Literature review:

Crime Prevention and High-Value Poaching

A critical review of lessons from criminology for developing a crime-prevention approach to address high-value wildlife crime in the Great Limpopo Transfrontier Conservation Area

February 2020

Executive Summary

WWF South Africa commissioned Conservation Synergies to undertake a literature review investigating the application of criminology and crime prevention theory to high-value poaching in the Mozambican and South African parts of the Great Limpopo Transfrontier Conservation Area (GLTFCA). This executive summary highlights the key points from this review.

Relationship between poverty and crime

Poverty and crime often occur simultaneously. However, analyses show that crime is not driven by poverty alone, but rather by inequality. Countries with high overall levels of poverty do not necessarily have higher levels of crime. It is places with high levels of income inequality that typically have the highest levels of crime. Another driver of crime is a breakdown in social norms and values which results in, and is worsened by, factors such as unemployment, incomplete education, a break down in family structures, limited opportunities and exclusion from the formal economy.

Many of these factors are present to the west of the GLTFCA in South Africa: there is social and economic inequality, a lack of economic opportunities, poor education and many families are affected by migrant labour into urban centres. The legacy of Apartheid compounds inequality as it resulted in limited opportunities and weak public services, particularly in rural areas.

On the eastern side of the GLTFCA in Mozambique, there is poor governance at the local government level and poaching bosses have captured some of the governance and power structures. Additionally, there is poor service delivery, which stifles economic development and limits opportunities. People in this area often turn to poaching as a way to access resources and livelihood opportunities, which are significantly fewer in Mozambique than South Africa.

Underlying the aforementioned social issues is corruption, which is a problem in both Mozambique and South Africa. While South Africa has problems with corruption, the state is better functioning and more developed than in Mozambique.

Contested Illegality

'Contested illegality' refers to a situation in which a behaviour may have been defined as illegal by authorities, but is not viewed as 'bad' or 'wrong' by the population, or a section of the population. This is true of the communities living in or near conservation areas, and their views of conservation and poaching. This is a particularly difficult concept for conservationists to accept because their careers are built around a set of ideals and core beliefs that focus on preserving and protecting wildlife. The historic and current inequality in South Africa resulted in the priorities, needs and values of park-adjacent communities differing from those of the people and organisations governing and managing the GLTFCA. Conservation values may not be supported within local communities. Many people living in and around the GLTFCA view the park as there only to protect wildlife. They perceive the GLTFCA as a place that they have been excluded from and as a symbol of a system that disempowers them and that they do not benefit from. People in these communities bear the majority of the costs and derive the least of the benefits of living with wildlife. These perceptions result in a lack of support for conservation and turning a blind eye to, or possibly even supporting, wildlife crime.

Conflict Resolution (and Aligning Values)

Conflict resolution through dialogue and mediation can bring parties together where interests are divergent or there is a history of animosity. These processes are necessary for addressing issues such as contested illegality and competing social values regarding conservation.

Conflict resolution tends to be more successful when built from the bottom-up. Bottom-up processes involve a larger number of community members and reduce the ability of power brokers and leaders to control the agenda. Bottom-up processes allow those most affected by the issue to shape the conversation and to engage more meaningfully in the process. Interventions should be complex and multi-faceted so that all sectors of society can express themselves, feel respected and be part of the process.

Lessons from Behavioural Economics

Awareness raising and conservation education are common strategies used by conservation organisations to engage with people living in and around conservation areas. A growing body of research in behavioural economics indicates that providing knowledge does not typically lead to the desired behaviour change. In particular, nudge theory states that humans do not always make rational decisions based on cost-benefit analyses, and when we attempt cost-benefit analyses, these are often inaccurate.

Behavioural economics has been used effectively to change behaviour in fields such as public health and financial planning. For example, awareness-raising campaigns on the negative consequences of smoking or unhealthy eating have had little impact, successful campaigns using small, strategic incentives have led to changes in these behaviours.

A key insight from behavioural economics is that people modify their behaviour when incentives or sanctions are swift, fair and certain. Criminal justice systems, particularly in South Africa and Mozambique, are neither swift, fair nor certain. Thus, we cannot rely on these criminal justice systems to drive behaviour change.

Conclusion

Lessons from criminology, crime prevention and behavioural economics suggest that law enforcement responses alone will be insufficient to reduce high-value wildlife crime in and around the GLTFCA. The significant anti-poaching and law enforcement efforts to date have succeeded in reducing poaching but have not stopped it. While these responses are needed in the short-term, they are insufficient as a stand-alone response. In the long-term, a range of interventions, informed by evidence-based approaches that address the social, economic and societal drivers of wildlife crime is needed, such as community crime prevention, socio-economic improvement, conflict resolution and behaviour change.

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Crime Prevention and High-Value Poaching

A literature review

This literature review outlines various crime-prevention approaches and explores their potential utility in reducing rhino and elephant poaching within the GLTFCA.

Acronyms

ANAC	National Administration of Conservation Areas - Mozambique
ASM	Artisanal and Small-Scale Miners
CBNRM	Community-based Natural Resource Management
CCTV	Closed-circuit television
CITES	Convention on the International Trade in Endangered Species of Fauna and Flora
CCT	City of Cape Town
CPP	Community Peace Process
CPTED	Crime prevention through environmental design
DEA	Drug Enforcement Administration
EU	European Union
EUT	Expected utility theory
FCRC	First Community Resource Centre
GII	Guardianship Intention Index'
GLTFCA	Great Limpopo Transfrontier Conservation Area
KNP	Kruger National Park
LSM	Large-Scale Commercial Miners
MRI	Magnetic resonance imaging
NGO	Non-government organisation
NSO	Neighbourhood safety officer
POP	Problem-oriented policing
PAT	Problem analysis triangle
PT	Prospect theory
RAT	Routine activity theory
SANParks	South African National Parks
SARA	Scan, Analyse, Respond and Assess
SASSA	South African Social Services Association

SNA	Safety node area
SCP	Situational crime prevention
UCT	University of Cape Town
UK	United Kingdom
US	United States
USAID	United States Agency for International Development
VPUU	Violence Prevention through Urban Upgrade
WWF	World Wide Fund for Nature

Introduction

In recent years, rhino and elephant poaching have escalated in sub-Saharan Africa. The Great Limpopo Transfrontier Conservation Area (GLTFCA), particularly the southern part of the Kruger National Park (KNP), is home to a large proportion of the world's rhinos and a significant elephant population. The ongoing high levels of rhino and elephant poaching in the GLTFCA make it a priority to address high-value poaching in this area.

The purpose of this literature review is to provide a brief introduction to a range of approaches that have proved effective in addressing crime or disorder. This document will provide the reader with an understanding of criminological theories and interventions aimed at preventing criminal offences and rehabilitating offenders. This research draws on both international and local experiences and examples. This literature review examines a broad range of interventions to inform thinking with a specific focus on the GLTFCA.

To date, approaches to address high-value poaching in the GLTFCA have largely tended to be para-military or military in nature. These approaches have been criticised for not responding to key drivers of the poaching (e.g. the social, economic and political inequalities) and because they have resulted in negative and unintended consequences for local communities. The continuation of poaching despite the increased militarised response in the GLTFCA indicates that militarisation and policing approaches are insufficient as a stand-alone response. However, military and policing approaches may be effective if complemented with a range of social and developmental approaches.

As a starting point, the literature review outlines the nature of poaching in the GLTFCA before considering crime prevention approaches from fields such as behaviour change, community development, economic empowerment and therapeutic interventions. The second half of the document considers approaches that are related to guardianship, community crime prevention and economic development.

This review is not exhaustive and is structured to give the reader a brief introduction to a range of conservation, criminology and crime prevention methods that have been employed in different settings to address different problems. It provides summaries of complex approaches, where each approach and intervention has been distilled down to its core principles. The approaches covered are representative of broader themes or trends within criminology.
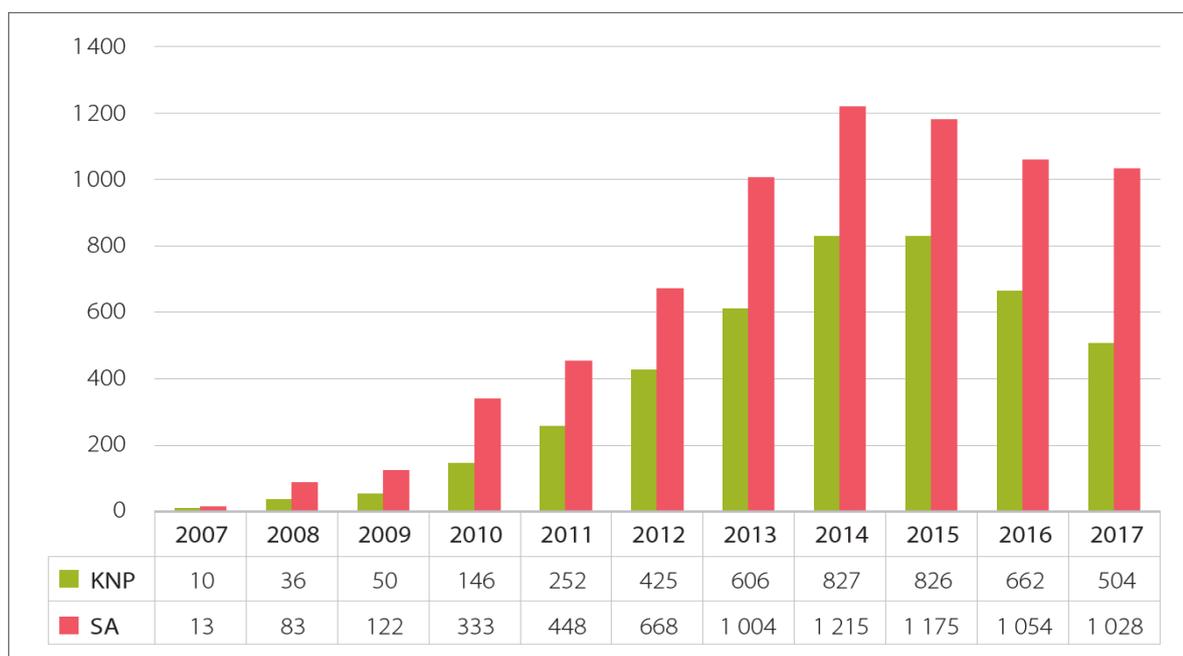
Poaching

Poaching is a broad term that relates to a range of behaviours (Von Essen et al., 2014). Both the catching of salmon in a Norwegian fjord out of season and the killing and de-horning of a rhino are 'poaching'. However, these are markedly different behaviours occurring in distinctly different contexts and requiring different responses (Von Essen et al., 2014, Kahler & Gore, 2012).

Eliason (1999) and Von Essen et al. (2014) provide theoretical frameworks for understanding the various types of poaching, poacher profiles and the drivers of poaching behaviour such as pleasure, profit, thrill-seeking, sustenance or defiance. There is a range of poaching behaviours occurring within the GLTFCA. These behaviours are understood to have distinct drivers, motivations and enablers (Von Essen et al., 2014, Kahler & Gore, 2012, Haas & Ferreira, 2016b).

Many academics, researchers and practitioners have applied their intellects to understanding poaching. Von Essen et al. (2014) offer three categorisations for poaching:

(1) *Livelihood crimes* are committed for financial benefit or survival and include both bushmeat poaching and poaching of animals that can be sold (Rogan et al. 2018). Concerning high-value poaching, livelihood crime is the most used descriptor. One poaching behaviour may have more than one motivation. For example, bushmeat poaching can be for household consumption as well as cash-sale (Lindsey et al., 2013, Rogan et al., 2018), or it may be pursued for cultural as well as livelihood reasons. It is generally assumed that these crimes can be treated primarily as economic actions (Von Essen et al. 2014, Rogan et al., 2018).

(2) *'Folk crimes'* are historically or culturally embedded within a community or place. For example, hunting may form part of a family or village's history. Folk crimes are often the least stigmatized form of poaching and often do not violate public sentiments regarding morality (Von Essen et al. 2014). However, they present particular challenges where economic development, biodiversity conservation, and human health and rights intersect, especially when the goals of these interests are incongruent (Golden et al., 2011).

(3) *Socio-political crimes* are those that occur when there is unhappiness with the socio-political context and poaching is a form of protest or dissent. Generally, there is a perceived sense of injustice, marginalization or exclusion relating to socio-economic or environmental issues driving these crimes. These crimes may be addressed through systemic changes aimed at addressing the causative issues.

A single poaching act can be understood in a variety of ways. Von Essen et al. (2014) note that choosing to call an act 'poaching' or 'unlawful hunting' imbues the act with a different meaning. 'Poaching' is often defined as the illegal taking of wildlife (Eliason, 2004) and may be "stigmatised as theft and animal cruelty or celebrated as a rebellion against oppressive laws" (Von Essen et al., 2014, pp.632). It may also be understood as a political act, as defiance or as modern-day 'Robin Hood' behaviour, stealing from the rich to give to the poor (Hübschle, 2017a, Hübschle, 2017b).

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
KNP	10	36	50	146	252	425	606	827	826	662	504
SA	13	83	122	333	448	668	1 004	1 215	1 175	1 054	1 028

Source: Hübschle & Shearing, 2018, pp.3

Figure 1: Unnatural Rhino Deaths in South Africa

Poaching in the GLTFCA

Poaching of rhino and elephant within the Mozambican and South African parts of the GLTFCA was relatively stable at low levels prior to 2007. There was a marked increase in rhino poaching in 2008, which continued increasing until 2014, after which it stabilised in 2015 and has declined slightly year-on-year[1] since then (Figure 1; Haas & Ferreira, 2016a, Hübschle, 2016c). Elephant poaching was absent from the KNP within the GLTFCA between 2000 and 2013 but has seen a slow increase since 2014 from two known cases in 2014 to 71 known cases in 2018[2]. In the Mozambican portion of the GLTFCA, elephant poaching has been prevalent since at least 2012/13. The 2014 National Elephant Census (Grossmann et al., 2015) estimated 227 carcasses in Limpopo National Park and reported a 23% decline in this population since 2009. Preliminary results from the 2018 census suggest that the population has continued to decline.

Green Militarisation

The increase in poaching (of rhino in particular) has been met with alarm and concern, with some conservationists and academics predicting that rhinos would become extinct within a few decades (Haas & Ferreira, 2016a). The response has been to escalate the level and complexity of anti-poaching and law enforcement operations, changing how the state and private parks making up the GLTFCA are managed and staffed (Gonçalves, 2017, Shaw & Rademeyer, 2016). These have resulted in what has been termed 'green militarisation' (Shaw & Rademeyer, 2016) or 'green violence' (Büscher & Ramutsindela, 2015) which includes the implementation of a broad range of military, para-military and security-based responses and technologies, military-style training of field ranger anti-poaching units, and the legal use of coercive or lethal force to enforce wildlife laws.

[1] http://www.poachingfacts.com/poaching-statistics/rhino-poaching-statistics/
[2] http://www.poachingfacts.com/poaching-statistics/elephant-poaching-statistics/

Both practitioners and academics have described the situation as a 'war on poaching' (Annecke & Masubelele, 2016, Shaw & Rademeyer, 2016). "Such language suggests armed conflict and subversive action against the government… Framing it in this way does not help those working with communities bordering parks" (Gonçalves, 2017, pp. 12). Shaw & Rademeyer (2016) note that the language of a 'war' against poachers and the use of violence has become state policy for many southern African countries to enforce wildlife laws within their borders. Military intervention may provide short-term gains, but in the medium-to-long-term, the financial and socio-economics costs of military and para-military activity in and around conservation areas will be significant and may outweigh the benefits (Annecke & Masubulele, 2016).

The continuation of high-value rhino and elephant poaching and the number of incursions remaining high despite the increased militarised response in the GLTFCA indicates that militarisation and policing approaches are insufficient as a stand-alone response (Hübschle & Shearing, 2018, Annecke & Masubulele, 2016, Shaw & Rademeyer, 2016). Securitisation, the process by which problems become understood as security problems, and are thus responded to using crime prevention and security tactics and technologies, is also of concern (Lunstrum, 2014, Massé & Lunstrum, 2016). This approach both negates and avoids the deeper socio-economic and/or socio-political structural problems which almost certainly underlie the illegal wildlife trade.

There are various critiques of the militarisation of anti-poaching, particularly regarding the ethical and moral aspects of using such approaches. However, this report focuses on the outcomes and pragmatics of the situation. Community relations in and around the GLTFCA were already poor before the increase in highly-militarised anti-poaching responses. In both Mozambique and South Africa, the conservation areas making up the GLTFCA are associated with the exclusion of poor people from conservation areas in various ways (Hübschle, 2017). This is as a direct result of forced removals in various areas and the increasing use of 'fortress conservation' methods that strained relations between parks and local people (Duffy, 2016).

Approaches implemented thus far have not addressed community or community-related stakeholder needs and have not been developed at the local level (Gonçalves, 2017). Rather, increasing militarisation further alienates local communities and deepens divides and polarisation between the two groups and does not respond to key drivers of poaching (e.g. the social, economic and political inequalities) (Annecke & Masubulele, 2016, Büscher & Ramutsindela, 2015, Von Essen et al. 2014, Vundla, 2018). Current thinking highlights that it is crucial to involve local people and resources in addressing wildlife crimes (Hariohay et al., 2019, Biggs et al., 2016, Hübschle & Shearing, 2018).

Criminology and Crime Prevention

A core challenge to criminology and crime-prevention is that neither is a distinct discipline. Rather they are both at the intersection of when scholars and practitioners start to consider crime and how to prevent it. When sociologists think of crime, their unit of analysis is the whole of society. When psychologists think of crime, their unit of analysis is the individual mind. Policing scholars focus primarily on police organisation and how to improve its functioning. This literature review attempts to capture some of the breadth and diversity of thinking in crime prevention.

A useful way to distinguish between various crime prevention theories is to look at whether they are focused on the offender or the offence (Cornish and Clarke, 2008). Very generally, offence-focused approaches tend to be fixated more narrowly on 'security' while offender-focused approaches take a broader view in addressing 'safety'. Offence-focused approaches are often referred to as opportunity-focused approaches. This distinction is illustrative rather than exhaustive, and there will be approaches that are not easily classified into either group.

Some theories or approaches focus on the offence, or on reducing the opportunity to commit the crime. These include situational crime prevention, problem-oriented policing, and routine activity theory. These opportunity-centred approaches "focus on the specific characteristics of a situation and study the process through which an offence is committed, rather than focusing on the offender, root causes or the broader political, socio-economic and regulatory context of crime" (Huisman & Van Erp, 2013, pp.1178) and are justified by the belief that "focusing on how is likely to be more productive than focusing on why" (Benson et al., 2009, pp. 176).

Approaches that focus on the offence (and reducing the opportunities to commit an offence) often lead to simple and effective preventative measures (Huisman & Van Erp, 2013). They avoid the complex and intricate work of attempting to address an offender's social influences, economic situation or values. Offence oriented approaches tend to focus on the ease or difficulty with which a crime can be committed, the target of the crime and the efforts to prevent crime. Approaches focusing on the offender and looking to reduce a criminal's likelihood or desire to offend tend to focus on the offender's internal psychology, their economic or social circumstances and the community or society in which they live.

It is perhaps more complex to implement approaches that focus on the offender and reducing their inclination or motivation to offend, and it takes longer to deliver results. This is in part because these approaches tend to be more theoretical and more focused on understanding the problem. These approaches include anomie and strain theory, both of which focus on the social conditions of society (Merton, 1938, Braithewaite et al. 2010). Interventions focusing on the offender tend to be more therapeutic or economic and are implemented by a range of organisations or actors who do not require security or police training. Part of the difficulty with these crime-prevention approaches has been their potential breadth, lack of clarity or focus and difficultly in measuring success. For example, it is significantly harder to quantify the change made through a therapeutic intervention than the change achieved by building an access control system.

Extensive work has already been done in applying criminological concepts to wildlife and environmental crime. However, the breadth of environmental and wildlife crimes complicates the application of criminology to these issues. Confining the conversation to *only* the poaching of wildlife helps to narrow down the field of study. However, the poaching of one species is markedly different from the poaching of another – these differences may be with regards to how the animal is hunted,

how it is transported, how it is sold and how it is consumed or used, and its value (Moreto & Lemieux, 2015).

The Police, Policing and Crime Prevention

It may be useful at this juncture to make a distinction between the Police, as an organisation, policing, the act of providing security or increasing safety, and crime prevention.

Crime prevention and policing are similar yet distinct tasks or sets of tasks. The Dictionary of Policing defines policing as "the organised order maintenance, peacekeeping, rule or law enforcement, crime investigation and prevention, and other forms of investigation and associated brokering, which may involve the conscious use of coercive power" (Newburn & Neyroud, 2008, pp. 217). Policing tends to involve the enforcement of national laws and the use of coercive force (Newburn & Neyroud, 2008). However, crime prevention can be done in ways that do not involve force. Crime prevention, simply defined, is any approach that attempts to reduce crime or prevent crime from occurring. This can be done in the long-term using socio-economic development and empowerment, or it can be done in the short-term through making crimes more difficult to execute.

