently presented in the academic literature and media, that drug smugglers are somehow *one step ahead* of law enforcement. The thesis is mostly shaped, however, by a desire to correct the oversimplified accounts of the nature of the practices of both sides of the interdiction/evasion binary. One side of the binary is made up of the practices, artefacts, plans, and actions of the Law Enforcement Agencies (LEAs) working to interrupt and impede the flow of illicit drugs, while the other side is dominated by smugglers' plans, devices, actions, and strategies oriented to evade state control. The oversimplified versions of the dynamics of this binary present an account characterised by flexible, innovative, and highly adaptive organisations – smugglers – on the one hand, and the inflexible LEAs, with slow decision making pace and slow to change and adapt organisations, on the other.

Evidence from the seizure of smugglers' artefacts has been used as a means to demonstrate smugglers' innovative capacities. However, when approaching the phenomena from a different perspective, it can be argued that a closer look at the practices of both sides of the binary provides a more balanced image of its dynamic. I

have argued that rather than a continuous process of improvement or *evolution*, the development of smugglers' artefacts can be better understood as the outcome of dispersed peer innovation. On the other side of the binary, Navy practices, rather than being bounded by the *inflexibility* resulting from a hierarchical bureaucratic organisation, can be better understood as emerging from the interplay of the localized views within and between organisations, the experiences of officials and NCOs, and rewards and institutional goals. In other words, the shaping of military practices is the result of the interplay between the arenas of command and the arenas of practice, each having their own political, social, and technical visions.

The War on Drugs, that is to say the efforts to curtail the production, distribution and consumption of various hallucinogenic and stimulant goods, through the prohibition of their consumption, has since the early 1980s been increasingly driven by law enforcement policies, and the control of the production and supply has increasingly involved the participation of military forces including the militarisation of policing practices. Interdiction efforts then play an important part in the control of illicit flows, and since local and multilateral agencies consider maritime routes to be the main transport method used by drug traffickers, maritime interdiction operations are a key moment in the WoD.

The operational part of this interdiction/evasion binary in the sea involves on the smugglers' side a wide array of artefacts including some fairly old technologies: fishing boats, trawlers, and *bricolage* artefacts, narcosubs and go-fast boats, which due to their cargo have the capacity of creating global effects. The deployment of the Navy and specifically of the Coast Guard is aimed at controlling illicit flows. In order to perform their job, the Coast Guard has increasingly relied on a combination of detection systems (radars) and human and technical intel, but their job is not fulfilled until smugglers' artefacts are stopped and their cargo seized. The Coast Guard Unit, specifically, relies on a combination of different practices and boats. Far from the

sophistication of contemporary military technology, the WoD, as fought in the maritime environment, is a war fought with mundane and prosaic artefacts.

Having presented an overview of the history of the prohibition of illicit drugs and the strategies put in place in the WoD, highlighting the increasing involvement and budget of the Colombian Navy in controlling illicit flows, I have presented a deeper analysis of two of the main maritime transport methods used by drug smugglers, go-fast boats and narcosubs. They are important for different reasons. While go-fast boats represent the main source of seizures made by the Colombian Navy and are a major feature of the routine practice of smugglers and Maritime Interdiction Operations, the narcosubs demonstrate the innovative character of some trafficker groups and create different challenges for the Navy, including the need for collaboration with law makers in order to promote legislation aimed at penalizing the design, building, and use of narcosubs.

Then I turned to the description of Navy practices. Given the complexity of the problem, I focused my attention on two related issues: the responses made by the upper echelons of the Navy to the question on how to patrol the sea, and the practices of the Coast Guard Unit in catching smugglers in the sea (i.e. Maritime Interdiction Operations). These correspond to the different arenas in which the technological choices and practices of the Navy are shaped.

In this chapter I bring together the empirical, theoretical, and practical findings that emerged as answers to the research questions posed at the beginning of this study. I begin by summarizing the main aspects of the empirical contributions made by this research. Then I present a concrete theoretical contribution to knowledge derived from this study, and discuss implications for policy and management. Finally, I present a series of considerations regarding limitations of this research and possible questions for further research.