It is also useful to draw a distinction between policing and social control (Newburn & Neyroud, 2008). Teachers and parents engage in social control as they attempt to shape children's behaviour through coercion, rules or kindness. Neither teachers nor parents are policing in any formal sense. Thus, policing is, in some form, the use of coercive force or legal measures (or the threat thereof) while social control may be exerted by numerous actors (Newburn & Neyroud, 2008). Crime prevention can be done through social control (using the example above with teachers or parents) or it can be using policing and the threat of coercive force (Newburn & Neyroud, 2008).

Historically, policing has relied upon two core ideas: deterrence and incapacitation (Braga, 2008, Picket, 2018). The threat of being arrested and punished for a crime was seen to deter people from committing crime and criminals were incapacitated from committing further crimes because of their arrest and subsequent prison sentence. The primary technologies of policing "have been preventative patrol, rapid response and retrospective investigation" (Braga, 2008, pp.1). Numerous scholars and practitioners note that these responses are reactive as they only begin after a crime has been committed (Braga, 2008, Freilich & Newman, 2016, Telep & Weisburd, 2012).

After World War II, police reform was initiated in numerous policing organisations, particularly in the United States (US) and the United Kingdom (UK). 'The Police' was the focus of public outcry as a result of corruption, abuse of power and a lack of professional standards. This led to what was termed 'Police Reform' and 'Professional Policing' (Braga, 2008, Scott et al. 2008). It was the focus of police forces in the UK and the US from around the 1940s until the 1980s. Professional policing emphasized military discipline, higher education for police officers, the use of professional standards, implementation of management strategies and the use of scientific technology (such as two-way radios and fingerprint technologies) (Braga, 2008, Newburn & Neyroud, 2008). The rigorous standards of professional policing reduced corruption and police abuse in the UK and the US. However, as crime rates continued to increase, researchers questioned the effectiveness of the strategies used by police (Braga, 2008, Newburn & Neyroud, 2008).

Bright (1969) found that the level of 'beat patrolling' has very little effect on crime rates. The Kansas City Patrol Experiment (Kelling et al., 1974) found that crime rates and citizen satisfaction remained unchanged regardless of the level of patrolling done by officers. Schnelle et al. (1977) found that if 30 times the normal amount of patrol cars were deployed, it reduced crime at night but not during the

day. Overall, these studies found that patrolling was not particularly effective (Ratcliffe et al., 2011). The levels at which it would be effective are unaffordable and unsustainable (Schnelle et al., 1977, Ratcliffe et al. 2011). This may be because many crimes occur in places not easily seen from a passing car (such as in a home or a business) (Eck and Spelman, 1987). These experiments were repeated more recently, rendering similar results, c.f. Ratcliffe et al., 2011 and Telep & Weisburd, 2012.

While the studies cited above cast doubt on the traditional police method of patrolling, it is important to note that these studies focused on assessing the efficacy of random patrolling at reducing all crimes in an area (Telep & Weisburd, 2012). Some crimes are unlikely to be affected by police patrols, particularly those that occur in businesses or homes such as domestic violence or fraud (Eck & Spelman, 1987, Scott et al., 2008, Braga, 2008). Police patrolling may be an effective strategy for addressing specific interpersonal contact crimes that typically occur in public spaces, such as robbery, mugging, assault or trespassing (Eck and Spelman, 1987, Maguire et al., 2015). In recent years targeted and data-driven patrols were found to be more effective at addressing particular types of crimes (Scott et al., 2008, Maguire et al., 2015).

There are numerous interesting parallels to be drawn between these developments and the anti-poaching efforts in the GLTFCA. Barichievy et al. (2017) conducted a study on the efficacy of armed-ranger patrols in deterring rhino poaching in a private reserve in South Africa. Similar to Schnelle et al. (1977), the Barichievy et al. (2017) research concludes that armed-rangers do not sufficiently deter poachers and argues for resource optimization strategies and adaptive management. They suggest sophisticated data management and analysis processes, such as live mapping and data updates. Similar strategies were tested by Critchlow et al. (2017) in Uganda where detection of illegal activities increased by up to 250%, this was achieved by deploying the same resources more effectively. Ranger-collected enforcement data was used to model the probability of illegal activities, and ranger patrols were then planned based on that data modelling. However, one criticism of this work is that the detection of illegal activities does not necessarily equate to deterrence.

Traditional policing is often engaged in what is described as 'crime prevention'. However, with some analysis, it becomes clear that police primarily respond to crime events rather than prevent them. While the traditional policing approaches – to deploy units in proactive patrolling and to respond quickly to crimes – have been demonstrated to have little or no effect on preventing crimes, they may still be useful and desirable for society. Braga (2008) also notes that police officers provide many people access to government social services as they may act as the first point of contact.

A deeper understanding of the ineffectiveness of random patrolling has led police agencies to adopt a broader range of crime prevention strategies, such as problem-oriented and Community-Policing models (Braga, 2008).

Whole-of-society Governance

Until recently, policing (as a verb) was seen as the exclusive domain of the police (as a noun). Within traditional Police Studies, policing was seen as the work of 'the police'. The police are an organ of the state that may use coercive force to effect the results legally prescribed. "It is the police service's role as the institution wielding legitimate force on behalf of the state that really sets it apart" (Newburn & Neyroud, 2008, pp.218).

Whole-of-society approaches take a broader view of security provision (Drahos et al. 2005, Froestad & Shearing, 2015) and moves policing away from being exclusively the domain of the police. They view all people within a society or community as actual or potential providers of security

(Boutellier & Van Steden, 2011, Drahos et al. 2005). Significant in this regard was Shearing and Stenning's (1985) essay that observed that all employees in Disney World were involved in security and social control in some way. This simple, yet profound, observation threw open the limits on what or who could be considered a 'security provider' (Shearing & Stenning, 1985, Drahos et al. 2005, Boutellier & Van Steden, 2011)..

In recent years, with the rise of private security and alternative approaches (such as community-based policing) and newer conceptual understandings of governance and security, crime prevention has become understood as something that may be carried out by several actors (Shearing and Stenning, 1985, Hübschle & Shearing, 2018, Boutellier & Van Steden, 2011). There are a number of organisations that may be engaged in some form of policing, such as private security services, the military, the police and neighbourhood watches. In the GLTFCA we also have government-mandated wildlife authorities (e.g. SANParks and ANAC), traditional authorities and private-sector anti-poaching units.

Gonçalves (2017) and Hübschle & Shearing (2018) outline strategies for creating whole-of-society responses to poaching. Gonçalves focuses on co-operation and co-ordination between government, non-government organisations (NGOs), communities and the public, stating that "a cross-organisational strategy is required where role players agree on shared strategies and methods" (2017, pp. 10). Hübschle & Shearing argue against the top-down anti-poaching strategies, stating that these approaches "fail to take advantage of a significant change agent in conservation: the local communities themselves" (2018, pp. 7). Both papers provide arguments for broadening the range of actors involved in addressing poaching.

Generally, responses to wildlife crime in conservation areas have largely focused on coercive force and/or rapid response units to prevent the crime from happening, or to apprehend poachers after a poaching incident has occurred. The focus of this paper, in terms of 'crime prevention', is to investigate systems or responses that will prevent future poaching from occurring by employing interventions that address the core drivers of rhino and elephant poaching in the GLTFCA.

Normative Approaches

When considering drivers of poaching behaviours, there are two primary approaches:

(1) *Instrumental approaches* hold the view that poaching is driven by self-interest and that individuals are affected by immediate incentives or punishments. These approaches are aligned with rational choice theory (page 22) and the opportunity-focused approaches (page 31) to crime prevention.

(2) *Normative approaches* focus on the role of morals, beliefs and values in driving poaching behaviour rather than looking solely at economic benefits (Von Essen et al., 2014, pp.635).

The bulk of work on poaching behaviour employs the instrumental approach (Von Essen at al. 2014). Drawing on microeconomics, this approach assumes that humans are motivated by economic or livelihood concerns in rational and dispassionate ways (Von Essen et al. 2014). From an instrumental perspective, poachers are more likely to adhere to legislation if they fear sanctions, thus leading to a criminal-justice deterrence-based response to poaching (Von Essen et al. 2014).

Numerous studies have considered wildlife crimes and the strategies employed by various individuals or groups to negate, invalidate or de-legitimate specific wildlife rules or laws. These studies indicate that poaching is a socially-embedded behaviour (Von Essen, 2014, Eliason, 1999, Hübschle, 2017a).

Normative approaches consider the relationship between norms, laws and compliance. Some scholars have moved beyond utility maximisation, or "pocket book and cooking pot" (Kahler & Gore, 2012, pp.1), explanations for poaching and consider normative and moral frameworks. This literature considers a range of motivations for poaching, such as dissent and democratic deliberation (Von Essen & Allen, 2017) or empowerment and social justice (Hübschle, 2017a). This approach leads to the application of theories employing concepts such as defiance (Von Essen et al. 2014), neutralisation (Eliason & Dodder, 1999), dissent (Von Essen & Allen, 2017) and contested illegalities (Hübschle, 2017b). Currently, there is little theoretical integration between instrumental and normative approaches.

Defiance

Von Essen et al. (2014) suggest defiance theory, drawn from criminology, may provide sufficient theoretical grounding for understanding poaching as a socio-political crime. Defiance is a "cluster of actions and attitudes that include dissent, resistance, rebellion and civil disobedience" (Von Essen et al., 2014, pp.643). Defiance theory states that unjust laws and unduly harsh sentences are met with defiance and often deliberate rule-breaking. Defiance theory tells us that when sanctions are seen as unjust, harsh or unfair, this results in the delegitimisation of the authorities and a continuation of criminal behaviour (Von Essen et al. 2014).

Neutralisation

Neutralisation theory, which is aligned to strain theory (outlined below), is a "cognitive-dissonance-reduction strategy that delinquents use to reduce the guilt associated with norm violation and, thus, to neutralise any definition of themselves as delinquent" (Eliason & Dodder, 2000, pp.1). This is the process whereby a person engages in an act that is illegal and uses an emotional or cognitive process to 'neutralise' the illegality of that behaviour and render it acceptable to themselves (Eliason & Dodder, 1999, Von Essen et al. 2014).

Much of the research on normative approaches look at the norms and values of poachers, villagers and regular people, observing that often these are at odds with conservation goals or objectives (Kahler & Gore, 2012). Ten techniques of neutralisation have been identified: the denial of responsibility; the denial of injury; the denial of the victim; the condemnation of the condemners; appeal to higher loyalties; the defence of necessity; the metaphor of the ledger; the denial of the necessity of the law; the claim that everybody else is doing it; and the claim of entitlement (Collins, 1994).

Enticott (2011) employed the technique of neutralisation to understand illegal badger culling in the UK and found that seven of the ten neutralisation strategies were employed by farmers to rationalise their rule-breaking. Significantly, Enticott (2011) links these justifications to cultural and identic demarcations. He states that these "rationalisations are culturally complex and do not simply rely on economic motivations… the findings suggest that neutralisation techniques should be seen as components of a broader argument in support of rural space and identity… neutralisation techniques combine to defend a particular rural identity and way of living. As much as they are attempts to rationalise criminal behaviour, neutralisation techniques should, therefore, be seen as spatial discourses, demarcating the boundaries of spatial and cultural identities" (2011, pp. 207). Neutralisation techniques can be related to culture, rural identity and rural ways of life may be significant for anti-poaching in the GLTFCA. "When isolated from the dominant culture, pockets of traditionalism, defensive localism and rural holdover values often framed in opposition to 'urban outsiders' and game legislation may be perpetuated in such a way as to become a socially organised and patterned deviance, a so-called deviant subculture" (Von Essen et al., 2014, pp.636).

Neutralisation theory states that offenders may not reject the dominant moral principles outright. Rather, they find excuses or reasons to justify behaviour or a specific act (Eliason & Dodder, 1999). "Neutralisation by delinquents does not involve a total rejection of the dominant cultural values of the society in which they live but instead involves the acceptance of those values while at the same time making exceptions to those values that excuse their misbehaviour" (Eliason & Dodder, 1999, pp. 235). However, it unknown whether this is true regarding conservation behaviours in the GLTFCA in general and concerning high-value poaching in particular. It is known that conservation values are controversial with residents around the GLTFCA.

The choice of neutralisation strategy to be employed in a particular time and place will depend on a range of contextual, cultural and social factors (Eliason & Dodder, 1999). In both South Africa and Mozambique, there have been controversial forced removals and a history of economic and physical exclusion from the conservation areas. It is anticipated that these cultural, historical and economic factors will all be present in neutralisations deployed by poachers around the GLTFCA. "Public support for illegal hunting has additionally been shown to be increasing in socio-political contexts in which conservation policy is seen as unfair and lacking in legitimacy" (Von Essen at al. 2014, pp. 632).

Enticott (2011) further observed that neutralisation might result in an ambiguous state where two value systems interact, whereby a poacher may subscribe to society's norms while simultaneously rejecting specifics values or beliefs. "There is still some debate about whether neutralisations instigate or merely justify deviances ex post facto" (Von Essen et al., 2014, pp.636).

"While the rhino has a bounty on its horn that far outweighs the average annual income of a rural villager, poaching is not just about the price of the horn but also about claiming reparations for the loss of land, hunting and land use rights and demands for economic opportunities and agency to co-determine the future and good fortunes of village communities" (Hübschle, 2016a, no page).

Dissent

Similar to the preceding discussion on neutralisation, Von Essen & Allen (2017) describe the illegal hunting of wolves in Nordic countries as a form of political dissent. Wolves have been reintroduced by the European Union (EU) as part of its conservation efforts, and are now hunted illegally by local farmers. Von Essen & Allen (2017) consider this dissent a form of political communication. The reintroduction of the wolves was considered a serious assault on the interests and lives of the local farmers and hunters (Von Essen & Allen, 2017). They reported that the wolves affected the safety of their livestock, animals and family members, and experienced the reintroduction by the EU as against their interests, and as being orchestrated from outside of their country, without them having been consulted. In this context, Von Essen & Allen (2017) debate whether the killing of wolves can be understood as a form of political expression.

Ultimately the authors conclude that illegally killing wolves fall outside of what can be classed as 'reasonable disagreement'. However, they did state that the hunters still deserve a dialogical uptake, "Above all, we believe that public authorities have failed to adequately justify their decisions concerning conservation regulations and directives to the hunters. In democratic theory, all of those who are coerced are owed a justification by the authorities" (Von Essen & Allen 2017, pp.224). They describe the farmers' sense of duty to protect their livestock and how farmers and conservationists were deploying competing conceptions of justice (Von Essen & Allen, 2017). "Plural conceptions of justice constitute a terrain of ideological struggle in society… Taking care of one's own and valuing one's livestock was not only the norm in society, it also was a legally stipulated civic duty until very recently… despite the shift in modernity from wolf-killing as a moral duty to a criminalised practice, public authorities have not met this burden of justification… This new environmental consciousness is not shared by the hunters who cleave to traditional norms and assumptions about our obligations to non-humans" (Von Essen & Allen, 2017, pp.223).

These 'plural conceptions of justice' may be a useful tool in understanding the situation in the GLTFCA. "The hunters deserve uptake in a way not dissimilar from how we should respond to objectors and disobedients, assigning them a status as more than mere criminals" (Von Essen & Allen, 2017, pp.225) If we accept that poaching can be deliberative dissent, then we have an option to engage in the deliberation, or we can continue to criminalise this dissent, or only address the criminal actions resulting from this dissent, and take on the mounting costs and decreasing legitimacy of doing so.

Contested Illegality

Similar to defiance is the concept of contested illegality, defined as a phenomenon whereby a law, or set of laws, is not accepted by all members of a society and thus that behaviour which has been defined as illegal by the law may not be viewed as unacceptable by all members of society.

Hübschle (2017b) notes that the rhino horn trade is now illegal, but that it was not always illegal. She argues that "banning an economic exchange is not a straightforward political decision but a protracted process that may encounter unexpected hurdles along the way to effective implementation and enforcement. While political considerations informed the decision to ban all trade in rhino horn initially, diffusion of the prohibition was uneven and lacked social and cultural legitimacy among key actors affected by the ban and its impact" (Hübschle, 2017b, pp.177).

A nation, or group of nations, delineates what is legal or illegal. However, "there may be a disconnect between the state and society regarding such legal definitions, their interpretation, and

the legitimacy of such rules. Both agents of the state and members of society might flout some rules of a society" (Hübschle, 2017b, pp. 178). Hübschle (2017b) demonstrates that the contestation over the illegality of the rhino horn trade is at the level of policymakers and enforcers, as well as poachers and smugglers. She quotes a South African law enforcement official: "It is crazy that these old colonial institutions are still in place. CITES [the Convention on the International Trade in Endangered Species of Fauna and Flora] decides how much and what we can sell. We stock about 90 per cent of the world's rhinos. So who are they to prescribe to us? I mean we are in a controlled area, where we manage stock. We know what we are doing and we are trying to protect them for our children" (Hübschle, 2017b, pp. 188). More recently, researchers find that many people living around the GLTFCA feel that the animals in the parks receive more care and attention than they do – and that the lives of the animals are valued more highly than the lives of the poor African people living around the park (Hübschle, 2016c, Vundla, 2018). Those living around the parks feel that they have been excluded from deriving benefits from the parks around which they live (Carruthers, 1995, Hübschle, 2016c).

Normative Approaches Conclusion

The normative approach is offered here as an alternative position to the instrumental view of poaching and the rational choice approach (outlined below). An expert review panel, put together to provide input on this literature review, is of the opinion that high-value wildlife crimes are driven, primarily, by economics. However, the context of the economic reality in which these crimes take place needs to be considered within the social and political history of South Africa. The KNP is viewed by the black South Africans living on its border as an illegitimate place – a place that their ancestors were removed from, they are excluded from, and where wealthy white people go to look at animals. Potential poachers are economically marginalised people who live adjacent to a resource that is mostly inaccessible to them, but where they can poach and derive real financial benefit.

Vundla (2018) notes the creation of protected areas "restricted and redefined natural resource use rights thereby excluding people from their livelihood base" and that "redefining land use and access contributed to the criminalisation of local communities through the use of legislation, enforcement and privatisation" (Vundla, 2018, pp.2). 'Illegal' with regards to resource use is a term used by conservationists, not local communities (Vundla, 2018). The social values around the GLTFCA are not supportive of conservation efforts. This is due to the costs of living alongside wildlife, the exclusion of local people and the increased livelihood insecurity that is often experienced after forced removals (Hübschle, 2016c, Massé & Lunstrum, 2016, Mbaiwa & Stronza, 2011, Vundla, 2018). Poaching is not viewed negatively and is a way to derive benefits from the existence of the conservation areas.

As noted above, when discussing the militarisation of anti-poaching, for people who have been forcibly removed from the conservation areas and excluded from deriving benefits from these areas, poaching rhinos and elephants is a way to derive benefits from the existence of the conservation areas. In this regard, the choice to poach makes sense. "Poaching was initially a partial form of protest against the hunting ban and park authorities, allowing some unhappy rural villagers to protest against unfair and economic exclusionary rulemaking. What started as an illegal economic activity born out of need and protest against unfair rules has however snowballed into greed-based accumulation further exacerbated by the high value of rhino horn at the source and in consumer markets" (Hübschle, 2016a, no page).

It is important to view poaching within its social and economic context and to address the social values and norms regarding wildlife crime in these communities. Poaching within the GLTFCA is

embedded within the towns and villages around the conservation area (c.f. Vundla, 2018 and Hübschle, 2016c). Researchers have found that communities living in or adjacent to wildlife areas are not homogenous and the benefits derived from poaching are not shared equally between poachers and villagers, necessitating a more nuanced approach (Hübschle, 2016a).

These insights are particularly troublesome when considered alongside the growing criminological revelations regarding the relative ineffectiveness of policing, punishment and deterrence, and growing support for community-based crime prevention. However, it may be impossible to effectively implement community-based approaches where community members do not support the conservation efforts or the view that these acts should be considered as crimes.

Rational Choice Theory

When asked why he robbed banks, Willie Sutton said
"Because that's where the money is"
(Cocheo, 1997)

Classic criminology tended to view criminal actions as deviant and criminals themselves as deviant or in some way, 'unwell' (Maguire et al., 2007). In the late 1980s, Derek Cornish and Ronald Clarke developed a "conception of crime as the outcome of rational choices on the part of offenders" (Cornish & Clarke, 2008, pp.24), this new approach was labelled the rational choice theory. This definition was a radical departure from the traditional criminological view of offenders as sick or deviant (Maguire et al., 2007). The theory states that criminal acts are based on a cost-benefit analysis and a reasonable assessment of the offenders' options "using cues present in potential crime settings to guide their decisions about whether (or not) to commit particular crimes and, if so, how to commit them" (Cornish & Clarke, 2008, pp.24).

The rational choice approach views criminal actions as purposive and rational – they view decisions to commit crime as based on a cost-benefit analysis and a reasonable weighing up of the offenders' options. Cornish and Clarke state that "the rational choice perspective is a heuristic device or conceptual tool rather than a conventional criminological theory" (Cornish & Clarke, 2008, pp.24). Theories regarding why some individuals commit crimes and others do not have been at the core of much criminological inquiry. These theories have, at times, failed to assist criminologists in developing functional programmes that reduce crime. The assumptions we deploy (consciously or unconsciously) regarding the nature of humans and their propensity for criminal actions have profound impacts on the kind of interventions we may consider and whether we consider them viable or not. These theories speak to the nature of society and what we assume to be true about humans and human motivations.

The purpose of the rational choice approach is to look at criminal actions in a pragmatic way that is present-centred and acknowledges the environment's influence on human action. Proponents of the model focus on the practicalities of preventing crime by determining how crimes happen, rather than on the more complex theoretical ideas around the development of criminality and causes of crime (Cornish & Clarke, 2008). It is at this point that many interventions diverge, some choosing to focus on the deeper internal motivations of offenders while others focus on making the act of committing a crime more difficult.

As Braga (2008) observes, by the time someone has come to the attention of the police, why they offend is of little importance. The most pressing concerns are rather how they offend at particular places and at particular times, and how to prevent this. The rational choice approach focuses on

decision-making in the present moment, as well as the mechanical and logistical practicalities of the offence, and how to make offending more challenging. It operates on the belief that stopping criminal actions, or making them harder, can lead to people choosing alternative behaviours. In this way, the approach views the motivation to commit criminal acts as similar to the motivation to commit legal acts, as changing over time and responding to the environment.

Deterrence

Most criminal justice models are based on deterrence theory. Von Essen et al. (2014) note that most simple deterrence models that intend to raise the costs of a behaviour, are microeconomic models focused on the costs and benefits of an individual's choices. The logic follows that if the sanction is made more severe (i.e. the cost is increased) the deterrent effect will be greater and people will become less likely to engage in that action. While intuitively appealing and logical, these models are not always accurate.

Deterrence models fail to explain people's choice to continue poaching when the costs associated are raised to lethal levels. Von Essen et al. (2014) discuss punishment for poaching and note that the "use of deterrence models led to the conclusion that extreme law enforcement measures (e.g. shoot-on-sight policies) may be needed when wages in society are low, and the economic benefits of illegal hunting are high" (2014, pp.635). "Scholars have attempted to address these limitations in part through a hierarchical approach that situates microeconomic models in their macroeconomic contexts. Such analyses have taken into account everything from the availability of legitimate employment, welfare state services and land use in poaching-prone communities to fluctuations in international markets" (Von Essen et al., 2014, pp.635).

Thus, while the threat of death may seem a sufficiently strong disincentive for some, for those with few alternatives, and where there are strong supporting motivations such as anger and perceived illegitimacy of the legislation, it may not work. Punishment-based deterrence models are also unable to capture or account for poachers meeting emotional or social needs through their poaching behaviour such as a sense of agency or protesting unjust legislation (see the section on Social and Economic Development, pp 53).

Behavioural Economics

> *"We tend to think of ourselves as reasoning (thinking) beings that have troublesome emotions.*
> *Actually, we are emotional beings that have learned the ability to reason."*
> *Michael Dues*

Traditional economics, based on expected utility theory (EUT) and decision theory, views humans as rational actors who make their decisions based on accurate assessments of risk, cost, and reward, and then decide on the outcome that will provide the most benefit. EUT[3] is the theory that people make choices based on the outcome that they expect will give them the most utility. However, it has been shown that humans do not always use EUT to inform their decision-making (Kahneman & Tversky, 1979). The rational choice perspective describes humans as rational. However, it does not describe humans as perfectly rational. Its understanding of rationality is nuanced and views humans

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[3] This project will not engage in the economic debates regarding the various approaches, such as prospect theory (PT) and EUT. PT while a theory that imperfectly maps to reality, has demonstrated its utility in numerous disciplines, such as Public Health, and had proven itself as more efficacious than EUT. Should readers wish to understand PT and EUT further, it is recommended that they examine: Kahneman & Tversky, 1979, Kahneman et al., 1982, Tversky & Kahneman, 1992, al-Nowaihi and Dhami, 2010.

as prone to making imperfect judgments. Within the rational choice perspective, humans are understood to have limited or bounded rationality – making decisions in a way that is consistent with a more limited calculation. Instead of exhaustively assessing all possible options, humans act as 'satisfiers' – picking the first option that best meets a current need or want. This approach aligns very well with the field of behavioural economics, which focuses on understanding the choices people make and how they make those choices.

Humans are understood to use heuristics[4] (thinking patterns) instead of conducting accurate calculations on risk and probability. Humans are prone to errors, bias and being rather poor at decision making – engaging in 'intuitive reasoning' that makes them prone to consistent errors in judgment (Kahneman & Tversky, 1979).

Daniel Kahneman and Amos Tversky (1979) developed prospect theory (PT), which proved more accurate in mapping human decision making in certain settings to explain the regular errors in judgment that they observed and how these function. The key elements of the original PT were: (1) losses are more salient than gains – most people will be more affected by a loss of x-value than they will by a gain of x-value, and (2) that people overestimate small probabilities and underestimate large ones.

Kahneman and Tversky (1979), when looking at how people made decisions under uncertainty, found that instead of accurately calculating the expected utilities (as theorised by EUT), they would first order the outcomes according to the heuristics identified, then set a reference point, and finally judge all outcomes that fall below the reference point as losses and all those above as gains. This alters how decisions are made because decisions experienced as losses are subject to risk-seeking, while those experienced as gains are subject to risk-aversion.

Kahneman and Tversky also defined a series of heuristics that have become foundational in behavioural research today. Research on human decision making has continued to evolve, and several recognised heuristics have been identified and validated through experimentation. Some of these are[5]:

- *Framing*: The rational theory of choice assumes that how a problem is described will not change the choices that people make. Numerous experiments, however, have found that people react very differently to choices based on how they are framed. For example, stating "if you do this operation you have a 10% chance of dying" or "you have a 90% chance of surviving" has very different outcomes in terms of patient decisions.
- *Loss aversion*: People experience losses more saliently than gains. Losing R100 is more emotionally impactful than gaining R100. This results in people overestimating the probability of a loss and underestimating the probability of a potential gain.
- *Risk seeking*: Traditionally, it was assumed that risks were avoided in decision-making processes. However, people have been observed to consistently take risks in two situations: (1) if the possible benefit is very large, and the loss incurred to enter that gamble is small (such as

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[4] Heuristics are thinking patterns that are used to simplify questions or to help people arrive at answers. Where finding the perfect answer to a question is impossible or impractical, a heuristic may be used to find an acceptably accurate answer. For example, if asked to calculate what 7 times 96 is, someone may say "just less than 700". This answer was arrived at by conducting a much simpler maths sum (100 times 7), which is 'close enough' to the actual answer. This saves them mental effort and helps them to arrive at an answer that approximates the correct answer.

[5] This section is a summary of ideas from Tversky & Kahneman 1992, Thaler & Sunstein 2008, and Kahneman 2011.

with lotteries), and (2) when people are already in a loss situation, they will take risks, even if that risk opens them up to losing substantially more.

- *Present bias*: People are significantly more motivated by a smaller outcome (positive or negative) offered today than a larger outcome to be received in the future. The longer this time scale is, the less effective that outcome is as a motivator. Research in this area has looked at choices, and peoples' ability to delay gratification (such as the famous "marshmallow test"). For crime prevention, that means a R500 fine today would be a more effective deterrent than a 1-year jail sentence to be started at some indeterminate point in the future.

- **Probabilities**: People overestimate low probabilities and underestimate high-probabilities. This tendency to miscalculate probability may have utility in how potential offenders assess their chances of being caught while committing a crime. "At very low probabilities, there may be a transition in perceptions from 'impossible' (I'll never get caught so can ignore that set of consequences) to 'possible' (I might get caught for this). At the high end of the range, there may be a transition from 'highly probable' to 'certainty' (I know I'll get caught)" (Cook, 2016, pp.1158).

- **Availability**: People overestimate the occurrence of an event if they have memories or experiences of that event immediately available to them. For example, "crime is getting so much worse, my aunt and my best friend were both robbed last week". Conversely, people may under-estimate how frequently things occur if they do not have any examples immediately available in their memories. For example, more people are attacked per annum by cows than by sharks, but cow attacks are not covered in the news in the same way that shark attacks are, and consequently most people would say that sharks attack more people.

- **Source dependence**: A person's willingness to bet on an uncertain event depends not only on the event itself but also on the source of the event and the information about that event. People will prefer unlikely bets in their area of expertise over probable bets in unfamiliar areas.

Behavioural economics interventions are effective in certain areas, such as public health where peoples' behaviours have been 'nudged' towards healthier outcomes (Thaler & Sunstein, 2008). Behavioural 'nudges' make use of the cognitive heuristics identified and are possible because even though cognitive heuristics lead to inaccurate decision making, they are consistent in their inaccuracy and, thus, human behaviour can be exploited.

Above we introduced 'present bias', the concept that refers to the human tendency to discount the value of a consequence the further into the future it is expected. A reward today is most effective, and conversely, the same consequence or reward is less salient if it will be experienced a year from today. With regard to both rewards and punishments, this insight is paramount. For example, "Increasing a threatened term of incarceration from 1 week to 2 weeks will have a greater… [deterrent effect] than increasing the threatened term from 50 weeks to 51 weeks" (Cook, 2016, pp.1157). This is because of peoples' present-bias. They are more motivated by consequences in one week or two weeks than in 50 or 51 weeks. This is significant when considering lengthening already long prison sentences. Thus "the marginal effect of a longer spell of incarceration dwindles quickly as the base sentence increases" (Cook, 2016, pp.1157). Extending long prison sentences to make them even longer, which is often politically popular, has less deterrent effect than expected (Zimmerman, 2004). The same applies to considerations regarding the deterrent effect of the death penalty. Numerous studies have found that the death penalty has little deterrent effect. This is because the options available are life in prison or the death penalty (Zimmerman, 2004). Both of these choices are 'losses' and thus, the difference between the two is marginal.

Cook (2016) also assessed humans' inaccuracies with regard to probabilities. As noted above, people tend to under-estimate high probabilities and overestimate low probabilities. Changing the perception that one may be caught for a crime could leverage the human propensity for over-estimating low probabilities. If people could be convinced that their prospect of getting caught is higher than it is, they may reconsider the costs and benefits of poaching. Such an effect would be small but could dissuade those who are at the margins, and those who have alternatives.

Academics and practitioners have started to apply behavioural economics concepts to conservation work. Reddy et al. (2017) and Tucker (2007) are noteworthy examples. Reddy et al. (2017) delineate the three approaches used to change peoples' behaviour by conservationists:

(1) **Promoting awareness and concern** is used by numerous conservation and environmental education programmes based on the rationale that new knowledge and beliefs will lead to concern and care, resulting in pro-conservation behaviour (Reddy et al. 2017). However, Reddy et al. (2017) acknowledge that "many studies suggest that the assumed direct link between awareness, attitudes, and pro-conservation behaviour… is relatively weak and is often mediated by other factors" and that "many education and communications programmes that promote biodiversity conservation have never been evaluated for their effect on behaviour". This is supported by research on behavioural economics (c.f. Thaler & Sunstein, 2008) and conservation behaviour change (Waylen et al. 2009).

(2) **Incentivising behaviour** assumes that people will act in their self-interest, so incentives or disincentives should be structured to encourage people to act in particular ways (Reddy et al. 2017). Incentives may take the form of government discounts for purchasing energy-efficient appliances or disincentives such as fines for littering (Reddy et al. 2017). One benefit of this strategy is that people do not need to understand or support conservation goals. They may choose to change their behaviour purely to enjoy an incentive or benefit.

(3) **Nudging behaviour** involves using incentives to 'nudge' people towards desired behaviours and is discussed in detail in the next section.

"Behavioural sciences can advance conservation by systematically identifying behavioural barriers to conservation and how to best overcome them. Behavioural sciences have informed policy in many other realms (e.g., health, savings), but they are a largely untapped resource for conservation". (Reddy et al., 2017, pp.1) However, conservationists tend to focus more on nature and the benefits of nature (thus relying on strategy 1) instead of focusing on the science of behaviour change (Reddy et al. 2017).

Tucker (2007) is critical of top-down planning and conservation models, in which conservationists identify unsustainable or undesirable behaviour. These top-down approaches are often rejected as they are developed using flawed and problematic assumptions, and because the proposed solution does not replace the value of the original action. In Madagascar, the Mikea rejected the farming of manioc instead of maize, because manioc while being better for the environment is substantially more labour-intensive and has a longer farming period before harvest (Tucker, 2007). Tucker (2007) proposes bottom-up engagement to fully understand the needs and values of the recipients of the programme and to solicit solutions from them.

Another important consideration regarding decisions is what is referred to as 'cognitive load' or 'cognitive scarcity'. Decision-making imposes a cognitive burden on people that they would rather avoid by using heuristics or that can impede their decision-making ability because it is overly taxing on an already overburdened cognitive system. Decision Research indicates that people have a limited

amount of decision-making capacity that is affected by factors such as stress, sleep and diet (Mani et al., 2013). Research on poverty and decision-making indicates that poor people are cognitively burdened by their poverty and worrying about their financial situation and thus make worse decisions as their finances worsen (Mani et al., 2013). One intervention found that rural farmers in India were more receptive to learning and educational interventions after they had harvested their crops as they were less worried about their finances and able to focus on the teaching (Mani et al., 2013). This insight helps to understand the potential cognitive burdens and decision-making capacity of poor people living around the GLTFCA and may help develop programmes to support them.

Nudge Theory for Behavioural Change:

This literature review provided a broad summary of some of the principles of behavioural economics and decision science[6]. The insights described above can be used to guide how behaviour change programmes are implemented. The following section provides a list of recommended principles to inform programme design. While behavioural economics itself is not focused on crime prevention, it can be used to shape and 'reality test' interventions. Interventions developed with an understanding of behavioural economics will prove more effective than interventions that do not consider these insights. For example, if we know that humans discount the future and are poor at assessing probabilities, we should build interventions that are present-focused and provide immediate and consistent feedback.

One of the fundamental premises of economics is that human behaviour is driven by incentives and that incentives matter. The logic follows that if you want to incentivise a behaviour, reduce the costs of engaging in that behaviour, and if you want to disincentivise that behaviour, increase the costs of engaging in that behaviour. This is the theory behind many economic and social policies such as speeding fines, sin tax, detention at school, prisons, the death penalty, policing, etc. These work in many instances, but not in all, and not all the time.

Humans respond very well to incentives – rewards and punishments can directly shape behaviour. However, the effect of incentives is not always logical or consistent. Certain forms of punishment or reward are exceptionally effective, while others are not. For example, humans are significantly more motivated to exercise by the promise of a free coffee once a week than by the knowledge that they are prolonging their lives and reducing their chance of getting cancer[7]. The reasons for this are complex and multi-faceted and can be explained by behavioural economics.

This section details some design principles[8] for developing and implementing behaviour change programmes based on nudge theory. There will be exceptions and instances where the advice given here does not work or unexpectedly makes things worse[9], but for the most part, programmes that are aligned with these principles are more likely to be successful.

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[6] There are numerous books on this topic that are recommended for further reading, such as "Thinking, Fast and Slow" by Kahneman "Nudge" by Thaler & Sunstein, "Change or Die" by Deutschman.
[7] Discovery Vitality's Active Rewards is a great example of this.
[8] Design Principles are the principles or ideas that underscore a programme's design and implementation. This approach is one step removed from 'best practice', and rather looks at the concepts and principles of a project.
[9] An excellent example of this is where crèches in Haifa, Israel, started to charge parents penalties for picking up children late. The idea being that parents would want to avoid the financial penalty and thus would be more incentivised to fetch their children on time. In multiple instances where this was done, the opposite outcome was achieved. More parents collected their children late when there was a penalty to be paid. The incentive had the opposite effect. One theory for explaining is that the parents felt less guilty because they were 'paying

Core Principle: Understand Context and Develop Appropriate Incentives: Effective behaviour change interventions are context-specific and effective at addressing very specific behaviours. In the case of rhino and elephant poaching, it will be necessary to understand the drivers of poaching and to build specific incentives around those behaviours.

Design Principles:

1) Peoples' perspectives vary. What makes sense rationally or what is morally better often does not compel people to change their behaviour. When doing conservation work, the authors suggest that dropping any notions of 'but people should just do x'. It is not enough to assume that people will immediately see the logic of a position.

2) Awareness and information are insufficient. A common assumption is that if the public were sufficiently educated or informed, they would not engage in the behaviour. Those responsible for implementing programmes assume that interventions based on morality (it's the right thing to do) or information (it's better for you and for us) will work, but this is not necessarily the case. 'Raising awareness' does not change peoples' behaviour, particularly not when people benefit from the behaviour you are trying to stop. Vu and Nielsen's (2018) review of behaviour-modification campaigns that aim to reduce the demand for rhino horn in Viet Nam show that the campaigns do not address the real drivers behind rhino horn use, nor the role of the traders in maintaining belief-systems and markets. Rather, the campaigns provide information on rhino populations, the medicinal properties of rhino horn and the legal consequences of buying it – none of which will influence the behaviour of people who buy rhino horn. A review by Olmedo et al. (2017), evaluating the design of behaviour change interventions to reduce demand for rhino horn in Viet Nam, found that the majority of campaigns did not have the basics in place, i.e. clear theories of change based on understanding the behaviour in question, the target audience and measurable indicators.

3) Create a clear, simple reward. Tangible, clear rewards (such as coffees once per week) are far more effective at shaping behaviour than intangible or abstract rewards (such as enjoying a longer, healthier life). Part of the problem is that you cannot compare a coffee to a healthier life. For some, a coffee is a delicious hot beverage that will release endorphins and result in a pleasant caffeinated feeling. A 'healthier life', on the other hand, is harder to grasp. It is a very vague concept, one defined by the absence of disease, one that is probably best understood by those who have suffered chronic disease. A coffee is something that you can hold, can put a price to, and can consciously enjoy. A 'healthier life' is harder to physically enjoy, in the immediate way that you can enjoy coffee. Thus, we are comparing apples with imaginary oranges. When seen in this way, it becomes clearer why coffee is a more compelling reward than a healthy life.

4) Create a clear, direct link between behaviour and reward. The link between behaviour and response should be clear and direct. This refers to the time between the action and the reward, the causal system between action and outcome and the mechanism by which the reward is offered. The motivation to engage in the desired behaviour is lower if: (1) the mechanism is very complicated (such as First National Banks's eBucks), (2) the mechanism only works sometimes (like the criminal justice system), or (3) the link between an individual's behaviour and the outcome is unclear (such as with community benefication). People are less likely to act when they feel their behaviour doesn't matter because the reward is too low, the system is ineffective and possibly won't respond, or they

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for a late-care service' (Gneezy & Rustichini, 2000). In this context, the fine was seen as a price, a service fee, that legitimated parents coming late (Gneezy & Rustichini, 2000).

are a part of a much bigger system, and the outcomes of their actions cannot be discerned from the actions of the whole.

5) Reward often. A large-value reward (such as being cancer-free or saving an extra 30% on a retirement plan) that occurs infrequently or at some indistinct point in the future is significantly less effective than smaller lower-value rewards that occur often (free coffees for meeting fitness goals, tax breaks in the short-term). Rewards should be frequent.

6) Avoid rewards that are the absence of a negative experience. Part of why a free coffee is more effective than not having bypass surgery is that not having bypass surgery is the absence of an event. It is hard to define and imagine a non-event. As the old saying goes, 'you don't know what you have until you've lost it'. People are not emotionally incentivised to retain the status quo, rather they are incentivised to receive pleasure. So framing rewards as actual experiences, rather than as the absence of a negative experience, is more compelling to people.

7) Be creative in your behaviour change interventions. Sometimes behaviour change interventions improve effectiveness by using innovative or unusual incentives. One example is that many sport and development programmes may not actually be changing recipients' lives through football, but what they are doing is providing a safe space and an activity that keeps young people busy for a few hours. Young people are then kept busy playing sport when they otherwise might be roaming the streets and engaging in fights and petty crime.

8) People follow the herd. Humans are social creatures and will 'follow the herd' regarding particular behaviours. If people are given the perception that the behaviour you want them to do is what others are doing, they are more likely to engage in the desired behaviour.

9) If people want to do something, it is very hard to stop them - so change the incentives. This speaks to one of the core problems within criminology and criminal justice, where police often speak of 'stamping out crime' or 'cracking down' on crime. What prohibition and the war on drugs have shown us is that if someone really wants to do something, it is very hard to stop them. In policing and crime prevention, a typical response to crime is 'target hardening', to make something harder to access, to increase the complexity of the security system, build bigger walls, stronger locks, better alarm systems, to patrol more often, to deploy more resources. Ultimately, if someone really wants to do something, such as poach rhinos, they will very likely find a way. Thus, it is highly recommended that the incentives for keeping rhinos and elephants alive be structured in such a way to outweigh the incentives for poaching.

9) Raise the opportunity cost. If the choice is between poaching and starvation, poaching is the obvious choice. However, if individuals are choosing between poaching, starvation or formal employment, many may choose formal employment. The opportunity cost of an activity is the total of all other activities that you forgo in pursuing that one activity. If you choose to work at McDonald's you cannot also work at Burger King. The opportunity cost of one job is the other job. With regards to poaching around the GLTFCA, the opportunity costs are low, as there is little alternative behaviour that young men in these peri-urban towns could engage in. Increasing the availability of work and wages would increase the opportunity cost of poaching, as people would be choosing between poaching and a viable career alternative. Some poachers may use poaching as a supplementary income stream, rather than a substitution. If formal employment were of sufficiently

good quality, and the costs of poaching were sufficiently high, more people would tend not to poach and tend to pursue legal employment options.