Empirical Findings

Colombia, as part of the Andean Region, has been involved in the illicit traffic of cocaine since the early years of prohibition. Under the influence of the U.S. Government policies to control illicit drugs, and specifically the policies developed since the 1980s which led to a militarisation of operations against drug smugglers, the Colombian Government established the Antinarcotic Police, provided the Air Force with resources to control smugglers using air methods, and promoted the use of the Navy in carrying out MIOs. The nexus between left wing guerrillas and illicit drug revenues, summarized under the umbrella of *narcoterrorism*, further pushed the development of policies leading to the deployment of military solutions to the problem of illicit drugs.

Embracing this view, the Colombian and U.S. Governments established the Plan Colombia in 2000, which generated and widened gaps between military solutions to the problem of illicit flows and other possible responses. When adopted, the Plan Colombia guaranteed resources for the expansion of military forces, justified through the aim of containing *narcoterrorism*. The perception that smugglers were making intensive use of maritime routes had already led the Colombian Government to unite the role of the Navy with the allocation of resources leading to the establishment of the Coast Guard Unit in 1994 (a unit which on paper was created in 1979). Since then central attention has been given to the problem of the use of maritime routes for the purpose of trafficking illicit drugs. Data on the estimates and results of seizures was used as evidence of the need to control maritime routes. This allowed the Colombian Navy to increase their budget and to promote their role as an able counter drug agency.

Two decisive events have been crucial to the short history of the Coast Guard Unit: the interdiction agreement with United States and the formulation of the strategic plan *Closing the Gap* in 2006. Even if these plans were not specifically focused on the role

of the Coast Guard, in practice more of the interdiction responsibilities were assigned to this unit. The strategic plan, *Closing the Gap,* consolidated the role of the Colombian Navy as the key player in the WoD. The Navy's adoption of this new role was met with initial apprehension by the older generations of the Navy who considered that its role should be to focus on defence against foreign countries. This position started to shift as the capture of drug smugglers and the seizures of cocaine became the central role through the promotion and advancement of both institutional and personal goals within the Navy.

The Colombian Navy adopted the State's goals and methods of controlling illicit flows, and implemented in their strategic plans the control of these flows, which redefined the main goals of the Navy around the control of *Narcoterrorist Organisations*. At the same time this created the backdrop upon which to measure operational success using institutional measurements based on established indicators, such as the amount of cocaine seized, the number of persons captured, the number of smugglers artefacts thwarted, and some attempts to establish cost-benefit balances as results of MIOs. For local commanders, *events* - or the results of successful operations, in which contextually defined, important amounts of cocaine are seized or particular operations are transformed into important tokens - provide prestige and consolidation for particular officers' roles within the Navy. After two decades of existence, the Coast Guard Unit was transformed from '*some offices and four boats'* to a key role in the state policies to control drug smugglers.

While the Colombian Navy appeared to define the resources needed to control the flow of illicit drugs in the 2006 strategic concept, *Closing the Gap*, the evidence suggests a divergence between those views expressed by the upper echelons of the Navy and the set of practices of Navy personnel in the field. While Navy personnel in the field are familiar with the larger promoted goals of the Navy, and I have no doubt they are committed to the goal of capturing drug traffickers, they are aware of the difficulties

of exerting permanent control over the sea. In this sense their narratives are aimed at explaining their results in terms of local events and transitory solutions.

As already highlighted, from the Navy there has been a clear focus on strengthening maritime control using a combination of technical solutions (e.g. radars, ICTs, boats, aircraft support) interpreted as the procurement of the 'right' technology which is in line with law enforcement and militarised solutions to the problem of illicit drugs. There have also been attempts to exploit and transfer the knowledge of Navy and Coast Guard personnel as a result of their experience carrying out MIOs. The evidence suggests, that for Navy personnel in the field, the combination of different forms of knowledge, acquired both in formal and informal manners, is key to narratives about how to perform a MIO.

Together with the promotion of military solutions to the problems of smuggling, there is a set of ideas about the enemy, the enemy's capacities, and the aims and forms of drug traffickers' organisations. The evidence presented shows that incentives to capture smugglers and the projection of images of the enemy's practices/technologies are connected. I showed that there are attempts by the upper echelons of the Navy to centralize and promote visions of the enemy which are coupled with a set of solutions aimed at gaining control of the sea. On the other hand, for Navy personnel in the field, their images of the enemy, rather than being the result of the accumulation of formalised data or 'factual' evidence, are shaped by the knowledge and experience of local commanders and their perceptions of interdiction 'events'. In short, while the arena of command promotes and designs strategic plans responding to border concerns and produces evidence of their capacities as an able counter drug agencies that responds to the state policy instruments, in the arena of practice, commanders, if aware of the global goals, shape their actions in relationship to their localized view of enemies and their readings of enemies' capacities.

I found that there are two interrelated ways in which the Navy has reduced uncertainty arising from their actions. The first one is the aforementioned images of the enemies. Here Coast Guard and Navy personnel stress the innovativeness of smuggler organisations and the structural characteristics of smuggler organisations. By performing MIOs firmly based on intelligence, officers and the Navy place special emphasis on achieving a high degree of success. Second, the figures and numbers produced by the accumulation of events allows them to visualize both their results and to reinforce their role. These strategies help to shape the contours of the drug smugglers' actions, which are in large degree, essentially unknown.

In directing this study to both the practices of the Navy and illicit drug smugglers in order to generate a deeper understanding of the interdiction/evasion binary, I was surprised to encounter a high diversity of strategies used by drug smugglers in order to transport cocaine. I focused on what were apparently two key methods: narcosubs and go-fast boats. Although both share some crucial elements, these two strategies differ in several others.

I found evidence to challenge the descriptions presented in policy, academic, and journalistic documents regarding the development of narcosubs, and about smugglers artefacts more generally, in which these are portrayed as a logical progression both in the departure from other means of smuggling narcotics and in regards to incremental technical improvements in smuggler artefacts. Contrary to these accounts, the evidence suggests that the diversity of smuggler artefacts can be explained by the different combinations of local knowledge, formal knowledge, and off-the-shelf technologies. I found out that the significant differences that determine the diversity of artefacts is the result of the different approaches followed by a multitude of groups in order to solve the problems of how to evade state control and overcome barriers to the production of these artefacts.

Smugglers' artefacts are the result of the knowledge of locals with experience in glass fibre handling, maritime engines, woodwork, etc. Smugglers often take advantage of knowledge acquired by these people when carrying out legal enterprises or in formal settings, such as technical school training. In remote areas where accessing workshops is very difficult and where off-the-shelf vessels and spare parts are not readily available and prohibitively expensive, local fishermen routinely tinker with engines and build their own vessels. Crews are also recruited from among locals and experienced seamen. Taking advantage of existing social ties, it is not uncommon for there to be kin ties among members of the crew.

In the remainder of this section I will briefly review three key additional empirical findings: the importance of contingent local knowledge for the Navy practices; the fallacy of flexibility as a result of the organisational arrangements; and, the symbolic importance of the seizure of smugglers' artefacts, especially of narcosubs.

The need for knowledge and information is a clearly important for Navy personnel in carrying out their tasks. I identified several instances or informal forums in which knowledge was transmitted. A particular form of knowing stood out as a result of this research, the *malicia indigena*. This is a highly contextualized form of knowing that is based on personal experience and assists in the interpretation of enemies' actions. Because of the manner in which *malicia indigena* is collected and stored - recorded in the minds of those who possess it - it is difficult to communicate and share, and is difficult to codify in documents. This difficulty also arises from it being the result of localized experiences - an individual's trials and errors and the experience of others - that may be difficult to share, particularly in a context where there is little incentive to do so. *Malicia indigena* is not an infallible resource and is subjected to the fluid nature of the environment. Such fluidity limits the long term effectiveness of those who consider themselves, or are considered, to possess *malicia indigena*. On the other hand, the kind of skills encompassed under the term *malicia indigena* can also be recognized as local knowledge, and as Scott have pointed out, it is key in the functioning of highly

complex systems (Scott, 1998). Kenney has explained how the lack of local knowledge hampers the actions of terrorist groups (2010), while Bonelli and Ragazzi (Bonelli & Ragazzi, 2014)has stressed the need to study the production of practical knowledge in police activities, as they play a central role in the creation of anticipations.