10) Employ a pragmatic focus on affecting the desired behaviour. There is typically a strong (often unconscious and implicit) desire for those who have 'done bad' to suffer. In these instances, the desire to punish or to create fairness gets in the way of implementing effective approaches to stopping negative behaviours. For example, sending young men accused of their first crime to a college rather than prison would be cheaper and potentially significantly more effective. However, this would be unpopular because it would be seen to be 'rewarding' young criminals. Even though it may be more effective, this approach would be rejected on 'moral' grounds.

11) Build towards the goal. If the goal is complex, such as 'stop rhino poaching', it may be impossible to achieve that goal with one incentivised behaviour. Developing sub-goals and incentivising participants to work towards those can lead to the achievement of the goal later. This may mean setting sub-goals for the population most likely to be employed as poachers – young men living around the GLTFCA. Incentivised, structured goals for this population may be, for example, (1) finish high-school, (2) become formally employed, (3) become debt-free, and then (4) start a business. The assumption is that with each step, the individual becomes less likely to poach and becomes more engaged in other goals.

12) Consider cognitive scarcity. Build interventions in ways that consider cognitive scarcity, i.e. if people are expected to make difficult decisions or attend an education course, ask them to do this shortly after they have been paid or received South African Social Services Association (SASSA)[10] grants, not the week before they are due to be paid.

13) Be trusted. Interventions or rewards only work as incentives if the recipients trust that they will receive the reward at the end of the stated period. If the recipients do not trust the reward scheme, they will not adhere to the programme.

An interesting book in this regard is Alan Deutschman's 'Change or Die' (2007), in which the author looked at instances in which people were given medical advice to change their lives or die. He cites research in which eight of nine people, who given this advice following bypass surgery, did not change their lives. Deutschman focuses on how to address this. In his view, we typically attempt to change people's behaviour through fear, force or facts (Deutschman, 2007). Fear being 'if you do not do this, you will die'. Force being coercion, either through emotional pressure (as a parent or friend) or physical force (as the police). Facts being the provision of information, one need only consider that people continue to smoke, to know that facts alone are insufficient to change behaviour. Rather, Deutschman (2007) suggests that the approaches that work are: relate, reframe and repeat. To relate, is to create a relationship between the person attempting to change and someone else, such as a coach or mentor. To reframe, is to change the way in which a problem is understood to a situation in which permanent change may be possible. Lastly, new behaviours or actions must be repeated in order for them to become a habit.

Community Benefication

Community benefication makes intuitive sense. The core principle is to align community incentives with conversation incentives by providing rewards (financial, property or resource rights, or others)

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[10] SASSA provides grants to citizens for a range of things, one of which is unemployment. In areas with low employment SASSA grants may constitute a substantial part of the formal economy.

to the community for engaging in pro-conservation behaviours (Riehl, 2015). However, the implementation of community benefication has met with mixed results (Dyer et al. 2014, Suich, 2013). When looked at through the lens of behaviour change, we can start to understand why. The time-gap between an individual's behaviour (choosing not to poach or access a conservation area) and the outcome (a cash pay-out at the end of the year, or a community benefit in the following year) is too large, and the causal link between the two is too vague to be sufficiently incentivising for community members to adhere to the benefication scheme, or to feel that they have benefited directly. If the link between the behaviour and reward (or punishment) is tenuous or is distributed over a large amount of time or over a large population, the incentive is less effective. This is particularly true for young men, the population group who are more likely to commit wildlife crimes and are more likely to be present-biased in their decision making than older members of a community.

It may be possible to structure benefication schemes in ways that more closely align with behavioural economics, and thus have more powerful impacts on the communities they target. However, this will require careful consideration of the incentive structures and reward mechanisms.

Behavioural Economics and Crime Prevention

Academics such as Picket (2018) are looking at the effect of the heuristics (page 24) on crime and crime prevention. Applying behavioural economics to criminal justice can explain why intuitively appealing criminal justice interventions (such as longer prison sentences) show little-to-no deterrent effect (Picket, 2018 and Cook, 2016). Further, for incentives or punishments to be effective, there needs to be a level of confidence in the system. If the system is inconsistent, and therefore unlikely to reward or punish as expected, this significantly drops the behaviour change power of that system. In the study of criminal justice, this is discussed through concepts such as swift, fair and certain.

Cook (2016), when discussing a probation programme called HOPE, noted that the slogan for the HOPE project, "swift, certain and fair", is aligned with the principles of behavioural economics. However, this is not the case more broadly, as most criminal justice systems could be described as "slow, uncertain and arbitrary" in their application of justice, demonstrating the traits that behavioural economics instructs us to avoid. The distance between crime and punishment is incomprehensibly long. An offender must be arrested, the evidence must be gathered, the case must go to trial, the trial must reach a 'guilty' verdict and then a sentence may be handed out. The system is inconsistent with monitoring, detection and prosecution of offenders, so there is a low probability that violations that are detected will result in punishment (Cook, 2016). These factors, when considered in totality, particularly in countries such as South Africa or Mozambique, where corruption is high and criminal justice enforcement is inconsistent, result in a criminal justice system that would be predicted to have a very low deterrent effect.

Opportunity-Focused Approaches

Opportunity-focused approached are named as such because they are focused on the opportunity to offend. All look to respond to the crime itself and view criminals as rational actors engaged in profit-loss calculations, who make decisions based on the environment in which they act. Opportunity-focused approaches look to analyse and change the practicalities of committing particular offences and tend to be security-focused, placing the police or another security-provider as central to most of their interventions. These approaches focus on interpersonal contact crimes, i.e. crimes involving direct contact – rape, robbery, assault, etc. High-value poaching is a violent contact crime. Focussing on how crimes occur, allows us to look for mechanisms that impact the relationship between the victim, offender and guardian (Gibbs et al., 2010).

However, it can be difficult to decouple why someone commits a crime from how it was committed. The motivation greatly affects one's commitment towards the 'how' as well as the kinds of solutions or interventions that may be viable to prevent crime from happening. If someone is engaged in a crime for thrills, for sustenance or because of deep-seated unmet emotional needs, these motivations affect how they respond to changing crime opportunity structures and how they assess the changes made to a particular criminal opportunity. Being able to address the motivation for committing a crime before the crime occurs can prevent it from happening, rather than trying to stop someone who has already started trying to commit that crime.

Conservation Criminology

Conservation criminology is an emerging discipline that combines natural resource management, criminology, and risk and decision science (Gore, 2012). It is gaining strong support among those working on wildlife crime policy and in anti-poaching. Conservation criminology is an interdisciplinary approach, formulated in response to criticisms of green criminology, which tends to look at the reasons why people commit crimes (Gibbs et al., 2010). In general, criminology has been criticised for being too theoretical and that it needs to be made more practical to be more relevant and effective (Gore, 2017). As a consequence, Conservation criminology focuses primarily on the 'how' rather than the 'why' of criminality (Gore, 2017). Focussing on how crimes occur, allows us to then look for mechanisms that impact the relationship between the victim, offender and guardian (Gibbs et al., 2010).

Criminology has typically been interested in understanding *why* people offend, while crime science looks at *how* they offend and *how to stop them* offending (Gore, 2017). Crime science differs from criminology in three key ways: (1) it focuses on cutting crime and reducing harm, (2) it studies crime and security rather than criminals, and (3) it is multidisciplinary and applies scientific methodology rather than social theory (Cockbain & Laycock, 2017). Gore (2017) argues that criminology may be limited in its ability to prevent or reduce certain crimes due to its focus on theory and understanding deviance, and consequently chooses to draw more on crime science.

However, it can be difficult to decouple why someone commits a crime from how it was committed. The motivation greatly affects one's commitment towards the 'how' as well as the kinds of solutions or interventions which may be viable to prevent this crime from happening. If someone is engaged in a crime for thrills, for sustenance or because of deep-seated unmet emotional needs, these motivations affect how they respond to changing crime opportunity structures and how they assess the changes made to a particular criminal opportunity.

Being able to address the motivation for committing a crime before the crime occurs can prevent it from happening, rather than trying to stop someone who has already started trying to commit that crime. We are also cognisant of the need to create context-appropriate solutions. The complexity of the historical and socio-economic context within which the GLTFCA exists necessitates approaches that address these factors.

Conservation criminology approaches (such as Situational Crime Prevention – discussed below) are instructive in supporting immediate short-term responses to poaching (Barichievy et al. 2017, Gibbs et al., 2010). However, in the medium-long term, greater structural and social changes are required to effect a more permanent and stable change.

Routine Activity Theory

Routine Activity Theory (RAT)[11] was first written about by Stanley Cohen and Marcus Felson in 1979. The two academics diverged, and Felson later co-developed situational crime prevention with Ronald Clarke (described below). The routine activities approach is based on the insight that for a crime to occur, there must be a "convergence in space and time of the three minimal elements…: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians against a violation" (Cohen & Felson, 1979, pp.589). This approach allows us to consider criminal actions as events that occur in specific locations at specific times (Cohen & Felson, 1979). The RAT takes "criminal inclination as given and examine[s] how the spatio-temporal organisation of social activities helps people to translate their criminal inclinations into action" (Cohen & Felson, 1979, pp.589).

RAT takes its name from the consideration of crime as something that occurs around and within peoples' routine activities. For example, increased employment rates drove the increases in crime rates in the US as people spent less time at home and left their homes unguarded against potential burglars (Cohen & Felson, 1979, Felson, 2008). Thus, while people were engaged in their routine activities (going to work or shopping), there was an increase in criminal behaviour (Cohen & Felson, 1979).

In its initial formulation, the approach concerned itself with the Target, the Offender and the Guardian, represented in one triangle. In the newer iteration, the Crime Triangle, there are two triangles, one around the other (Figure 2). The inner triangle features the Offender, Place and Target/Victim. The outer triangle features a secondary layer of actors, the Handler (who may limit an offender's ability to offend), the Manager (who may manage a place and act as surveillance over that area) and the Guardian (who may protect the Victim or Target from the offender). This approach focuses on the circumstances in which offences are carried out, rather than characteristics of criminality and takes its view of human behaviour and action from human ecological theory (Cohen & Felson, 1979).

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[11] RAT can also be referred to as the Routine Activity Approach (RAA), both are acceptable (Felson, 2008).

Figure 1 The Crime Triangle - Felson, 2008, pp.75

RAT is helpful in that it views criminal motivations as similar to motivations for other behaviours. The researchers observed that if criminal motivation remains stable over time, changes in the environment (such as less surveillance in peoples' homes) would result in an increase in criminal activity. Thus, the driver of criminality is seen as 'opportunity', rather than criminal desire. Similarly, even if the proportion of offenders and targets were to remain stable, a decrease in suitable guardians (through changes in routine activities) would result in increased crime rates. Thus, from the RAT perspective, control and surveillance are essential.

As Cohen & Felson stated: "We argue that structural changes in routine activity patterns can influence crime rates by affecting the convergence in space and time of the three minimal elements of direct-contact predatory violations: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians against a violation. We further argue that the lack of any one of these elements is sufficient to prevent the successful completion of a direct-contact predatory crime and that the convergence in time and space of suitable targets and the absence of capable guardians may even lead to large increases in crime rates without necessarily requiring any increase in the structural conditions that motivate individuals to engage in crime" (1979, pp.589).

Cohen and Felson noticed that passive surveillance (that is, people going about their regular tasks and being able to see a potential crime occurring) is a far more pervasive and effective form of surveillance than deliberate, active crime-prevention. It follows then that guardians can be police or professional security personnel, but they can also be regular civilians. People are less likely to offend if they may be seen by people going about their regular business. In this regard, an analysis of the GLTFCA is both instructive and concerning. The geography and nature of protected areas make them particularly hard to patrol and secure, and the targets (rhinos or elephants) are exceptionally hard to guard against offenders (poachers) as they are found in uninhabited spaces that do not lend themselves to active or passive surveillance.

One charming example goes as follows: in Canada, Professor Clifford Shearing and his colleagues were asked to assist with a particularly troublesome set of apartment blocks. The stairwells had been taken over by drug dealers, who had then taken to harassing the residents of the block. There had been an increase in petty crimes, as well as the open selling of drugs in the stairwells. The intervention was to provide chairs, tables, playing cards, tea and biscuits to the elderly people living in the apartment blocks. The elderly people living in the blocks of flats – who had also been harassed by the drug dealers – played cards in the stairwells of the buildings, thus changing the routine

activities taking place in the stairwells and providing extensive passive surveillance. The drug dealers did not want to deal drugs in view of the elderly people, who had re-taken the stairwells with playing cards and biscuits, and they moved to another location.

This literature review is interested in developing interventions that may be implemented both within the GLTFCA as well as in the villages and peri-urban towns around the GLTFCA. Affecting the socio-economic conditions and nature of criminality in the towns around the GLTFCA will very likely have a significant impact on the crimes occurring within the GLTFCA. The majority of research on poaching has focused on understanding why people poach (Herbing & Warchol, 2011), linking drivers to poverty and economics (e.g. Duffy et al. 2016, Mbaiwa & Stronza, 2010), or offered analysis by applying criminological theory to offenders (e.g. Eliason & Dodder, 1999). "Less has been done to examine why protected conservation areas are so easily penetrated and their wildlife populations victimised on a regular basis" (Herbig & Warchol, 2011, pp. 2). However, there are a number of studies that have used RAT as an analytical tool to understand rhino poaching in South Africa (c.f. Herbig & Warchol, 2011, Eliason, 2012, Warchol & Harrington, 2016).

Herbig & Warchol (2011) note that "the Routine Activities Theory may well provide a suitable and unique theoretical framework for examining poaching in conservation areas. As a rule, South Africa's game reserves are located near human populations, often with high unemployment and crime rates providing a pool of motivated offenders. Capable guardians refer to the compliance management staff and the natural and man-made barriers in the conservation areas. Finally, suitable targets are the wildlife. As with humans, wildlife follows, or are predestined to follow, very predictable patterns of behaviour during their day-to-day activities" (Herbig & Warchol, 2011, pp. 5).

Motivated offenders were present within a short distance of five conservation areas considered in Herbig and Warchol's study (2011), and often employees of game farms would become poachers themselves, particularly for bushmeat. "Employee poaching [is where the] capable guardians of wildlife becoming the motivated offenders" (Herbig & Warchol, 2011, pp.11). With regards to bushmeat, they linked this to a desire for quality protein and poor wages for staff. They assert that if game farm owners were to provide their staff with some bushmeat, this would reduce the 'pilferage' that staff engages in. Herbig & Warchol (2011) note that one game farm, with a high elephant population and sandy soil, was targeted very infrequently by poachers, while the neighbouring farm, with an abundance of smaller game animals, firmer soil and fewer elephants was victimised more often. The reasons provided for this were that aggressive elephants could be a risk when walking on foot through the reserve (as poachers would do). The looser soil and smaller number of suitable targets made the neighbouring conservation area a far more appealing target for poaching. In another comparison, they observed one game farm with proactive and aggressive anti-poaching strategies that had no poaching incidents, while farms around it that were less well run and had more haphazard anti-poaching activities experienced poaching much more frequently (Herbig & Warchol, 2011). Herbig and Warchol (2011) suggest that likelihood of poaching is based on factors within an individual reserve (e.g. wildlife present, anti-poaching strategies, geological factors that affect the ease of access and probability of detection, etc.) as compared to the same factors across neighbouring reserves. Thus the reserve with the highest number of suitable targets, providing easier access to motivated offenders and with the lowest number of suitable guardians is likely to experience the majority of poaching activity. "The final component of the Routine Activities theory is capable guardianship, which essentially refers to the amount of protection afforded to the target by a person or physical barrier. The quality of guardianship in a conservation area is influenced by the quality of the field rangers and their supervisors" (Herbig & Warchol, 2011, pp.13). Herbig & Warchol (2011) argue that these examples show that poaching can be better understood using a framework such as RAT. Dense populations near conservation areas, poverty, hostility between

management and conservation staff, exclusion from conservation areas, historical animosity and access to high-value targets all contribute to the motivation of offenders (Herbig & Warchol, 2011).

Warchol & Harrington (2016) conducted a similar analysis of abalone poaching in South Africa, again they noted that conservation areas are, as a consequence of their geographical features, lacking capable guardians and often replete with suitable targets. They further note that "abalone is a highly suitable target for the illegal trade" (Warchol & Harrington, 2016, pp.36). They reached this conclusion based on routine activities analysis, which revealed that accessing the fisheries and harvesting the abalone is relatively easy (suitable target), that the coastline is difficult to police and that there are insufficient rangers (absence of suitable guardians), and that the fishing villages on the edge of the conservation area have traditionally harvested abalone (motivated offenders) (Warchol & Harrington, 2016). "The social issue of historic use of the marine resource prior to park's creation combined with the presence of large populations of low-income South Africans living adjacent both parks combine to create a pool of motivated poachers, some of whom that do not consider abalone harvesting in protected areas a crime" (Warchol & Harrington, 2016, pp.37). "The results demonstrate the viability of routine activities theory in addressing this type of natural resource crime, identifying unique aspects of the offence and the offenders, and suggesting policy changes to reduce or prevent poaching" (Warchol & Harrington, 2016, pp.38).

Violence Prevention through Urban Upgrade (VPUU)

One example of a project that makes use of the insights from the RAT[12] is the Violence Prevention through Urban Upgrade (VPUU), based in Khayelitsha, Cape Town. VPUU has been in operation since 2005 and was initially funded by KfW, the German Development Bank. VPUU interventions are informed by the RAT, situational crime prevention and crime prevention through environmental design (CPTED)[13].

VPUU looks to reduce violence in Khayelitsha by "co-creating safe and sustainable neighbourhoods to improve the quality of life for all residents through innovative, social activation of public spaces and participatory planning" (VPUU, no date). It creates safety, or reduces violence, by changing the routine activities in high-crime spaces. This is done in different ways; sometimes by changing the layout of an area or by changing the activities that people engage in that space or creating 'pull-factors' that draw people into an area and create foot traffic. These interventions create 'sustainable neighbourhoods': neighbourhoods that are well-run, safe and pleasant to be in. It further supports the development of various local services or businesses that increase safety and the qualitative experience of an area. One such example was the creation of a football club, with numerous football fields, an attractive walkway and public spaces in a part of Khayelitsha that was notorious for robberies and muggings.

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[12] Here the VPUU is presented as an example of the Routine Activities Approach. It could also be presented as a situational crime prevention or community-crime prevention intervention (both of which are discussed below). Interventions do not often fit within one particular framework or ideology, they are (hopefully) developed to meet the needs identified in the complex societies humans live in. A number of the interventions presented in a particular section of this paper could have been presented under another approach. There may also be disagreement within practitioners themselves about which categories an intervention should fall into – this debate is beyond the scope of this paper. The categorisation carried out in this literature review is done to emphasise particular aspects of an intervention, however, the categorisation of approaches is illustrative rather than exact or exhaustive.

[13] Crime Prevention through Environmental Design (CPTED) is the design (or re-design) of physical spaces to reduce crime. A very simple example of CPTED is to put street lights in dark or unsafe areas. More elaborate examples involve considering the way that houses are oriented, so that they provide passive surveillance onto surrounding areas.

A key part of the VPUU's work has been its various problem identification processes. Throughout their existence, VPUU management has held meetings with community members to create community buy-in and participation, and to understand the community's concerns and priorities. VPUU developed a community action plan with the residents of Khayelitsha and supported them in implementing that plan. "The approach requires a significant time investment in people and healthy development processes. Participatory design methodologies are applied to develop appropriate solutions for the relevant context. Potential user groups of a facility advise the professional team on design elements of the facility" (VPUU, no date).

"When intervening in a community, a research-based and highly participatory methodology is used, using logical steps. The work is evidence-based and socially inclusive, and it encourages active participation through the process of sustainable and integrated development" (VPUU, no date). Community members developed maps of 'hot-spots', and problem areas within Khayelitsha and the VPUU then assisted with the development of safety nodes areas (SNAs) – individual sites built at or near problem areas that draw people to those areas to engage in legal and constructive behaviours.

The VPUU created mixed-use buildings that serve as SNAs and provide services to their community. Each building or service centre created becomes another place of safety and legitimate service provision, drawing people in and creating areas frequented by people who act as passive surveillance and deterrence against potential criminal activity. Each SNA has more than one function or use, e.g. an SNA building may be a crèche and offices, or a sports centre and apartments. The intention is to have people in spaces, deriving benefits from facilities, engaged in productive activities and creating natural surveillance and reducing crime in that space.

The VPUU model is based on two components: (1) community engagement and participation, and (2) creating sustainable local solutions for areas that were previously unsafe. Firstly, the model asks community members what they want or need in their communities and then co-develops those solutions. The changing of spaces and routine activities in areas leads to increased surveillance and increased social use of spaces, reducing crime and violence in those spaces. Secondly, the VPUU has focused on creating sustainable local solutions that improve the economic and social situation immediately surrounding that building. Practically, this has involved considering street-level interventions and supporting a diversity of local businesses or public services that benefit its community members and change the activities available in particular spaces. The creation of self-sustaining and functional local businesses improves the economic and social situation immediately surrounding that building.

Situational Crime Prevention (SCP)

Situational crime prevention (SCP) was developed by Felson and Clarke in the late 1970s and early 1980s. SCP's goal is to reduce the opportunities to commit a particular crime (Clarke, 1980). SCP focuses on opportunity reduction, which leads the implementer to analysing minute details of a particular crime. "The more specific the definition of the offence, the greater the likelihood that the interventions derived using a situation approach will be effective in reducing or eliminating the problem. This is because a well-defined crime problem has a distinctive opportunity-structure… every criminal opportunity structure is defined by characteristics of the offender, target/victim, mechanics, site and situation that are unique" to that particular crime (Benson and Madensen, 2007, pp. 614).

Interventions are designed to address a particular situational factor that enables the crime to occur. There are five broad SCP approaches (Clarke, 1980, Clarke, 2008):

(1) Increase the effort required to commit a crime,
(2) Increase the risk involved in committing that crime,
(3) Reduce the reward for committing that crime,
(4) Reduce situational factors that may provoke or encourage the commission of the crime, and
(5) Remove excuses that may legitimate or justify the commission of that crime.

As Freilich and Newman argue, SCP focuses on "minutely analysing" a specific crime to explain how "situational factors facilitate a crime's commission, which … informs the social control response in ways that allow the situational causes of the crime to be manipulated and changed to enhance social control" (2016, pp. 205). For an SCP intervention to be effective, three constituent elements must be present: "(1) the approach must focus on highly specific forms of crimes, (2) manipulation of situational factors must occur in the immediate environment, and (3) the applied interventions must affect the judgment of a wide range of offenders" (Benson and Madensen, 2007, pp. 614).

Examples of SCP interventions include: placing gear-locks or steering locks on cars to make them harder to steal, reducing the value of stolen goods by placing tracking devices on them or increasing the likelihood of being caught through installing closed-circuit television (CCTV) cameras in a shop. SCP and other offence-focused approaches have successfully reduced numerous crimes, such as burglary, shoplifting and car-theft (Clarke, 1995).

Scholars such as Huisman & Van Erp (2013) argue that as these approaches have been successful in reducing 'conventional' forms of crime, there is scope to apply them in diverse and less conventional settings. However, SCP is not effective with regards to all forms of crime and the approach may need to be modified. Applying SCP should be done judiciously and with careful consideration of the factors relevant to a particular crime or type of crime. "White-collar crime" or "environmental crime" are broad categories, and SCP may be suitable for some of these crimes and not others (Clarke, 1995, Huisman & Van Erp, 2013). Regarding organised crime, "offenders in organised crime seem to be more resourceful in a way that makes them less dependent on any given opportunity and space. Also, a 'target' is missing, as these crimes are often consensual as the basis of the activities lies in cooperation. Further, the mechanisms that generate preventative effects within a situation, most notably the discouraging of the presence of others, do not seem to work under all circumstances" (Huisman & Van Erp, 2013, pp.1179). "We also note that research and theory in other disciplines suggest that crime is produced by larger structural economic forces, indicating that SCP alone is likely not sufficient to control environmental crime" (Lynch et al., 2017, pp. 178).

A consistent criticism of SCP is that while it may reduce crime in one area, it does not actually prevent crime but rather displaces it from one activity or from one area to another. However, Guerette and Bowers (2009) conducted an analysis of 102 SCP studies and found that this was not the case. Displacement was observed in 26% of the cases while diffusion of benefit (the opposite of displacement) was observed in 27% of cases. Crucially, though, they further found that when displacement did occur, it was to a lesser degree than the treatment effect – suggesting an overall drop in crime (Guerette & Bowers, 2009).

Lemieux and Clarke (2009) report on the ivory trade ban and its effects on the poaching of African elephants. A trade ban, such as the international ban on ivory, can be understood as an attempt to reduce the rewards for committing a crime. Lemieux and Clarke (2009) analysed the effect of the trade ban on elephant poaching across 37 African countries and found it had mixed results, with some countries showing marked decreases in elephant poaching and others having no effect or even an increase in elephant poaching. Other scholars state that market disruption (through a trade ban) may potentially be more effective than traditional anti-poaching work (increasing penalties or

enforcement) (Huisman & Van Erp, 2013). However, they note that disrupting the trade in illegal wildlife products across Africa requires coordination across numerous countries – many of which suffer from poor governance or corruption (Huisman & Van Erp, 2013).

Huisman and Van Erp authored a paper on the potential utility of SCP as a method for addressing 'Environmental Crimes' (2013)[14]. Significantly, for this attempt to analyse SCP's utility in addressing environmental crime, Huisman & Van Erp looked at pollution in Holland, explicitly choosing not to consider green crimes that occur in developing countries, such as high-value poaching. They stated that, given the underlying political, economic and cultural root causes, green crimes in developing countries are "among the most complex categories of crime" (Huisman & Van Erp, 2013, pp.1180). They discuss an example of an SCP intervention, where, to stop parrot poaching in the rainforest, CCTV cameras were installed. However, these cameras were destroyed by poachers, who then continued to poach.

The 25 SCP Techniques

SCP has five broad strategies, which have been subdivided into 25 specific techniques (Table 2, Clarke, 2008, pp.184) and shows how interventions are very specific and designed to addresses a particular problem or behaviour. SCP can be used to address both criminal and non-criminal behaviours.

Several scholars, particularly Jessica Kahler (2018), Meredith Gore (2017) and Andrew Lemieux (2014), are explicitly looking at the application of SCP strategies to tackle poaching.

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[14] 'Environmental crime' is a broad term that encompasses both corporate green crimes (such as pollution or failure to properly dispose of waste materials) and a wide range of individual wildlife crimes (such as professional poaching or the consumption of protected species as 'bush meat').

Table 2: The 25 techniques for SCP

Increase Effort	**1. Target harden** • Steering column locks and ignition immobilisers • Anti-robbery screens • Tamper-proof packaging	**2. Control access to facilities** • Entry phones • Electronic card access • Baggage screening	**3. Screen exits** • Tickets needed for exit • Export documents • Electronic merchandise tags	**4. Deflect offenders** • Street closures • Separate bathrooms for women • Disperse pubs	**5.Control tools/weapons** • 'Smart' guns • Restricted spray paint sales to juveniles • Toughened beer glasses
Increase Risk	**6. Extend guardianship** • Go out in a group at night • Leave signs of occupancy • Carry a mobile phone	**7. Assist natural surveillance** • Improved street lighting • Support whistle-blowers	**8. Reduce anonymity** • Taxi driver identification documents • 'How's my driving?' decals • School uniforms	**9. Use place managers** • CCTV for double-deck busses • Two clerks for convenience stores • Reward vigilance	**10. Strengthen formal surveillance** • Red-light cameras • Burglar alarms • Security guards
Reduce Rewards	**11. Conceal targets** • Off-street parking • Gender-neutral phone directories • Unmarked armoured trucks	**12. Remove targets** • Removable car radios • Women's shelters • Pre-paid cards for payphones	**13. Identify property** • Property marking • Vehicle licensing and parts marking • Cattle branding	**14. Disrupt markets** • Monitor pawn shops • Controls on classified ads • License street vendors	**15. Deny benefits** • Ink merchandise tags • Graffiti cleaning • Disabling stolen mobile phones
Reduce Provocations	**16. Reduce frustrations and stress** • Efficient lines • Polite service • Expanded seating • Soothing music/muted lights	**17. Avoid disputes** • Separate seating for rival soccer fans • Reduce crowding in bars • Fixed cab fares	**18. Reduce temptation and arousal** • Controls on violent pornography • Prohibit racial slurs	**19. Neutralise peer pressure** • 'Idiots drink and drive.' • 'It's OK to say No.' • Disperse school troublemakers	**20. Discourage imitation** • Rapid repair of vandalism • Censor details of modus operandi
Remove Excuses	**21. Set rules** • Rental agreements • Harassment codes • Hotel registration	**22. Post instructions** • 'No parking.' • 'Private property.' • 'Total fire ban.'	**23. Alert conscience** • Roadside speed display boards • Signatures for customs • 'Shoplifting is stealing'	**24. Assist compliance** • Easy library check out • Public lavatories • Litter receptacles	**25. Control drugs and alcohol** • Server intervention programmes • Alcohol-free events

Extensive work has been done on applying SCP to poaching and wildlife crimes. Noteworthy examples are Gore (2017), Lemieux (2014), Pires (2014), Pires & Clarke (2012) and Kahler (2018). Kahler (2018) has expanded the SCP framework in Table 2 to include an additional, sixth strategy, 'increase incentives for compliance'.

The work of Moreto & Clarke (2015), Pires & Clarke (2012) and Pires (2014) look at the characteristics of the animal products themselves, and how these affect the illegal wildlife trade. Pires and Clarke "proposed that 'hot products' sought by thieves are concealable, removable, available, valuable, enjoyable and disposable, or CRAVED, and … [using] CRAVED helped to explain theft preferences" (2012, pp.124). The CRAVED model was applied to the poaching of parrots in Mexico. The most poached species were those that were most widely available and those whose chicks were easily removed from their nests, while the most valuable and enjoyable species (those offering the highest profits) were rarely poached because they were harder to find (Pires & Clarke, 2012 and Pires, 2014). Pires & Clarke (2012) posit that those engaged in poaching behaviour are opportunistic villagers, dissuaded from taking harder to find species by the effort required, rather than organised crime. Similar results were observed in Bolivia and Peru (Pires, 2014).

"What is stolen depends not just on target characteristics but on a variety of other factors including the kind of theft, the specific motives of the thieves, and the resources available to them" (Pires & Clarke, 2012, pp. 123).

Pires (2014) conducted a similar analysis, applying the CRAVED model to parrot poaching in Bolivia and Peru. Again, it was found that the most beautiful and valuable parrots were not the most poached, rather the parrots most commonly seen in markets were those that were easiest to poach (Pires, 2014). Pires & Clarke (2012) concluded that parrot poaching was opportunistic rather than organised. "If it is organised, the most targeted parrots should be the rarer and thus more valuable birds; if it is more opportunistic, the most poached birds should be the more widely available species …and the more easily removable in terms of ease of capture…the measures needed for dealing with opportunistic poaching are likely to be different from those for organised poaching" (Clarke & Pires, 2012, pp. 125).

Moreto & Lemieux (2015) extend this product-focused analysis of wildlife crime and move from CRAVED to CAPTURED. Focusing on illegal wildlife trade as a product-based market, they observe that some animal products require specific storage facilities (for live animals), while others may require elaborate processing facilities (for parts of animals). They then suggest CAPTURED instead of CRAVED; for concealable, available, processable, transferrable, useable, removable, enjoyable, and desirable. The new components are processable & transferable – both of which are relevant to how easily moved or processed the animal products are - may be less relevant in the initial taking of the wildlife product but are relevant to middlemen, smugglers and retailers further along the market chain (Moreto & Lemieux, 2015). CRAVED is used to assess the suitability of particular targets for theft and is thus able to explain why some animals may be targeted over others while CAPTURED assesses and measures "the dynamic and influential nature of product characteristics within different markets. [The model assists with] understanding the characteristics of a product as it progresses through the market and to further examine hot products within the context of markets" (Moreto & Lemieux, 2015, pp. 314).

SCP strategies can be used to address particular aspects related to high-value poaching, such as control of access to high-calibre hunting rifles, access control, increased patrolling within protected

areas, banning the trade of ivory and rhino horn, harsher sentences for poaching and deploying technology, etc. However, these approaches and strategies have proven to be insufficient to address high-value poaching (Barichievy, 2017, Haas & Ferreira, 2017). SCP, like RAT, does not address criminal motivation or inclination. The concern with high-value poaching in the GLTCA is that the pull factors are sufficiently strong that SCP disincentives will not prove strong enough to dissuade poachers who, as noted above, have a low opportunity cost because they have few other options and the reward for poaching is so high (Huisman & Van Erp, 2013, Haas & Ferreira, 2017).

Wildlife crimes in developing countries may be "deeply embedded in local communities with little alternative sources of income, and where the political, economic and infrastructural context cause severe enforcement problems" (Huisman & Van Erp, 2013, pp.1180). Therefore, approaches aiming to reduce the opportunities to commit wildlife crime "will only succeed if local communities see their wildlife as a resource worth protecting… reducing poaching requires engaging local communities in conservation and generating revenues through means of living, such as ecotourism or regulated trade, and employing poachers as rangers" (Huisman & Van Erp, 2013, pp.1179).

For interventions to effectively address wildlife crimes, they must change how local communities think of wildlife and must alter the beliefs, knowledge and attitudes of local communities (Huisman & Van Erp, 2013, Biggs et al., 2016). However, normative approaches are not typically part of SCP approaches (Kahler, 2018, Kurland & Pires, 2017). Kahler (2018) argues SCP can be reframed more broadly to incorporate normative aspects – specifically, neutralise peer pressure and discourage imitation (Kahler, 2018).

Problem-Oriented Policing (POP)

"Complaints from passengers wishing to use the Bagnall to Greenfields bus service that "the drivers were speeding past queues of up to 30 people with a smile and a wave of a hand"; have been met by a statement pointing out that "it is impossible for the drivers to keep their timetable if they have to stop for passengers."
(Goldstein, 1979. pp.236)

Developed by Goldstein in 1979, problem-oriented policing (POP) is primarily a way of thinking about policing issues that involve the identification and analysis of specific crime and disorder problems to develop effective response strategies. Goldstein (1979) developed POP to replace what he termed the reactive, incident-driven 'standard model of policing' which he viewed as bureaucratic and unable to respond to community needs. In his view, policing was overly focused on the processes of policing and improving them, rather than on the outcomes it created through preventing and responding to crime and was ineffective in its responses.

POP was born out of Goldstein's observation that large "bureaucracies risk becoming so preoccupied with running their organisations and getting so involved in their methods of operating that they lose sight of the primary purposes for which they were created. The police seem unusually susceptible to this phenomenon" (1979, pp.237).

Goldstein was critical of what he describes as a 'means over ends' problem, where the police had become so focused on improving their policing processes and techniques that they had lost sight of the fact that they were meant to prevent and respond to crime. He linked this to the 'policing-reform' efforts that started in the 1960s and continue to this day. Police-reform primarily consisted of the use of modern management techniques and strategies to improve policing organisations' functioning. Goldstein cites an example in which much effort was spent within a particular police service to reduce the amount of time it took a police service to respond to a call. Resources were

spent on personnel, vehicles, equipment, and procedures to shorten the time it took for police officers to respond to a call. However, no work was done on training officers on what they should do once they arrived on the scene. Ironically, after all of that effort was expended on shortening response times, the value of quick response was called into question. The officers were able to arrive more quickly, but they were no more effective once they had arrived.

Goldstein was of the view that police were too focused on their organisational structure and how they did policing, rather than on the crime problems that they needed to solve (Braga, 2008). Instead of focusing on processes and procedures, Goldstein thought policing agencies should analyse patterns of problem behaviour and devise responses to those behaviours that would lead to sustainable reductions in those behaviours. POP is a process of identifying "problems in more precise terms, researching each problem, documenting the nature of the current police response, assessing its adequacy and the adequacy of existing authority and resources, engaging in a broad exploration of alternatives to present responses, weighing the merits of these alternatives, and choosing from among them" (Goldstein, 1979, pp.236). Thus, POP means that the police are focused on understanding the problem, identifying the conditions that produce or enable that problem, and then developing a systematic response to that problem. As POP is a way of thinking about and addressing crime problems, it can be implemented by both police and non-police organisations.

POP, in combination with Community Policing, is implemented by the majority of policing agencies in the US (Braga, 2008). POP can be used to address both crimes and non-crime behaviours (such as disruptive or anti-social behaviour). POP is about using an analytical evidence-led approach to understand and respond to policing problems.

Eck and Spelman developed the SARA (Scan, Analyse, Respond and Assess) Model in 1987 that neatly lays out the four steps of POP: 'Scanning' is the identification of problems; 'Analyse' is the analysis of that problem (looking for patterns, understanding the drivers of that problem, etc.); 'Respond' is where the problem-oriented police then respond to that particular crime problem; 'Assess', is the assessment of the effectiveness of their response (Eck & Spelman, 1987).

One tool used within POP is the problem analysis triangle (PAT) (Scott et al., 2008). The PAT refers to the triangular relationship between victim, offender and location. PAT is used by police to analyse the three constituent components of a crime pattern and develop a response to it. The PAT is very similar to the crime triangle used in routine activities theory (page 32) (Scott et al., 2008).

Goldstein argued that the unit of analysis in policing must become the 'problem' rather than calls or crime incidents, as was the case during that period. POP had a tremendous impact on American policing and is now one of the most widely implemented policing strategies in the US (Weisburd et al., 2008).

The implementation of POP has had mixed success for several reasons, including organisational culture, cultural resistance, simplistic performance management, lack of training, and policing by habit. POP implementation has been reduced as 1) POP has proved to be technically difficult to implement, 2) there have been weak analyses of problems and 3) there has been a return to traditional, reactionary policing. The majority of POP interventions have lacked the focus and clarity offered in Goldstein's vision.

There have been some successes, but many projects have defined problems too narrowly, and focused on *ad hoc* or individual response, while others have defined problem behaviours too broadly to be usefully actionable (Scott et al., 2008). Maguire et al. (2015) and Weisburd et al. (2008)

conducted substantial evaluations of POP and concluded that while it is effective in reducing crime and disorder, that effect is fairly modest. These conclusions were based on an analysis of numerous cases and considered the aggregate crime effects of POP, which means that some POP projects may have been more effective and others less effective.

The POP approach may help thinking about crime prevention responses to high-value poaching. However, the SARA model itself is not markedly different from monitoring and evaluation approaches to implementation or development approaches.

Operation Ceasefire

Operation Ceasefire was developed and implemented by the Boston Gun Project (Braga et al., 2014) to deal specifically with youth gun homicides, which was primarily a gang-related problem. Operation Ceasefire included two main elements: (1) a direct law-enforcement approach to address illicit firearms traffickers supplying young people in Boston with guns, and (2) an attempt to generate a strong deterrent to gang violence (Braga et al., 2001).

The law-enforcement component focused specifically on reducing young peoples' access to firearms through enforcing laws regarding the sale and possession of firearms, while the strong deterrence to gang violence consisted of coordinating a strong response by various organisations to gang gun violence. As gang-members were chronically involved in various criminal activities, this gave law enforcement officials numerous mechanisms to make their lives harder. So, when there was an incident of gun violence, police would respond by enforcing by-laws, searching gang members, confiscating drugs, cash and weapons, and so forth. They would enforce all possible laws to make gang members' lives more difficult. This second part of the approach, the deterrence component, was coupled with a very public statement that violence would result in negative consequences for gang members.

If there was an incidence of violence Ceasefire staff and law enforcement authorities, including the police and other agencies involved, would focus a disproportionate effort specifically on the gang responsible for the shooting and on particular individuals within that gang. These responses would employ a wide range of tactics, from curfew checks (for parolees) to Drug Enforcement Administration (DEA) investigations. They would "disrupt street drug activity, focus police attention on low-level street crimes such as trespassing and public drinking, serve outstanding warrants, cultivate confidential informants for medium- and long-term investigations of gang activities, deliver strict probation and parole enforcement, seize drug proceeds and other assets, ensure stiffer plea bargains and sterner prosecutorial attention, request stronger bail terms (and enforce them), and focus potentially severe federal investigative and prosecutorial attention on, for example, gang-related drug activity" (Braga et al., 2001, pp.201).

There are two aspects to the Ceasefire model worth considering for purposes of this report. First is its singular focus on one particular crime type. Second is its pragmatic engagement with that crime type. Linked to this singular focus was Ceasefire's deliberate communications strategy. Ceasefire explained explicitly to the gangs what they were doing and why. Ceasefire watched for outbreaks of violence and responded with a suite of tactics to each individual act that occurred. It was necessary to communicate directly with the gang members about Ceasefire, to explain how it worked and that there would be consequences for gun violence, for Ceasefire to succeed. (Braga et al., 2001).

Ceasefire was not designed to stop gangs from existing or to stop all of their activities. Policing agencies are not capable of stopping gang activity entirely and, cognisant of this reality, Ceasefire

chose to focus only on one crime type – youth gun murder – and to work to stop that activity by reducing youth gun violence in Boston (Braga et al., 2014). This pragmatic approach is in contrast to the politically popular, though mostly ineffective, 'zero tolerance' or 'crackdown' policing initiatives that numerous police agencies have implemented.

Through the combination of Ceasefire's singular, pragmatic focus on gun crimes and its effective communications strategy, gang-members came to understand that if they engaged in gun-violence the Ceasefire staff would respond disproportionately and the consequences would be severe. Ceasefire worked because the gang members in Boston were a small population (less than 2,000 people) who were known to authorities and easily identifiable (Braga et al., 2001) and gang members knew that the response would be swift and certain. This pragmatic, singular focus enabled Ceasefire to target all of its energy towards one problem behaviour and reduce it over time. In a setting with large numbers of mostly unknown people or a highly transient population, this policy may be less effective.

Cape Town Ceasefire[15]:

Ceasefire was brought to Cape Town through a collaboration between the Ceasefire programme in the US and the City of Cape Town. The US Consulate put pressure on the City of Cape Town to tender for implementation. Pastor Craven Engel, as the head of the First Community Resource Centre (FCRC - a faith-based organisation that was running outreach programmes with youth and community members in Hanover Park), tendered for the project and was awarded the contract – theirs was the only bid submitted.