Much of the literature on drug trafficking has explained the success of smugglers as a result of their organisational structure. Flexibility is brought to the fore to explain the advantages of smugglers. The evidence found during this research shows that Navy and Coast Guard personnel can also possess a high degree of flexibility in relation to the ways in which operations are carried in the sea and in relation to artefacts. I found that even though Navy personnel have a strong sense of the *real* role of the Navy in which policing through interdiction play only a minor role, those operations play an important part of their day to day and one in which base commander possess a high degree of autonomy in regards to how to pursue smugglers, deciding how many and which boats and resources to deploy, and in determining which personnel will tackle particular issues. Furthermore, mechanics at the bases constantly tinker with boats to adapt them in order to face what are perceived to be the local needs to counter threats. During the late 1990s and early 2000s, Coast Guard personnel were also able to match smugglers' capacities by making use of seized artefacts and by quickly producing their own go-fast boats. Therefore, while it can be argued that LEA personnel are subject to centrally designated *modus operandi*, that is to say, interdiction as the sanctioned form of controlling smugglers, in the field, officers and NCOs are able to quickly adapt and transform their practices and artefacts to meet operational demands.

As described earlier, despite the demise of powerful early drug smuggling organisations, such as the so-called Medellin and Cali 'cartels', and the disruption of air transportation methods, the flow of illicit cocaine continued. The seizure of smuggler artefacts and cocaine demonstrate that the trends in the use of maritime routes, despite the efforts of the state, continue. The growth of the Coast Guard as a result of the particular reading of the transport of illicit drugs, deepened the quasi-

symbiotic features of the security environment, in which the prosperity of the enforcement agency depends on the balance between their success and the existence of the threat they are set to control. The growth of the Navy, due to their involvement in the WoD, has also created a situation in which their own bureaucratic interests depend on the existence of the flows of illicit drugs. The budget of the Colombian Navy was greatly increased as a result of their involvement in the WoD. The WoD provides a constant reminder of the importance of their role, which is also demonstrated through public displays of their results, including guided visits to the Narcosub Museum and press releases pointing out previous trends and prospective ones.

Contribution to Knowledge

As pointed out in the introduction, this thesis brings together several strands of academic literature. My main aim has been to contribute to the growing literature on STS regarding the role of users in the process of technological innovation, and from this perspective to provide a different reading of the interdiction/evasion binary in the so-called War on Drugs. The literature on organised crime and drug smuggling is abundant and growing rapidly. On the one side, there are studies that offer descriptions of the drug smuggling enterprise and propose policy advice and intervention instruments to disrupt the drug market. On the other side, a complementary literature measures the impact of those policies. This literature places great stress on economic analysis, based on the reading that drug traffickers behave in a traditional economically rational manner. However, none of this literature symmetrically analyses the two sides involved in this antagonistic, yet paradoxically symbiotic, relationship.

Confronting my empirical results with current theoretical concerns I suggest that the main contributions to knowledge of this research are: to provide evidence that traditional co-evolutionary explanations of threat and security agencies fall short in

explaining the antagonistic relationships in a context in which players confront a high degree of uncertainty regarding the results of their actions; to provide evidence that traditional accounts of drug trafficking that frequently attribute the success of smugglers to their structural organisations fall into what I call the fallacy of flexibility – the result of an asymmetrical view of the phenomena; and, finally, that a turn to the study of the practices of the military instead of an analysis of the technical capacities of security technologies provides a more accurate picture of these complex antagonistic relationships. As part of a concern with understanding the shaping of smuggling and interdiction technologies this thesis further explores the scope for and barriers to innovating in outlaw environments. Furthermore, I propose that the outcome should not be analysed in terms of the technical properties of the artefacts deployed by both sides, but needs to look at their incorporation into smuggling and interdiction practices.

The ever-present antagonistic relationship between smugglers and LEAs can be reduced to the contrast between what the State considers to be the appropriate activities in a territory and the tactics of unruly users as they take advantage of perceived opportunities. There is a need to explain the dynamics of such antagonistic relationships. The process of technological innovation in the WoD offers such an opportunity. The concept of co-evolution is useful to explain how dynamic socio-technical systems influence each other. It has proven useful to explain change when elements of a system are closely connected, and to explain the mutual relationship between heterogeneous elements and wider society. Mutual shaping or co-evolution arises in the cases where developers seek to create community of users, i.e. align goals. I argue that the concept of co-evolution is not particularly helpful as an explanatory tool to understand the nature of technological innovation in situations in which players only possess a sketchy, partial, and localized view such as that which exists in the interdiction/evasion binary, where players actively seek to hide their intentions.