The Ceasefire implementation in the Cape was a victim of the success it had in the US. The Ceasefire US staff wanted to implement the programme. However, in their eagerness to implement, they did not ensure that they had a suitable implementation partner in Cape Town. The project has not been subject to a formal evaluation, and thus it is hard to assess the efficacy of its implementation. While it has received favourable coverage in the media[16], those involved in its implementation are more critical of the project. Based on interviews with former Ceasefire Cape Town staff, it is apparent that the project did not implement a mediation-based methodology but rather provided financial incentives to gang members for not engaging in violence. One concern with this model is that it incentivised gang-membership, as only bona fide members of gangs were able to benefit from the incentivisation scheme. When gang violence flared, Ceasefire Cape Town lacked the technical capacity, in terms of mediation skills, or legitimacy, and in terms of perception within the community and with gang members, to successfully intervene. These shortcomings were ascribed to poor training, weak management capacity and an overall lack of technical skills in the Cape Town Ceasefire program.

As is often the case with donor-funded programmes, there are few involved in the implementations that are incentivised to critically evaluate the implementation.

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[15] This information was obtained during an interview with former Ceasefire Cape Town staff. The number of professional gang intervention practitioners in Cape Town is small, consequently the identity of the respondents remains confidential. The interviews consisted of two semi-structured interviews lasting 30 – 60 minutes. The respondents were part of the core staff hired by First Community Resource Centre to implement Ceasefire in Cape Town. The interviews were conducted in May of 2019 for this literature review.
[16] For Example: https://www.sapeople.com/2016/04/18/ceasefire-hope-cape-town-gang-violence-south-africa

Community-Oriented Policing

Community-Oriented Policing (or Community-Policing) involves engaging community members, or community-based resources, in policing by creating collaborative relationships (Braga, 2008, Reisig, 2010). Community policing has been used in conjunction with POP in the majority of police forces in the US in recent years (Braga, 2008, Reisig, 2010). The goal of community policing is for the police to build relationships with the community through regular interaction with residents. "Community policing is … where the same officer patrols and works in the same area permanently, from a decentralised place, working in a proactive partnership with citizens to identify and solve problems" (Ferreira, 1996, pp.1). The community members are viewed as experts on their own area and relationships with residents are developed as resources to support more effective local policing. Community policing is similar to community crime-prevention in that both rely on the resources and local knowledge of the community. However, community policing is fundamentally a policing activity, carried out by the police while community crime-prevention can be enacted by members of the community.

A commonly held, but incorrect, belief, is that violence occurs primarily between strangers. While this may be true for some types of crime (such as hijacking or bank robbery), the majority of interpersonal crime and violence that occurs in low-income settings is between young men who are familiar with one another in some way, if not by name then they may know where the victim or the perpetrator stays. Another misconception is that victims and offenders are easily distinguished from one another. One of the primary indicators for criminality is previous exposure to violence. It is in such complex settings, where victims and offenders know one another and where they may swap roles in different instances, that community-based crime prevention can be particularly effective. The social ties that exist within a community can be a powerful disincentive for committing a crime.

With traditional policing, particularly when there is an escalation in force, the police and communities can become polarised, resulting in residents becoming unwilling to support the police or provide them with information. The community may have the information to prevent crime, but may be unwilling (because of police illegitimacy, or the benefits they derive from certain crimes) or unable (because of the threat of violence or a lack of resources) to prevent those crimes.

The failures of police reform and professional policing became apparent through the 1950s and 1960s and led to the implementation of POP and community policing (Braga, 2008, Reisig, 2010). While implemented in tandem, they are distinct approaches. "Problem-oriented policing changes the prime focus of the police away from incidents toward identifying, understanding and solving problems. Community policing redefines the role of the public. Instead of playing a passive role, citizens are invited to partner with the police to improve neighbourhood conditions" (Reisig, 2010, pp.2). Community policing was desirable as it offered police the possibility of improving police-community relations (Reisig, 2010).

There are two distinct approaches within community policing (Reisig, 2010). One is based on the broken-windows theory, which states that small signs of disorder (such as broken windows) lead to larger forms of disorder and, ultimately, criminality (Reisig, 2010). This form of community policing aims to address these low-level signs of disorder to reduce neighbourhood crime. The second is based on social disorganisation theory, which focuses on improving community organisations, processes, resources and structures to reduce the negative effects of poverty and disorder (Reisig, 2010). In this version of community policing, community-police meetings are held, and community resources are strengthened, to facilitate residents supporting crime prevention in their community.

Community policing has, of course, been understood and implemented in different ways, across different locations, at different times (Reisig, 2010). Officers spend significantly more time patrolling neighbourhoods, seeing and being seen walking the streets and spend time getting to know the people in the area they are patrolling. Community policing tends to be quite localised in application and intervention and can have strong success in one area and fail in another. This approach can be resource heavy and leads to police officers being involved in activities that are not strictly policing-related, such as helping the elderly carry shopping or giving directions to lost tourists (Reisig, 2010).

Some community policing methods include:

- Increase patrolling (primarily on foot or by bicycle, so that police and community members interact).
- Increase the accountability of officers to the community that they patrol.
- Allocate particular officers, or teams of officers, to patrol very specific areas within a community.
- Create clear lines of communication between police and community members.
- Partner with other organisations in the community.
- Involve the community in crime prevention (neighbourhood watch, reporting on crime incidents) (Reisig, 2010).

Neighbourhood Safety Officers

One approach worth considering is the Neighbourhood Safety Officer (NSO) project, implemented by the Centre of Criminology of the University of Cape Town (UCT) and the City of Cape Town (CCT)[17]. NSOs are police officers. However, they receive training to enable them to think and act more creatively and holistically than traditional police officers. NSOs have a more nuanced understanding of safety and think innovatively about how to develop safety solutions, while also developing practical plans of action that involve all actors in that neighbourhood (Cartwright and Shearing, 2019).

An important aspect of the UCT/CCT NSO project is the ideology upon which it is based. The project is co-run by UCT's Global Risk and Governance Programme, by Clifford Shearing and John Cartwright. Shearing's scholarship in security, risk and governance have focused on broadening the number of actors involved in safety and thinking more creatively about how we create safety in particular spaces. Cartwright and Shearing (2019) outline the principles and practices that they recommend for neighbourhood safety. Their work, and consequently the NSO project, is informed by whole-of-society thinking - an approach in which the providers of safety and security look to involve a wide range of actors and organisations in the provision of safety. Thus, while the NSOs are police officers, their approach is to engage with all actors in their designated neighbourhoods to proactively develop safety solutions.

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[17] http://www.grgp.uct.ac.za/neighbourhood-safety-initiative

The whole-of-society approach is informed by 4 key principles:

(1) Focus on the future, not the past.
Focus on making the future better, instead of trying to 'fix' the past. The question to ask is not 'Who is to blame?', but rather 'What made it possible for this to happen?' and 'What can be done so that this is less likely to happen again?'

(2) Focus on opportunities.
How can we make a harm less likely to happen again? What opportunities are there to encourage positive attitudes and engage in constructive action?

(3) Think issue-based partnership ('whole-of-society').
Identify, mobilise and integrate whatever range of knowledge, capacity and resources is necessary for dealing effectively with any given issue.

(4) Different problems and opportunities require different solutions.
Creating and managing safe and liveable communities and public spaces require a flexible and comprehensive 'toolbox'. Budgets to promote 'security' need to be flexible, so that they can be used to support those people, programmes or projects that actively contribute to safety – not only the obviously relevant state agencies" (Cartwright and Shearing, 2019, pp.4).

Armed with these principles, additional training and a more nuanced understanding, NSOs are deployed to particular neighbourhoods for an extended period of time. Neighbourhoods are understood to be an "informally demarcated area that can realistically be covered on foot or bicycle and forms a reasonably consistent whole with respect to its typical problems of safety and liveability" (Cartwright and Shearing, 2019, pp. 4). Thus a neighbourhood may be a small-village, an apartment complex, a sports field or an apartment complex[18].

NSOs "have the attitude and the experience to think innovatively and develop practical plans of action in cooperation with all persons, agencies and organisations who share the vision of a safe, peaceful and prosperous neighbourhood" (Cartwright and Shearing, 2019, pp. 7). NSOs aim to become part of the neighbourhood they are assigned to. Their role is to help foster conditions that enable constructive safety that focusses on the future. They are further expected to promote safety and improve the quality of life in their areas. NSOs become the 'face' of policing for their neighbourhood. Cartwright & Shearing state that effective policing is "visible, professional and publicly accountable" (2019, pp.3) and that this "is an essential element in creating and maintaining safety and a sense of safety in any given neighbourhood" (ibid. pp.3).

They are further expected to promote safety and improve the quality of life in their areas. They do this by being familiar with the people living in their neighbourhoods, identifying opportunities for reducing crime and disorder and by linking together the organisations and individuals who are invested and able to assist in reducing crime and increasing safety (Cartwright & Shearing, 2019).

This approach has demonstrated some success in a small number of test sites around the City of Cape Town. The City has chosen to expand the NSO project to a larger number of neighbourhoods. For this method to succeed, managers and senior policing officials need to understand and support this more holistic and integrated approach to policing.

The NSO model could be useful in some of the peri-urban areas around the GLTFCA. This approach should not be linked to wildlife crime or poaching specifically, but rather NSOs should be

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[18] The City of Cape Town has deployed 'School Resource Officers' to different schools, treating each individual school as a separate neighbourhood or community, with its own needs and own social conditions.

deployed as community resources to address crime and safety in general. The thinking behind the NSO approach leads to a holistic and collaborative approach that engages community members in the positive process of creating safety for themselves. This understanding leads to de-escalation in violence and a reduction in the military approaches that are typical of modern policing, particularly in anti-poaching work. The practices that the NSOs advocate are locally-focused, problem-solving and future-oriented.

Offender-Focused Approaches

The preceding sections have provided summaries of similar approaches that focus on the offence and making it harder to offend. These opportunity-focused approaches tend to view the state, through the police or other security-providing agencies, as the primary agents for intervention. These approaches, when applied judiciously, could be successful in contributing to a reduction in poaching in the GLTFCA. However, as noted by SCP scholars, these approaches alone will be insufficient as wildlife crimes in poorer communities are embedded within a cultural and social climate that views these offences as beneficial and legitimate.

This section outlines approaches that focus on the offender, their motivation, their development and their economic opportunities. Offender-focused approaches tend to involve 'the community' in the provision of safety and security. The following sections entail an examination of approaches that focus on the offender and changing the social climate, as well as preventing the crimes themselves. These approaches tend to be longer-term and more complex to implement. Both offence-focused and offender-focused approaches should be implemented simultaneously to effect real change in the poaching of rhinos and elephants in the GLTFCA.

As previously noted, much of what is called 'crime prevention' is in fact 'crime response'. Most policing activities are responses to crime events that have already occurred. Preventing crime suggests a need to act pre-emptively. However, pre-emptive crime prevention is difficult. How does one make a person less likely to commit an act in the future? This is the complex terrain of development or crime prevention work.

Offence-focused approaches are limited as they do not consider, conceptually or in response, any of the precursor events or conditions that lead to crime. Crime should be considered not only as an event occurring in a particular place and time but also as an event that occurs as the result of a process. This process-lens allows us to consider 'what factors have led to this crime being committed at this moment, and how could we seek to address those factors?' If a crime event were understood as emerging from a longer process, such as a person's life trajectory, the possible moments for intervention would become far more numerous.

Our approach is to think more abstractly about the criminal journey and to consider it as a historical journey. We view crime as an event that occurs after a number of other things have happened or are in place. Many resources have been deployed within the GLTFCA to stop the 'poaching moment', but we are more interested in addressing the factors that bring these moments about such as poverty, lack of opportunity, failed government, corruption, ineffective policing, absence of prosecution, etc.

Crimes have not traditionally been considered as events resulting from a process because they have been considered by the police, who are not traditionally equipped to respond to an analysis of crime in this manner (Gonçalves, 2017). However, for development, non-government or other state organisations, their resources are typically not best deployed for policing and would be better

deployed in analysing and responding to crime as a process. Security personnel are better equipped to address the commission of the crime, the actual poaching of a rhino or elephant. However, community-based crime prevention can be useful in the time before and after poaching as poachers often eat, sleep and sometimes live in the towns around the GLTFCA. Community-based crime prevention can target either the willingness of the offender or the absence of a suitable guardian by reducing the ease of doing business within communities or improving the ability and likelihood of communities to identify and report poachers.

Community-based crime prevention can target either the willingness of the offender or the absence of a suitable guardian. To clarify, in tackling high-value poaching in the GLTCA, targeting the absence of a suitable guardian can be achieved by reducing the ease of doing business within communities, and / or improving the ability and likelihood of communities to identify and report poachers. "The war on poaching will unlikely be won solely by more guns and boots on the ground in the long term, but structural changes in the socio-ecological systems surrounding wildlife trade and protected area-community relations, that match societal values and conservation objectives. But these are longer-term objectives, and maximising the effectiveness of local protection in the short term is of paramount importance in ensuring the survival of species such as rhino" (Barichievy et al., 2017, pp. 558).

A cautionary note with regards to the use of European or US-based scholarship: South Africa has a particularly complex social history. As a result of this, when ideas are 'imported' they must be adjusted to fit to the local context – one in which forced removals and systematic exclusion from wildlife areas and formal economies has left poor black Africans resentful of conservation and believing that they have legitimate rights to access and use those resources, even illegally (Duffy et al., 2016, Hübschle, 2016, Carruthers, 1995, Aubynn, 2008). Approaches that consider poaching in Northern Europe, for example, may be inappropriate for the GLTFCA because the lived experience is so different in the two locations.

Rural Livelihoods

The lives of rural people are precarious, with droughts or changes in climate greatly affecting food security and livelihoods that are often dependent on ecosystems (Knapp et al. 2017). Often short-term needs for survival result in over-use of resources that damage the ecosystem and make the area less hospitable to its residents. This uncertainty may influence a person's choice to become involved in poaching in general (Kuhl et al., 2009, Lindsey et al., 2013, Mbaiwa & Stronza, 2010, Pires, 2015, Rogan et al., 2018) and rhino or elephant poaching in particular (Hübschle, 2016c, Knapp et al., 2017, Duffy et al., 2016, Haas and Ferreira, 2016b, Vundla, 2018, Minnaar & Herbig, 2018).

Researchers such as Knapp et al. (2017) note that rural economic livelihoods are often precarious. Life for poor rural people can often be hard, with droughts or changes in climate greatly affecting food and livelihood security. Household economies and conservation areas are interdependent upon one another (Knapp et al. 2017). Van Klinken (2007) notes the links between decreasing subsistence farming, increasing food insecurity and criminality and violence.

Research on poverty and poaching indicates that the two are related, however, the relationship is not linear or simple (Knapp et al. 2017, Duffy et al., 2016). Duffy et al. conclude that there is a "need for much better understanding of what poverty is and what motivates people to hunt illegally" (2016, pp.14). Atuo et al. (2015) found that individuals in West Africa were more likely to engage in poaching if they were in villages with lower average household incomes or had a higher number of dependents. Knapp et al. (2017) found that poachers living outside Ruaha National Park, Tanzania,

were motivated by their subjective experience of poverty and desire to improve their livelihoods, rather than by objective financial status. Hübschle identifies three contemporary drivers of poaching; "rural poverty, opportunity structures of living close to the park and greed" (2016a, no page). She further states that the root causes of poaching are related to "the history of conservation, hunting rights and land ownership in southern Africa" and the "continued economic, political and social marginalisation of village communities" (Hübschle, 2016a).

Some criminologists argue that environmental crimes can be understood as political acts. For example, rhino poaching in the KNP (Hübschle, 2017) or illegal mining in Ghana (Andrews, 2015). We believe, supported by researchers such as Katz (1990), Lindegaard & Jacques (2014) and Grundetjern & Miller (2019) that environmental crimes can be a means to achieving empowerment and agency in the absence of alternate legitimate means and can be seen as political acts. For poor rural black men (and sometimes women) with little access to the formal economy, poaching can be understood as empowerment. Thus, approaches seeking to stop these people from poaching should offer alternative means to achieve this empowerment that can be either financial or emotional.

For crime to become a form of empowerment requires alternative, legitimate means of economic empowerment to be absent. Raising the opportunity cost of an activity can be an effective way to dissuade that behaviour. Currently, people are limited to a choice between poaching and very little else, resulting in poaching being the obvious choice. However, if people were offered an alternative with a higher opportunity cost, such as a job with an acceptable salary, the appeal of poaching would likely be significantly reduced. Research conducted with other criminal groups, such as Boko Haram and Somali pirates, reveals that members would prefer to do other things but involvement was perceived by them to be the only viable option available for them to change their lives through financial reward or to have some meaning (Ewi & Salifu, 2017, UNODC & OBP, 2015).

Social and Economic Development

"Within this context, Capone represents the triumph of amoral intelligence over morally prescribed "failure," when the channels of vertical mobility are closed or narrowed."
(Merton, 1938, pp.679)

Abject poverty is not the cause of crime, but it is relevant because of the associated disadvantages that make people living in poverty less able to compete for wealth or financial success. Countries with high levels of inequality experience high crime rates as members of the population live in a state of deprivation relative to the wealth of others in that society – this is referred to as 'relative deprivation' (Higgins et al., 2011, Merton, 1938, Tibbets, 2012). "The cultural demands made on persons in this situation are incompatible…they are asked to orient their conduct toward the prospect of accumulating wealth [but] they are largely denied effective opportunities to do so institutionally. The consequences of such structural inconsistency are psychopathological personality, and/or antisocial conduct, and/or revolutionary activities" (Merton, 1938, pp.679). The critical criminology school views poor people as disadvantaged by the structures within which they exist, as they are unable to meet their desires through legitimate employment (Lynch, 2017).

Anomie is a term used to describe social instability resulting from a breakdown 'of the regulatory order that secures norms' (Braithewaite et al., 2010, pp.17). Anomie is seen as a root-cause for crime and disorder, and numerous approaches have been developed to prevent crime based on this approach (Tibbets, 2012, Gerber & Macionis, 2010, Merton, 1938, Higgins et al., 2011). Merton

(1938) describes anomie as arising from a mismatch between cultural goals and legitimate[19] means or opportunities to obtain them. In Merton's conception of society, there are goals and there are regulatory orders – which are a mix of social norms, cultural rules about acceptable behaviour and legal limitations on behaviour that is permissible. When adherence to these regulatory orders prohibits ones' ability to achieve the culturally-approved goals, the individual is said to experience 'strain' (Merton, 1938, Braithewaite et al. 2010). In such cases, alternative regulatory orders are sought, or developed, to legitimise continuing to pursue goals through means that others may consider illegitimate. When the legitimate opportunities breakdown or become closed, members of society look to illegitimate means and 'strain' results in criminal behaviours (Braithewaite et al., 2010, Higgens et al., 2011, Gerber & Macionis, 2010, Merton, 1938).

Merton (1938) cites a study of organised crime in Chicago, where the employment opportunities were primarily manual labour and low-paying, while the cultural goals were to obtain wealth and prestige. Part of the cultural norm was also to privilege white-collar work and to look down on manual labour jobs. In this setting, organised crime, which was viewed as more prestigious and better paying than manual labour, was understood as a 'normal' response to the mismatch between cultural goals and available opportunities (Merton, 1938).

Gerry Van Klinken described a series of conflicts in Indonesia as 'small-town wars' (2007). In 1999 the Indonesian government decentralised much of its operations and service provision. This shifted control over resource allocation to the local level, and with it went legitimate and illegitimate opportunities, as well as corruption and political conflict. Van Klinken (2007) also argued that conflict is most likely to occur in areas experiencing high levels of de-agrarianisation. As peoples' dependence on agriculture declines, their need for employment and access to the cash economy grows. If people are unable to meet their needs through legitimate employment, they may consider illegitimate means.

Contests over political power, disputed moral norms and exclusion from formal economies are part of an anomic society, one that is significantly more likely to experience criminality and violence (Braithwaite et al., 2010, Braithewaite et al. 2012). In rural South Africa and Mozambique, it can also be argued that opportunity structures have collapsed and that this will push people towards illegal means to achieve their goals. This is exacerbated by issues of contested illegality, social inequality and historical injustice.

In addition, there is a link between the systems that allocate power, resources and violence (Braithewaite et al., 2010). The collapse of power structures and moral authority in a society can lead to power grabs and complex conflicts at local, regional and national levels. Focusing on governance and social structures as an analytic lens and a point of intervention may prove very useful in the GLTFCA as the area has experienced failing political and governance structures, competition over local and regional resources through political appointment, and predatory state practices. For example, in the small peri-urban towns on the western side of the GLTFCA, there are several potential leaders and authorities to provide both a moral framework and access to opportunities (legal or illegal), including traditional leaders, political leaders, police, business people, SANParks, private lodge owners and the provincial and national governments.

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[19] The authors of this paper are of the view that activities should be described as legal and illegal, as legitimate has two meanings and is thus confusing. Illegal means are often highly effective, and thus may be regarded as legitimate routes from the perspective of effectiveness. However, the scholars cited use 'illegitimate' and we use this term for this reason only.

When state structures are absent, citizens coalesce around other forms of governance and security provision (Baker, 2008). This could be around a neighbourhood watch, a traditional chief, a council of elders, a militia, a private security company, a vigilante group, a self-appointed despot, a ward councillor, etc. (Shearing & Stenning, 1985). Where these power structures compete, they will bring their own implicit, and sometimes explicit, moral codes and sets of beliefs about issues such as the use of force, access to opportunities and the distribution of wealth. People, being pragmatic and opportunistic, will subscribe to a structure that they are aligned to but they may switch allegiances depending on which suits them concerning a particular issue. This can result in complicated circumstances. In Massingir, Mozambique, the poaching bosses hold significant social power. They provide resources and they may be seen to represent the community. With this, comes a particular moral code and a way of seeing the world. In this framework, poaching is an act that benefits the local community.