One of the main goals of this thesis has been to present an overview of the *evolution* of smugglers' and LEAs technologies. However, the identification of such *evolution*, - that is to say that smugglers' innovative creation of new artefacts and LEAs' creative responses to the challenges posed by smugglers - does not explain how this has happened. In the case of narcosubs, different smuggler groups have identified the possibility of exploiting local expertise in the construction of maritime artefacts and the weakness of the Navy in detecting underwater vessels. In doing this the various groups have been able to create their own working versions of the artefact. By exploiting go-fast boats, other smuggler groups continue to rely on a steady supply of traditional knowledge about maritime routes and readily available artefacts. This also involves adapting the go-fast boats to avoid detection. These various strategies, and the strategies of LEAs, can only be broadly covered by the concept of co-evolution, but it is possible to offer a more complex analytical framework.

This thesis has found that an analysis of the role of users, and especially the concept of dispersed peer innovation, provide a very useful explanatory tool. This concept was explored as an alternative explanation of the process of the evolution of a complex artefact. In this model, as expored by Hyysalo and Usenyuk (2015) in their Karakat study, users retain control over the invention, modification, diversification, building, and maintenance of an artefact. I have argued that this concept helps to account for the diversity of smuggler artefacts. Different groups adopted the narcosub meme, and combined different off-the-shelf components and different forms of knowledge, formal and local, in order to build these complex artefacts. The artefact arising from this process needed to fulfil two main characteristics: the safe transport of the illicit cargo and the evasion of state control. In this sense the concept of dispersed peer innovation is more helpful than other concepts because it accounts for the high diversity of artefacts in outlaw contexts. The concept of bricolage was also useful to describe the process of creating smuggler artefacts, in which outlaw users opt for a mix and match approach in order to produce a highly cost-efficient product – including highly complex technological configurations like narco-subs - in a manner suited to their needs which exploits locally available traditional knowledge/capacities and helps

them to avoid potentially expensive and detectable procurement from commercial suppliers.

This led me to propose a more encompassing definition of outlaw innovation, not understood only as innovation that happens to be performed in outlaw environments, as initially proposed by Shulz and Wagner (2008), but to describe some of its features. As demonstrated in the case of smugglers' innovation, the main characteristic of outlaw innovation is its open character. This means it is characterised by the highly dispersed effort of often markedly temporary forms of organisations and the self-reliance of builders and designers in terms of the acquisition of knowledge and materials.

I argued that any explanations that aim to account for the process of innovation in outlaw contexts in which antagonistic relationships shape the actions of actors must further take into account the paradoxical and symbiotic relationship between smugglers and LEAs. Diverging interpretations of success on each side of the binary, conditioned by asymmetries of information between them constantly unravel the perception of the reality that allowed both sides' initial actions. In such circumstances it is increasingly difficult for actors to differentiate between what it is created, what is destroyed, what remains, and how to perform their actions under such circumstances.

Several metaphors have been used to explain the dynamics between traffickers and law enforcement. Practitioners and media refer to a cat and mouse game of interaction, while the balloon effect has been used to explain the mobility of the drug market, farming sites, routes, and transport method as the result of enforcement efforts. I argue that the Red Queen metaphor is helpful to explain the dynamics of interdiction/evasion. Contrary to the previous metaphors that places agency only on one side of the binary, with the Red Queen metaphor it is possible to stress the symbiotic relationship between the two sides, and at the same time recognize that the

two sides of the binary are constantly updating their strategies, not only as a response to the other side's actions but as a way to remain in the game.

Literature on drug smuggling has adopted methodologies that, paradoxically, only provide asymmetric access to the interaction between traffickers and LEAs. Only a handful of studies concentrate on analysing the ways that both enforcement agencies and traffickers perform their actions and learn. An even smaller number present descriptions of or deal with the technologies and practices of smugglers and, to the best of my knowledge, although some researchers that have discussed the militarisation of the WoD, there are no studies on the practices and technologies deployed by the military to face drug traffickers. Given this, I argue that this thesis may contribute both to studies on drug trafficking and military studies, through stressing the need to provide a symmetric view on the phenomena, and by turning to the study of the practices and not solely the technical characteristics of the technologies.

Studies of drug smugglers have, since the mid-1990s, stressed the *unorganised* character of illicit business, as a way to avoid the problems of previous descriptions of illegal enterprises that mostly focused on *mafia* and *cartel* type, in which bureaucracy models of organised crime, as defined by Kleemans (2014) were used to explain the success of these enterprises. Since the mid-1990s, it has become popular to use the concept of networks to explain the fluidity of traffickers. In doing so, drug studies concentrate their efforts on characterising the structure of these networks and on pointing out the competitive advantages that the network structure provides to such networks. In doing so, these studies counterpoise the flexibility and adaptability of drug trafficking with a traditional view of LEAs in which such traits are hampered by their imputed bureaucratic commitments and long command chains. This thesis demonstrates that studying the practices of LEA personnel in the field provides a different assessment to that previous stressed by academic literature. Turning to the

study of the practices of LEAs allows us to understand that flexibility is not an emerging property that results from a particular form of organisation.

I argue that this turn to the study of the practices can also benefit military studies. Studies of innovation in the military have long recognized that traditional business models do not apply when analysing military technology. The implementation of military technology is often studied by putting stress on several factors, the technical characteristics of the technology, technological innovation as a result of doctrinal change, and intra and inter rivalry service. I argue, following the The Biography of Artefacts and Practices (BOAP) framework proposed by Williams, Pollock and Hyysalo that local actions and outcomes should be explored as part of a context that provides resources - offering incentives and penalties for local players. Exploring practices offers a contrast to interpretations focusing on the technical aspects of the innovation process, and is particularly useful when study antagonistic environments and that have at their centre fairly mundane and prosaic artefacts.

Implications for Policy and Practice

This thesis develops the premise that antagonist relationships in the WoD cannot be fully explained with the methods, theoretical lenses, and metaphors currently in use. The multiple narratives presented in this thesis have summarized the roles of the key players in the WoD and several key policies that have been put into place. One important issue recognized by policy and academic literature is that the drug market is constantly changing. Change is attributed either to the agency of smugglers, expressed as the result of their adaptability, or as the result of policy efforts. In this section I present two implications for policy and practice that emerge from this thesis.

The first is the recognition that what is perceived as the innovative character of drug traffickers does not emerge merely as a result of their ingenuity, and that smuggler technologies do not arise as a result of organised innovation programmes –whether incremental or radical innovation. Rather they are the result of non-coordinated actions of many different groups pursuing a similar goal and applying different tactics. Further training of Navy personnel and the gathering of both human and technical intelligence would benefit from recognizing the uncoordinated patterns of smugglers' actions.

Even with their limited capacity to contribute to national or institutional policy, Navy personnel in the field are able to innovate, modify their practices and artefacts as a result of what they perceive to be local threats. Given the continuous mobility of personnel in the Navy, I consider that practitioners would benefit from establishing strategies to protect, promote, circulate the knowledge and tactics they have achieved, stressing the possibilities of transferring localized experiences to other personnel.

One of the arguments advanced in this thesis relates to the critique of the 'fallacy of the flexibility,' which states the competitive advantages of drug smugglers as result of their organizational arrangements and their innovative capacities. I argued that the fallacy is the result of asymmetrical views on the capabilities of drug smugglers vs. state agents. Several possibilities emerge from this criticism for the manner in which Military and LEAs conceive their practices.

Understanding that competitive advantages of smugglers are only temporary and the result of uncoordinated patterns may lead to escape the fallacy of flexibility. As recognized by several of the participants and Navy official documents, the Navy has specialized in reactive actions, that is to say, to develop new strategies to counter smugglers' innovations. As I pointed out in this thesis, this is the result of attaching a high degree of flexibility to smugglers. As a result, the Navy should concentrate on

exploring and exploiting strategies tending to exercise control of the sea instead of focusing on particular smuggler innovations.

Understanding that the perceived innovative capacities on the smugglers' are the result of multiple groups attempting to escape state control, using both local resources and knowledge. Moreover, that as such the patterns of response-counter resulting is the result of acting upon those perceptions, should lead to a strong collaboration between the Coast Guard, in charge of maritime interdiction and the policing of the sea and the Maritime Authority dependent of the head of the Navy, in charge of issuing control permits.