It follows then that many poor people living around the GLTFCA may not be opposed to poaching. They may not even view it as a crime or consider it as a negative behaviour. It is anticipated that any effective response strategy will need to shift their beliefs around governance, adherence to the law, and ideally, even their perceptions and views of the GLTFCA and wildlife. However, for this to happen, an approach that addresses both their social beliefs and the realities of economic exclusion will need to be adopted. Poachers "use rhino poaching for their own upward social and economic mobility" (Hübschle, 2016a, no page).

As Merton observes; rigid class systems or oppressive states do not experience high levels of (non-state sanctioned) violence or anomie. However, crime often increases when authoritarian states transition into democratic or semi-democratic states. Similarly, Braithewaite et al. (2010) found that semi-democracies are significantly more likely to experience civil wars than autocracies or fully democratic states. This is because states in transition are typically weaker and because of the uncertainty around who has power.

In the small peri-urban towns on the western side of the GLTFCA, there are several potential leaders and authorities who may provide both a moral framework and access to opportunities (some legal, some illegal), such as traditional leaders, political leaders, police, business people, SANParks, private lodge owners and the provincial and national governments. On the South African side, it is theorised that there are multiple competing ideologies and moral frameworks. Speaking very simply, the middle-class have beliefs such as 'don't poach' and 'don't mention that we benefited from apartheid', and poorer African people may say 'we lost our land' and 'these resources should be ours', while the various parts of government are involved in political rent-seeking for self-enrichment. South Africa, as was the case in Indonesia, is "a society in which norms were in such flux that it was hard for people to identify any semblance of a position that market a normative constellation of a 'good citizen'". (Braithwaite et al., 2010, pp.17).

Approaches aiming to address anomie, look to repair the 'social fabric' of a community and aim to address governance and social norms. Interventions in this vein may also look to create pro-social behaviours and opportunities for young people. Economic development and employment programmes aim to support people in finding work and remaining employed, enabling them to support themselves and improve their lives. Approaches addressing relative deprivation, focus primarily on economic empowerment. An important nuance in any approach focusing on both anomie and strain is that crime is not caused by absolute poverty. As mentioned above, this can be seen in analyses of crime rates and poverty, as the poorest countries in the world do not have the highest crime rates. Rather, the countries with high levels of inequality, and social disorder have the

highest crime rates. Those who are deprived relative to people around them are more likely to commit crime.

Social Inequality and Historical Injustice

There are concerns around the legitimacy of using resources that were re-allocated or appropriated during the colonial and Apartheid eras, such as the KNP itself. This includes questioning what is and what should be defined as 'legitimate' resource use (Andrews, 2015, Hübschle, 2017, Hübschle & Shearing, 2018). We believe that recognising the legitimacy of questions around exclusive protected areas and the use of the resources within them must be heard and seriously considered to meaningfully engage local communities living around the GLTFCA (Hübschle, 2017, Hübschle & Shearing, 2018). Interventions to address historical injustices may be complex and involve a mixture of mediation and dispute resolution. These approaches may, over the medium to long-term, help the communities within the GLTFCA to support conservation efforts and the rule of law.

As noted by Cohen & Felson (1979), crime typically does not derive a net benefit for the whole of society, rather individuals or groups benefit themselves at the expense of another. Criminals do not generate wealth, they 'subsist' by appropriating resources from others. i.e. stealing money that was earned legitimately or stealing resources that another has worked to develop. Cohen and Felson note that "Since predatory violations fail to yield any net gain in sustenance for the larger community, they can only be sustained by feeding upon other activities" (Cohen & Felson, 1979, pp.590). While this is true of the majority of crimes, this is not true of poaching from outside of the GLTFCA. Poaching works differently as it involves collecting a resource (rhino horn or ivory) from an area and bringing it back to your village or town outside of the conservation area. These resources were not available to the communities where the criminals reside and, until poached, were of no direct benefit to the residents. In this way, poaching from conservation areas is a net benefit to the communities living outside those conservation areas.

Braithewaite et al. (2010) suggest that top-down approaches for conflict resolution, that are negotiated by a small group of military and political elite, help only to pause the conflict or negotiate a suspension of the conflict. Securing peace and ending the conflict requires complex bottom-up approaches that engage the majority of the civilian population in reconciliation processes. Braithewaite et al. (2010) advocate for bottom-up processes in which large numbers of civilians can become stakeholders in developing and implementing the peace deal. Their context is post-civil war Indonesia, where the bottom-up peace processes sought to create a non-violent future for Indonesia. In the context of the GLTFCA, bottom-up peace processes would seek to create a pro-conservation ideology or at least support for the rule of law within the communities around the GLTFCA. Braithewaite et al. further state that peace-building must have an economic component and "be diagnostic in identifying specific blocked opportunities that could be unblocked" (2010, pp.432). For peace-building or crime-prevention to be effective in the long-term, legitimate employment opportunities must be available (Braithwaite et al., 2010, Merton, 1938).

Accommodation: AGL Mining Project

Artisanal and Small-Scale Miners (ASM) in western Ghana have traditionally had conflictual relationships with Large-Scale Commercial Miners (LSM) (Andrews, 2015). The local people who engage in illegal mining believe that they have legitimate access to the resources that they are extracting and do not view their mining activities as illegal (Andrews, 2015). While the LSMs that have paid for access to various concessions view the resources as exclusively theirs and view the ASM miners mining on their concessions as illegal and disruptive to their business operations.

ASM miners in Ghana extract substantial quantities of resources. ASM miners extract roughly 10% of the country's gold (100 000 ounces) and 70% of the country's diamonds (700 000 carats) per annum (Aubynn, 2009). LSM operations directly hire roughly 15 000 Ghanaians. Calculating the number of people involved in ASM operations is difficult. However, estimates are that between 100 000 and 200 000 people are directly involved in ASM mining (Aubynn, 2009). Roughly 30% of those involved in ASM mining in Ghana are women. As a result, there is strong support for illegal mining within the rural poor communities, where the ASM miners live. The relationship between LSMs and ASMs… "is characterised by mutual abhorrence, mistrust, antagonism, threats, violence, and intimidation. Yet, it is widely recognised that maintaining harmonious relationships between large-scale multinational mining companies and local ASM operators is crucial" for continued mining in Ghana (Aubynn, 2009, pp. 65).

The core of the conflict between the ASM and LSM is around contested access to the same resources. The two groups have divergent views of land ownership. The LSMs understand that they have exclusive access to concessions and tracts of land that they have legally acquired. They view ASM operations on their land as illegal. While the ASM miners "perceive their territory of operation as their traditional rights to work on the land, whether for mining or farming. Those employed in ASM, along with residents of local communities, often argue that they have long sustained themselves on mining local mineral resources, well before the arrival of LSM operations; and, that the latter seizes control of lands and deprives local people of their rightful access to minerals and other natural resources" (Aubynn, 2009, pp.65).

The LSM operators have employed both state and private security providers in efforts to stop ASM operators accessing their lands (Aubynn, 2009, Andrews, 2015). The results of efforts to stop ASM miners were often an increase in violence and acrimony between the two groups (Aubynn, 2009, Andrews, 2015). In some instances, the sheer number of ASM miners has meant stopping them is impossible. In one instance, 15 000 ASM miners worked the AngloGold Ashanti Obuasi Gold Mine in full view of security and policing personnel who were unable to stop them (Aubynn, 2009).

One company, AGL, made the pragmatic decision to accommodate ASM miners on some of its concessions (Aubynn, 2009). "The failure of aggressive policies provided a strong case for a paradigm shift… [AGL] adopted a more negotiable and compromising approach… encapsulated in the concept of 'Live and Let Live'. This approach sought to accommodate artisanal miners on AGL's concession in so far as their operations did not cause operational threats to the company" (Aubynn, 2009, pp.67). Implicit in this approach is that the managers of AGL realised that the cost of accommodating ASM miners on their concessions (and thus losing a percentage of the ore in that concession) would be lower than the cost of hiring security firms and the continued violence on their concession.

AGL's accommodative approach was founded on two principles: "(1) Recognition that ASM activities have for a long time been an important activity both socially and economically to the indigenous" people in the region, and "(2) That a well-organised and harmonious relationship between the artisanal operators would facilitate sound and safe mining practices" (Aubynn, 2009, pp. 67). Improved relations between the two groups, it was believed, would reduce costs to the company and lower the disruption to AGL's commercial operations.

AGL formed a management committee, consisting of representatives of ASMs from each of the small towns involved in the dispute, technical experts from AGL, and local politicians and leaders. AGL ran educational workshops and explained their new policy to nearby villages. ASM miners registered with AGL and received ID cards. Initially, there was mutual distrust and suspicion, but over time, the

ASMs and LSM managers came to a reasonable working relationship. This was in part because of the LSM managers' commitment to respectful and consistent management practice (Aubynn, 2009).

The management committee decided on particular areas of the AGL concession that the ASMs would be allowed to access. They set ground-rules in terms of safe and reasonable mining practices and provided the ASMs with technical training and some equipment. ASMs, for the most part, adhered to the agreement and mined in the agreed areas. This led to a reduction in conflicts between the two groups and a significant reduction in disruptions to AGL's operations. Interestingly, after ASM miners had registered with AGL, a number of them were hired to work directly for AGL while others formed smaller companies and then fulfilled contracts for AGL.

Aubynn (2009) notes that while the accommodation model was effective, it was primarily motivated by pragmatism rather than by moral or altruistic motives. AGL's short-term goal was to reduce disruptions to their business. AGL also sought to avoid the negative publicity that followed clashes between ASMs and their security personnel. AGL's long-term goal was to remove the ASMs from their concession. The technical training and material support that the ASMs received were discontinued after 2002, though it continued to benefit them long after the training ended (Aubynn, 2009).

While this example is not immediately transferrable, as the 'accommodation' of poachers within the GLTFCA would prove problematic, it is useful for several reasons. It is helpful to know that other regions have had to contend with competing legal frameworks regarding access to and use of resources. While the politics of these situations are divisive and fraught, pragmatic strategies based on mutual benefit can be developed. It is also useful to note that even in intractably violent situations, accommodative or compromise approaches can be used to reduce violence and reach mutually beneficial outcomes.

Therapeutic Intervention: Realistic

Rehabilitation and reintegration are the processes through which criminals are 'rehabilitated' away from their criminal behaviours and supported in their reintegration into society. Typically, rehabilitative programmes tend to be therapeutic or psycho-social and attempt to address the complex internal emotional world of the criminal. Intensive group or individual therapy and life-skills programmes are common in rehabilitation. Some programmes function as diversionary programmes, where, instead of going to prison, a first-time offender or a young person may be sent to a therapeutic programme instead.

Realistic is a therapeutic support programme for ex-convicts in Cape Town that aims to reduce offender recidivism. *Realistic* is an abbreviation for Rebuilding and Life Skills Training Centre. The organisation works with young offenders out on parole and youth at risk by providing services to facilitate personal healing for emotional development including one-on-one counselling, support groups and workshops.

Sean Larner (2017) found that those who completed the six-month training programme reported a significantly improved sense of self-worth and life skills. However, while young people stopped criminal activity and behaviour while on the programme, within 12 months of completing the programme at least 50% had been rearrested[20] and 66% reported that they used drugs or alcohol.

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[20] Unfortunately no data was provided comparing *Realistic's* recidivism rate with those who had not received treatment.

Larner (2017) ascribes these failures to *Realistic* not addressing material obstacles faced by young offenders and the lack of follow-up services after the programme ends.

Overall, the programme does an excellent job of meeting the ex-convicts emotional needs and providing life skills. However, this alone is insufficient, and the programme did not address the financial needs of the trainees. The young offenders had a remarkably high unemployment rate of 98%, which can be understood as a consequence of less than one in five having completed high-school, and all of them have criminal records (Larner, 2017). Additionally, 60% of the trainees were dependent on their families for some financial support, and 88% relied on their families to provide housing. Thus, once the programme ended the majority of offenders returned to crime and / or drug use.

While *Realistic's* provision of life-skills and therapeutic support were valued by their recipients, it did not address their very real financial needs. Programmes such as *Realistic* may be very good but will have limited long-term impact without being able to provide support in accessing licit sources of income. As a result, numerous programmes have been developed that include both personal development and employment components. In the GLTFCA, it can be expected that even for those wishing to stop criminal behaviour, if there are no viable financial options, this will prove very difficult.

Skills Development and Employment: Homeboy Industries

The Homeboy Industries project addresses both employment and therapeutic concerns by hiring young men and women who have previously been involved with gangs or crime, or who may be at risk of doing so. This approach can be difficult to implement and is not without shortcomings but has had successes in various settings. Currently, there are 250 organisations based in different countries looking to replicate a part of the Homeboy Industries model.

Homeboy Industries is the biggest gang member and ex-prisoner reintegration programme in the world (Homeboy Industries, no date). It is based in a poor area of Los Angeles that has a strong gang presence (Homeboy Industries, no date). Homeboy runs what it calls 'Social Enterprises', which are for-profit businesses that fund the other programmes that Homeboy Industries runs (Homeboy Industries, no date). The social enterprises were all started with the express purpose of hiring ex-convicts and assisting them in turning their lives around. Homeboy Industries does this by working on therapeutic and emotional issues, re-socialising people to be employable and better-adjusted to non-criminal lives by training them in various workplace skills and behaviours.

To the public, Homeboy is a business that offers commercially competitive products with a really great story – giving consumers a feel-good bonus. To the ex-offenders, Homeboy offers a free 18-month programme that offers therapeutic services, case management, job-training, reintegration support, and job placement.

Sports and Development: Project Alcatraz

The story goes that in 2003, a group of criminals broke into the Santa Teresa Rum Distillery in Aragua, Venezuela (Santa Theresa, no date) and were caught by the security guard. The owner gave them two options: either they could work at the distillery and pay off their debt, or he would call the police. The robbers chose to work at Santa Teresa. They were employed at the Distillery, while also being taught life-skills through rugby – and Project Alcatraz was born. The project has since grown and formalised and is now also run in prisons in Venezuela (Barbarani, 2016).

Project Alcatraz recruits criminals and gangsters, rehabilitates them and supports their reintegration into society. Alcatraz offers training in various professional skills, including vocational skills, and provides training on-the-job, primarily at the Santa Teresa Distillery. Trainees are given formal education and psychological support where needed. An unusual aspect of the Santa Teresa programme is its use of rugby to teach values and discipline (Santa Theresa, no date). We are not of the view that it is the teaching of rugby itself that is crucial, rather it is the teaching of values, and the use of rugby to simulate struggle, difficulty and cooperation in a way that emulates real-world experiences. One interesting aspect of rugby is that because of the rules, and different functions of each position in the team, there are very few 'stars' on the field. Rather, each person in the team must do their part for the team to succeed. This level of cooperative benefit and the shared emotional struggle can be harnessed to teach values and personal development. The team nature of rugby also creates a sense of belonging to something larger than the self, and the physical side provides a release of energy, as well as stimulating positive endorphins (Rugby Players Association, no date).

Project Alcatraz demonstrates that with an effective emotional development programme, people involved with crime and delinquency can become formally employed and engaged in development and rehabilitation. Venezuela is similar to South Africa in that it has high levels of interpersonal violence, high levels of unemployment and lagging economic development. For these reasons, projects that can employ criminals or those on the fringes of criminality and integrate them into formal employment are worth understanding and replicating.

The key part of a programme such as this is the therapeutic and emotional component. There are numerous examples of programmes that offer jobs to at-risk youths and those in conflict with the law, however many of these programmes fail because the young people they hire are unreliable and underperform at work. The employment of those with criminal pasts involves a double burden; as they need to be managed in the same way as normal employees but often also need coaching and emotional development to enable them to succeed. This additional component, seen at both Project Alcatraz in Venezuela and Homeboy Industries in the US, is both crucial and difficult to implement.

The model of Project Alcatraz is not particularly revolutionary or unusual. Numerous programmes aim to employ criminals and support them in moving away from criminality and violence. It is helpful is to consider what has enabled this programme to succeed while others have failed? It seems that the differentiator is not *what* is done, but *how* it is done. Alcatraz and Homeboy bring together effective business management and effective emotional and personal development. Those running Project Alcatraz are running a successful business and simultaneously developing the emotional character and resilience of their trainees.

Community-based Crime-Prevention

Community-based crime prevention is, very broadly, the use of community members and community resources to prevent crime. This approach is most easily understood in comparison to traditional policing-based crime-prevention. Traditionally, crime prevention is centrally done by the state: the police and sometimes intelligence services or military (Newburn & Neyroud, 2008, Tibbets, 2012). More recently, there has been an increase in the use of private actors, such as private security companies or private military contractors

Traditional policing approaches can be successful, though they do often lead to an escalation of force and can become resource heavy (Telep & Weisburd, 2012. Often the belief is that if 10 police officers are making a difference but haven't fixed the problem, then 15 will be enough. This is found

to be ineffective (Braga, 2008, Telep & Weisburd, 2012). This escalation can result in what we have seen in the US, where there are 750 000 police officers and over 2 million people in prison. South Africa currently employs over 100 000 police officers. Employing more officers is both unaffordable and difficult to manage. In these approaches, the residents or community of an area are the recipients of crime prevention initiatives. They are passive. Community-based crime prevention looks to leverage community members' knowledge and resources to prevent crimes from occurring in their areas.

Community-based approaches and interventions can take many forms, some are policing focused, such as neighbourhood watches, while others are developmental or therapeutic in nature, such as support groups for young people who may become involved in criminal activity (Tibbets, 2012). Community-based crime prevention recognises that those best-placed to prevent crime are those who live within the community where it occurs, as they have resources and knowledge that outsiders do not have. Often, they are aware who the criminals residing in their area are, and where to find them.

These approaches, however, are not effective against highly organised professional criminal networks, particularly when those networks are of foreign individuals who have no ties to local community members. For example, Mozambicans crossing the border into South African towns to base their poaching operations may not have ties to the local communities. The social networks within those communities may be ineffectual in addressing this problem as poachers will not value their relationships with the communities, and will not be well-known by local people. However, should the poaching gangs be recruiting from within the communities in South Africa, then community-based interventions could be built to assist in reducing poaching.

Using community-based crime prevention approaches, it may be possible to effect changes regarding how easily poachers can operate within the towns how easily young people are recruited into poaching gangs or for poaching events. Biggs et al. propose a Theory of Change to address high-value wildlife poaching that consists of "4 pathways for community-level actions: strengthen disincentives for illegal behaviour, increase incentives for wildlife stewardship, decrease costs of living with wildlife and support livelihoods that are not related to wildlife" (2016, pp.5). This model, while tricky to implement, shows promise in addressing high-value poaching in the GLTFCA.

Guardianship

An important aspect of community-based crime-prevention programmes is the inclusion of the community in preventing crimes. This involves enlisting or involving community members in supporting crime prevention initiatives. This can be done in a variety of ways. However, the key to this approach is that community members are supportive of crime prevention (Hübschle & Shearing, 2018). In the context of the GLTFCA, this is unlikely, and work to engage with the norms and values of those around the landscape would be necessary.

Community-based crime-prevention can be based on a wide range of interventions, such as neighbourhood watches, or diverting young people away from criminal behaviour. However, they are all premised on the idea that those in the community view the behaviours in question as negative, or at least as high-risk. As noted above, those living around the GLTFCA are often supportive of poaching, and it is anticipated that extensive work regarding understanding the values and norms of those around protected areas will need to precede any guardianship-based crime-prevention intervention.

Community-based crime prevention models look to involve community-members in guardianship roles over their own resources. This approach is necessary when traditional law-enforcement has proven insufficient, and when criminal behaviours are embedded within a community.

Kahler (2018) argues that conservationists should move from the stewardship model to one of guardianship. Guardianship "is a concept from mainstream criminology that examines the willingness of stakeholders to assume an informal role as protectors and intervene if necessary to disrupt crimes and has three critical dimensions: 1) the willingness to supervise or monitor crimes, 2) the ability of the guardian to detect potential criminals, and 3) willingness to intervene when faced with a crime" (Kahler, 2018, pp.21).

Guardianship refers to local people becoming the guardians of natural resources and protecting them. This proposition is the ideal state for crime prevention and functional governance. However, when considering the social and economic context and the contested illegality of rhino and elephant poaching in the GLTFCA, it becomes clear that the social context precludes effective guardianship and that work on community-conservation relations is necessary.

"Governments and non-governmental organisations (NGOs) that plan projects to conserve the environment and alleviate poverty often attempt to modify rural livelihoods by halting activities they judge to be destructive or inefficient and encouraging alternatives. Project planners typically do so without understanding how rural people themselves judge the value of their activities. When the alternatives planners recommend do not replace the value of banned activities, alternatives are unlikely to be adopted, and local people will refuse to participate" (Tucker, 2007, pp.1)

Kahler & Gore (2012) write about the significance of consideration of norms and values with regards to conservation and poaching in the development of projects (Kahler & Gore, 2012, Tucker, 2007). Conservation is embedded in an ideological frame but it is not a worldview held by those living around the GLTFCA. A large part of the work that needs to be done around the GLTFCA is sensitising conservationists to their own implicit ideological biases and encouraging them to be pragmatic in engaging with those around the GLTFCA.