Finally, two resources are critical for smugglers actions, first, unpoliced areas in which they are able to hide for extended periods of time unmolested. Second, local knowledge in the form of artisanal skills and knowledge of sailing. Strategies of the Navy should strive to hamper the links between the use of those unpoliced areas and the availability of local knowledge.

Limitations of this Study and Future Research Questions

The conclusion of this thesis provides a special opportunity to reflect on the different choices made during my doctoral studies. At the beginning this research was proposed as an attempt to provide evidence about the ways smugglers transport their illicit cargo. During fieldwork it became evident that responses to any question would be constrained due to the very obvious issues of access to those involved. One major limitation of the current thesis was the asymmetrical access to data. As a result, the claims I made about smugglers practices and innovations are obtained from the reading LEAs agencies made of them, both in the press releases, interviews, guided visit to the places where smugglers artefacts are stored, official public documents, official

magazines and intelligence documents. However, in using those readings, I avoid enhancing the reading of a pattern response-counter-response further. Quantitative studies and the exploration of statistics have dominated the study of drug policy issues; I propose that more qualitative studies are needed. In my own research, nevertheless, I have identified several limitations of such. Access to key informants is difficult to secure, and the informant's readily understood need for secrecy may limit data collection. More importantly there was the need to study not only the way smugglers produce their technologies, but also how LEAs produce theirs. Therefore, the first step was to distance myself from traditional accounts of the drug market and to retain a symmetric view of both smugglers and LEAs. I also sought to distance myself from traditional methodologies from STS and elsewhere revolving around localised and often snapshot studies of particular sites and moments of innovation. I was influenced by ideas from the BOAP framework, and especially the need to integrate different viewpoints (Kaniadakis, 2006) in order to explore the process of technological innovation. Here I was concerned with the possibilities offered by analysing the phenomena from multiple scales, as expressed by the BOAP, and comparing the concerns expressed by actors moving in the arena of command with those in the arena of practice.

While I consider the Red Queen Hypothesis particularly rich to explain the dynamics in the interdiction/evasion binary, it has some limitations. First, I mentioned that the sort of dynamics of the WoD creates scenarios where both sides of the binary interdiction/evasion as expressed in the literature about innovation and the Red Queen Hypothesis, run 'a fast as (they) can' to stay in the same place, this needs further clarifying. Both smugglers and state agencies are forced by competition to improve their performance, increasing the pressure on both sides, thus creating a circle of learning and competition. As in Lewis Carroll, after all the running, there is no real change in the dynamic. Second, while I criticize previous metaphors because they entail a pattern action-reaction and coordinated action, it seems that once players are involved in the sort of competition that the Red Queen entails, the process is automatic,

and both sides fall into a spiral and incapable of avoiding the negative consequences of the dynamic. Third, the interpretation I put forward is based on the critique of previous metaphors and the empirical data they are based on, as they are focused on the measurable elements and the representations of the WoD. Measurement of performance is not easily identifiable in the WoD. The empirical data in this thesis corresponds to one side of the binary and only secondary data of the smugglers' side, and the Red Queen presupposes the consequences of the competitive spiral in which both sides are engaged. To continue advancing the metaphor, it is necessary to make possible the identification of both learning and imitation phenomena at the smugglers' side.

In terms of future research, more detailed qualitative comparative research between different regions would allow for an understanding of the scope for transferring Navy personnel's experiences. Qualitative studies are needed that explore the perceptions of Navy personnel regarding rewards and their perceptions of performance, success, and normative indicators. In order to understand the complex and uncertain symbiotic relationships between smugglers, LEAs, and the military it is necessary to examine and understand better the connections between the ways in which images of enemies are constructed and how this affects decision making in the field. That is to say, there is a need to explore how practitioners deal with the asymmetry of information and the uncertainty of the results and success, and explore the process of decision making in contexts of acute uncertainty.

As discussed above, scholars of drugs have not delved into the way drug traffickers innovate, and less research has been conducted into the ways in which policies are implemented and practices elaborated. Further studies analysing other transport methods used by smugglers could help to support the claim concerning the dispersed character of smugglers innovation. Finally a turn to the sites in which technologies and players encounter and perform their actions would help to better understand the complexity of the interdiction/evasion binary.

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