Our position is to take an entirely pragmatic position, one based on a few assumptions:

1. If people wish to engage in a crime, it is very hard to stop them,

2. Those living around the GLTFCA currently have little reason to support anti-poaching or conservation work, and

3. Engaging with #2 must be done before meaningful community-conservation partnerships can be developed.

Guardianship Intention Index (GII)

Kahler (2018) developed and investigated what she terms the 'Guardianship Intention Index' (GII) that intends to measure a persons' willingness and ability to intervene should they witness poaching or illegal wildlife use. The GII was developed using the three constituent components of guardianship, namely: "(1) perceived ability to supervise, (2) reported willingness to supervise, and (3) reported willingness to intervene if they witnessed poaching related activities" (Kahler, 2018, pp. 5). Kahler found that participants' willingness to intervene was significantly affected by demographic variables (gender, livelihood, village of residence, age, etc.), risk perceptions, and wildlife values.

This concept is of interest with regards to the GLTFCA. However, the questions Kahler asked related to guardianship presumed that poaching activity would occur in a space that is viewed by the respondents. With regards to high-value poaching in the GLTFCA, the actual poaching of elephants and rhinos in the conservation areas, far away from villagers. Kahler asked respondents how strongly they agreed or disagreed with statements such as "I have the ability to aid in wildlife protection" and "it is everyone's responsibility to watch for illegal activities in the park" (2018, pp.37). These questions may be inappropriate for the GLTFCA, given the competing normative frameworks and beliefs about what 'illegal activities' are. It follows that when determining the GII in the GLTFCA, care must be taken in framing questions and interpreting results.

"Findings from this line of research have important theoretical implications in terms of understanding demographic and attitudinal dimensions that influence stakeholder willingness to intervene. The practical application of articulating wildlife guardianship as a concept, and understanding, monitoring, and increasing the behaviour among diverse stakeholders has broad appeal to answer the calls for more effective and inclusive responses to wildlife crime" (Kahler, 2018, pp. 7).

Compliance

Within the conservation literature, there is growing research into compliance that explores the factors that affect peoples' decisions to comply with legislation (Kurland et al., 2017, Kahler & Gore, 2012). The literature on compliance is usually divided into regulatory approaches and normative approaches (Kahler & Gore, 2012).

- **Regulatory approaches** "come in the form of setting regulations and laws, fines and punishments, and implementing various law enforcement tactics such as anti-poaching patrols and making arrests. Such approaches are the most widely used tactics to increase compliance with conservation objectives (Kurland et al., 2017, pp. 8).

- **Normative approaches** "focus on moral obligations such as standards of personal morality, moral development, social influences such as peer opinion and influence, and perceived legitimacy of laws implemented by authorities such as procedural fairness" (Kahler and Gore, 2012, p. 105).

Models that employ regulatory and normative approaches simultaneously are rare but have shown that normative influences can support regulatory compliance (Kahler & Gore, 2012).

In the Zambezi region of Namibia, 94% of respondents believed that the conservation legislation was correct, viewing its implementation by the local conservancy leaders as 'the right thing to do' (Kahler & Gore, 2012). In contrast, implementation of conservation legislation in the GLTFCA is contentious and unpopular (Hübschle, 2016c, Vundla, 2018). It may be that the reasons behind support for the rules in Namibia are that the conservancies are structured as Community-based Natural Resource Management (CBNRM) projects and locally run, instilling a sense of guardianship over wildlife. Motivations for poaching in Namibia may vary from those in the GLTFCA. "…some participants mentioned noncompliant poaching acts motivated by rebellion or disagreements with rules; these motivations were related to negative local attitudes toward the establishment, governance, or benefit distribution scheme of the conservancy" (Kahler & Gore, 2012, pp.115).

Given the historical conflicts between residents around the GLTFCA and the conservation authorities, as well as the competing normative frameworks, it is considered imperative that normative work is done around the GLTFCA.

The recommended strategies are:

1) Behavioural economics support to direct cooperation incentives, and

2) Mediation and communication to address normative disputes and historical injustices by understanding why people don't support conservation and then working to systematically address those issues.

Community Resilience

There exists within criminology and crime prevention extensive research on rehabilitation and treatment of offenders. Much of this literature focuses on what can or should be done with convicted offenders, which is not particularly useful to this current inquiry. However, there is a growing understanding of what predisposes people to being violent or committing crime, including the links to a person's development. This research is driven in part by developments in neuroscience and magnetic resonance imaging (MRI) technology, enabling researchers to explore the links between early childhood development, neurological development and behaviour. Much research has been devoted to identifying specific risk factors that affect predisposition to violence and criminality, these include:

- poverty,

- absence of a parent,

- drug abuse in the family,

- mental illness in a parent,

- low educational attainment in a parent,

- child abuse,

- unemployment in the family,

- malnourishment,

- an absence of healthy role models, and

- the absence of legitimate opportunities to improve one's life (Garbarino, 2001).

Researchers speak of cumulative risk and that the accumulation of risk through the co-occurrence of multiple factors results in criminality (Garbarino, 2000). No single factor needs to be identified as the causal factor. This approach does lead to more complex responses, as it necessitates a multi-faceted approach to reducing crime and violence.

Garbarino was asked what causes the school-shootings in the US, as he explains: "I kept trying to say there's no one single cause, there's only the accumulation of risk. It's as if a boy is building a tower of blocks, block after block after block, and finally, he puts one more block on the tower, and it falls over. You can't really say that the last block is the cause of the fall because if that block were there by itself, it wouldn't fall over. If some other block came last, it would look like the cause. Indeed the research shows that it is the accumulation of risk factors that does the damage" (2001, pp.174).

Researchers and practitioners debate the number of risk factors that lead to criminality or violence. However, the general rule is that more risk factors make children or young adults more likely to engage in violence. Thus, fewer risk factors reduce the likelihood of violence and increase resilience.

This approach is based on an ecological perspective of human development and the accumulation of risks and opportunities (Garbarino, 2000). Developing families and communities that are resilient to risk factors necessitate multi-faceted interventions that address multiple risk factors simultaneously. The interventions listed below (and some of the economic and governance interventions listed above) should be used in combination to create resilient communities. The combination of approaches should be adapted to suit different localities around the GLTFCA.

Community crime prevention and community resilience can be strengthened through numerous approaches, such as neighbourhood watches, employment programmes, educational programmes, dispute resolution and sports development programmes.

Neighbourhood Watch: iSafety

The Safety Lab develops, implements and tests innovative approaches to urban violence issues in Cape Town, including a data-gathering tool to support crime-prevention initiatives, called iSafety. The Safety Lab's approach to crime prevention is based on the philosophy that research without action is not helpful and that all action must be researched. Based on this approach, the Safety Lab develops and test interventions in lower-income areas around Cape Town. Their primary focus is on gang violence.

The core of iSafety is an app-based data-gathering tool given to neighbourhood watch members so they can gather highly detailed information while conducting their regular neighbourhood watch patrols. iSafety is a technological addition to the traditional neighbourhood watch concept. Neighbourhood watch is a well-known community crime prevention methodology. It is a patrolling system where the residents of a community form a group who actively patrol their neighbourhood. The level of complexity and organisation of neighbourhood watches can vary greatly, from scheduled shifts of patrollers with torches and reflective bibs designated to particular areas, to ad-hoc patrols of residents with little or no technological support or planning. The idea behind a neighbourhood watch is to increase the presence of law-abiding citizens on the streets to deter criminal activity in those spaces.

The iSafety system works by enabling community members to upload, analyse and display data to a live map of their community. This provides a visual overview and enables implementers to quickly see hot-spots, potential risks and nodes of safety within that area. The iSafety Neighbourhood watch is both a means to an end and a positive outcome in itself. The iSafety team employs young people to act as 'activators' who are each provided with a cell phone to use on patrol. This provides surveillance and an increased sense of safety, it provides some financial benefit to those employed on the programme, as well as training to those young people. The 'activators' upload data to a live map of the area as they patrol. iSafety also results in highly detailed information about the community in which it operates, which can be used to develop more effective safety interventions going forward.

Where iSafety was implemented it delivered five benefits to its host community, these were: (1) that young people were trained and employed, (2) these young people were patrolling their neighbourhoods, (3) they were capturing safety, and social data on their areas as they were walking around, (4) that the uploading this data and being on patrol gave them a positive sense of being involved in something useful and meaningful, and (5) the data is then used to develop targeted location-specific interventions for that town. Interventions developed in this way are based on granular-level detail about the problems within a community and are thus significantly more likely to succeed. This approach may prove useful in the peri-urban spaces around the GLTFCA as it involves

young people in providing safety and creates much-needed data about what is happening in those spaces.

Community-based data-gathering apps such as this have proven useful in the public health space. iSafety was developed in partnership with Dimagi, who specialises in developing public health app solutions. iSafety can be used as part of a neighbourhood watch or as a separate data gathering tool. Indeed, the potential applications of the iSafety are innumerable. iSafety is therefore useful for neighbourhood watches but also various other crime-prevention and data gathering initiatives.

iSafety offers the potential to gather granular levels of detail on safety and security concerns within a community, which can then be used to inform interventions and develop effective responses for that particular space.

The Safety Lab advocates for a three-prong process:

1) Target hardening,
2) Developing/collecting information from the community, and
3) Diverting into positive behaviours

iSafety involves all three steps, as it creates a patrolling function while diverting young people into positive behaviour: which is to gather information/intelligence from the local community.

The iSafety neighbourhood watch-approach is explicitly apolitical, and if implemented around the GLTFCA it must remain to be a safety approach. While an iSafety for the GLTFCA may have some similarities to the Rhino Ambassadors[21], this approach should not be linked to conservation in general or rhino poaching specifically. Anti-poaching is a politically contentious issue around the GLTFCA and 'politicising' community-safety initiatives will have undesirable consequences for a programme and will limit its ability to effect change in the long-term.

Dispute Resolution: Community Peace Process

The Community Peace Process (CPP) was implemented in 1997 in Zwelethemba, a small township just outside Worcester in the Western Cape. The CPP was designed to increase governance and the rule of law by utilising community members' knowledge and local resources (Froestad & Shearing, 2015). At the core of the CPP was a process of looking at what had led to violence or disagreement and what could be done to make it less likely to happen.

The founding narrative goes as follows: a man stabbed his neighbour in Zwelethemba. Typically, when this happens, the police are called, or there is an escalation in violence. If the police are summoned there is the chance that a person will be arrested and if there is sufficient evidence that may go to trial, after which that person may go to jail. Instead, the CPP members went to the man who had stabbed his neighbour and asked why he stabbed his neighbour, he explained that his neighbour's children insult him every morning on the way to school. Then they asked the neighbour why his children insult their neighbour, he explained that it was because the neighbour's chickens scratch in his garden. From this the CPP concluded that they had a chicken problem, not a stabbing problem, and the proposed solution was for the man who had stabbed his neighbour to erect a

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[21] 'Rhino Ambassadors' is a community-based programme that focus on creating pro-conservation sentiment and reducing poaching support, they do this by having young people around the GLTFCA speak to community members about poaching and conservation.

fence, thereby stopping the chickens from scratching in the vegetable patch and reducing the likelihood of the offence reoccurring.

The primary question of this approach is 'where is the chicken?'[22]

The CPP was developed with the understanding that most disputes are relatively simple to resolve. However, if they are not dealt with, simple disagreements can escalate and have serious consequences (Froestad & Shearing, 2015). The CPP consisted of two primary processes, Peace Making and Peace Building, both of which were consultative forums termed 'Peace Gatherings'.

Peace Making Gatherings were community-based mediation processes focused on individual instances of violence or disagreement. These Gatherings were intended to bring the disputants and any other people who may be in a position to help understand and resolve the disagreement, together and engage them in a problem-solving dialogue. The role of the CPP members was to facilitate the dialogue using a clearly defined process. CPP members were required to not blame or judge and to refrain from providing solutions. The solutions were proposed by disputants or other involved parties.

All Gatherings were staffed by members living in the community, who had been trained in the CPP model, and who would then facilitate and oversee the mediations. The Peace-Making Gatherings' primary aims were to stop disputes from escalating into violence and to assist people in finding acceptable outcomes to their disputes. The CPP reduced the burden on the police to respond to conflicts and reduced the total number of interpersonal conflicts in Zwelethemba (Jenneker & Cartwright, 2005, pp.6). The CPP oversaw some 12 000 gatherings between 1997 and 2005. The CPP tended to resolve conflicts over money (money-lending disputes or non-payment), assault, property damage, domestic violence, substance abuse and neighbourhood disputes (Jenneker & Cartwright, 2005, pp.6).

Peace Building Gatherings worked in the same way as the Peace Making Gatherings, except that here the Committee focused on broader problems instead of individual disputes. Peace Building Gatherings were called for by members of the community when they noticed a pattern of recurring disputes or observed a long-term problem within the community. A Peace Building Gathering was intended to bring together local resources in a consultative process in order to develop a solution. The Peace Building Gatherings, significantly, broadened the role of the CPP from conflict management to that of improving governance (Jenneker & Cartwright, 2005). The Peace Building Gatherings strengthened local governance and created more empowered functional communities – this was done primarily through the focusing of local resources and knowledge on addressing particular problems within the Zwelethemba community (Froestad & Shearing, 2015).

The CPP "model is designed to enable people to manage their own lives. This is capacity building of a fundamental kind – the development of human capital through focused action around real problems" (Jenneker & Cartwright, 2005, pp. 3).

Peace-Making Gatherings address individual conflicts and make those particular conflicts or problems less likely to occur again. While Peace Building Gatherings support good governance and provide a new set of values and norms for community members (Jenneker & Cartwright, 2005). The CPP led to an improvement in governance and a sense of belonging to a safe and ordered space by reducing

the sense of anomie and lawlessness within Zwelethemba, resulting in a set of shared values within the community that was non-violent and led to more peaceful and productive dispute resolutions (Froestad & Shearing, 2015).

Central to the CCP's model are the principles of gathering people together and helping them to focus on problem-solving in a future-oriented (Froestad & Shearing, 2015). Key to the CPP was the mobilising of local knowledge and capacity (Froestad & Shearing, 2015). The model shows that "even in the poorest and most marginalised of places, diffused local knowledge and capacity can be mobilised for governance purposes through relatively simple institutional means" (Drahos et al., 2005, pp. 52). Both the Peace Making and the Building Components may be useful for the GLTFCA when considered as part of a suite of interventions.

Thoughts on High-Value Poaching

> *"Many wildlife crime interventions fail to achieve sustained impact due to the complexity of the crime. Different aspects of the problem are interconnected, but stakeholders address them in parts."*
> *(Gonçalves, 2017, pp. 1)*

One of our assumptions is that effecting social change becomes more complex with bigger systems or larger groups of people. Making a change in a town of a few thousand people is easier than implementing a change across multiple towns of a few million people. The GLTFCA landscape varies greatly in socio-economic, environmental and political settings. It is important to consider how individual programmes may translate across the landscape and how they may change as they are taken to scale.

Currently, the poaching issue is framed as a legal and a law enforcement/military problem where poachers are viewed as criminals. If poaching were to be understood through a conflict resolution lens, in which poachers were seen as people with legitimate needs and desires that could be met through means other than poaching, the entire landscape may shift radically. This idea, drawn from mediation and conflict resolution, would lead to speaking about 'competing interests' instead of a 'war on poaching'.

Understanding high-value poaching as a behaviour that meets particular needs or desires allows us to more critically examine the drivers and enablers of the behaviour, as well as alternative behaviours that could be engaged in. It also allows us to view the legal definition of crime as a choice, rather than a quality inherent to the act. The definition of crime creates a strong disincentive for engaging in that action, however, in itself it is insufficient to stop the behaviour, and the criminality of the act can be contested.

Poaching should be understood as part of a global organised crime problem (Lemieux & Clarke, 2009). Research on illicit and transnational trade indicates that those involved in smuggling illicit animal products are often also involved in smuggling other illicit goods[23] (Nordstrom, 2007). The same is true in the GLTFCA where various parts of the high-value poaching networks are involved in other forms of illicit trade.

A useful distinction was drawn by Lin & Zegart (2019), who speak about the difference between defence and deterrence. In their language, defence is the idea of creating a sufficiently strong

defensive system that would defeat the enemy if it were to be attacked. When examining anti-poaching units and their operations, we must consider them to be defensive. Deterrence, on the other hand, is to dissuade potential attackers from even engaging in an attack. This understanding of deterrence is helpful when developing proactive methods to reduce poaching attempts before they occur. We view this kind of deterrence as most probably being in the social and developmental realm, rather than in law enforcement.

Results from a recent analysis that used long-term elephant poaching rates from 53 sites across Africa note that "annual poaching rates across all sites strongly correlate with proxies of ivory demand in the main Chinese markets, whereas between-country and between-site variation is strongly associated with indicators of corruption and poverty" (Hauenstein *et al.*, 2019, pp. 1). The authors concluded that while continued investment in law enforcement could further reduce poaching, it was unlikely to succeed without broader actions that reduce demand and tackle corruption and poverty.

One of the primary considerations in this work is that power is never absolute. James Scott (1992) conducted extensive research on power and resistance and concluded that power is always contested and negotiated. He looked at some of the most disempowered population groups, such as slaves on plantations in the United States, and even there he found moments of resistance. His 1992 book on the topic opens with the quote, "When the lord enters the wise peasant bows deeply and farts silently" (Scott, 1992, pp.1). While the study of power is beyond the scope of this document, it is useful to consider that power is contested and relational. This has significant implications for poaching within the GLTFCA. Poachers do not have absolute power, they need to negotiate with the towns they operate in and require support from those around them. Anti-poaching units and the military do not have absolute power, either. They are not able to stop every poacher, and they require support and co-operation. The realities of power and resistance often necessitate some form of compromise or mutually-beneficial arrangement.

Conclusion

This literature review has covered several topics and ideas, it has introduced a range of crime prevention approaches that may help address high-value poaching in the GLTFCA. This document provides short summaries of the developments with regards to poaching and anti-poaching in the GLTFCA, the militarisation of anti-poaching and related damages to community relations.

Rational choice theory leads to opportunity-focused interventions such as situational crime prevention and more effectively managed anti-poaching patrols. While normative approaches, based on understandings of concepts such as neutralisation and dissent, look to engage community members and poachers in dialogue and behaviour change. These approaches look to incentivise conservation behaviours or to instil those behaviours through changing values. As a result of the complicated socio-economic context of the region, the history of exclusion and anger at conservation values, we are of the view that normative approaches are necessary to any interventions planned around the GLTFCA. They may be successful if applied in nuanced and respectful ways. People living around the GLTFCA were observed to be unsupportive of anti-poaching efforts. Efforts to understand the reasons for this should form an important part of programmes aiming to address poaching in the GLTFCA.

Behaviour economics and the concept of 'nudging' behaviour have proven exceptionally helpful in addressing behaviour change in public health. The principles of behavioural economics are recommended to inform the design of intervention methodologies.

Offence-focused approaches are based on opportunity-oriented crime prevention interventions that aim to increase the difficulty of committing a particular crime. This paper looked at routine activity theory, situational crime prevention, problem-oriented policing and community-oriented policing.

The more complex offender-focused approaches focus on addressing an offender's motivation to offend, through addressing their individual psychology, the society in which they live, their economic situation or a combination of these factors. Offender-focused approaches look to involve local resources and community-members in anti-poaching work. The offender-focused approaches discussed in this document were: therapeutic interventions, community interventions and economic interventions.

A number of specific interventions were discussed in this literature review, of key interest were examples of skills development and employment, neighbourhood watch, dispute resolution and development through sports. It should be reiterated that while the interventions discussed in this paper have demonstrated some success, while there have been numerous similar programmes that have failed. This, it is believed, is because how something is done is as important as what is done.

Particular principles and concepts are valuable when understanding the success of the implementation of these programmes. Consequently, our research method has been to explore both the approaches themselves as well as the thinking behind them.

The summaries provided for these interventions were kept deliberately short, for the sake of readability and understanding. To implement one or, as is anticipated, a combination of these interventions, further understanding and exploration of these approaches will be required.

People living around the GLTFCA are subject to social and economic structural inequalities, some of which derive from an unequal political history. These negatively impact people's perceptions and actions. To tackle rhino and elephant poaching successfully over the long term, these need to be addressed. Linked to this is the inherent challenge of high-value poaching being a 'Wicked Problem', a complex problem with multiple variables that does not present an obvious or easy fix. It follows that addressing high-value poaching will require the thoughtful implementation of multiple approaches simultaneously.

This review looked at the problem through this lens. It reviewed a suite of examples which can contribute to our thinking on how we can implement these types of programmes, in an interconnected way, designed to have as much short-term impact as possible, while also building to have significant longer-term impact to change the choices that people make to reduce rhino and elephant poaching and to build a constituency for conservation.

This document outlined a range of theoretical approaches and linked those to particular interventions. Approaches based on rational choice theory lead to deterring criminal behaviour through punishment, while a normative theoretical starting point leads to crime prevention through engaging in governance and community-based interventions. We are of the view that a combination of both will be required, using a suite of approaches, to effectively address poaching in the GLTFCA. In the short-term, we advocate for more effectively managed patrols and anti-poaching efforts. In the medium- to long-term, we advocate for community-based programmes that address both the normative and instrumental aspects of poaching.

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