

Theorizing About Crime: Elements for a Contribution of System Dynamics to Criminology

Camilo Olaya[†], Marcela Salinas, Isaac De León Beltrán[#]

[†] Departamento de Ingeniería Industrial, Grupo TESO, CeiBA-Complejidad;
corresponding author: colaya@uniandes.edu.co

[#] Grupo MÉTODO, Área de Crimen y Conflicto

Universidad de los Andes
Calle 19A 1-37 Este, Bogotá, Colombia

Abstract

Customary theories of crime follow a cause-and-effect view, that is, crime is explained as a function of various weighted factors. This causal bias is prevalent across supposedly dissimilar theories of crime. Moreover, these theories tend to be universalistic: they seek to explain crime independently of context; crime is supposed to be causally produced in the same way in the United States, Colombia, Norway or Namibia. Moreover, such universality is constant across time, the causes of crime are the same one hundred years ago and today. A system dynamics conceptualization can contribute a different view. Here we show the possibility of having dynamic theories of crime, that is, theories based on feedback structures that explain complex patterns of behavior. Moreover, we also show the prospect of developing indigenous theories according to particular societal environments. The paper illustrates these points with a possible theory of crime for the Colombian society. The benefits of such an approach are discussed

Key words: crime, justice, feedback, conceptualization, causality, empiricism

1. Introduction

The tendency of human beings to understand nature as a cause-effect machine has seemingly permeated every endeavor aimed at conceptualizing complex issues. Crime is not an exception. The *search for the causes* of crime and criminality is a typical way of speaking of criminology, e.g. (Willis, Evans, and LaGrange 1999). System dynamics presents a different assumption. Problematic behaviors are explained by complex structures that represent decision making processes embedded in multi-causal environments. The need for a truly dynamic theory of crime is more evident in countries like Colombia where crime is prevalent and the failure of standard theories of crime is manifest. This article introduces an indigenous and dynamic theory for understanding crime based on key elements of Colombian society.

The first part of this article briefly revises typical ways of conceptualizing crime. Such a revision provides the platform to introduce system dynamics as a way to think about

crime. The central notion of feedback gives a dynamic approach to understand the persistence of crime in Colombian society. The articles suggest various feedback loops that help to build a theory of crime. The last section discusses the main points.

2. Theorizing about Crime

American theories have dominated universalistic theories of crime. Little attention has been given to unique cultural and social structures of other societies (Willis, Evans, and LaGrange 1999). However, theories of crime should include contextual factors that are peculiar to a given society (Marenin and Reisig 1995). Furthermore, perhaps we should discard general or even middle-range theories and focus on what might be called lower-range explanations and build upon these (Szockyj and Geis 2002). In this section we start from universalistic theories in order to introduce idiosyncratic elements observed in the Colombian society that have been reported by diverse researchers in order to establish various elements so as to develop a dynamic theory that can help to understand crime in Colombia.

A useful framework for addressing questions on crime has usually been the free will vs. determinism debate. In criminology this debate has taken the form of “objective” causes vs. rational-choice approach to crime. This discussion is our starting point.

2.1. “Objective” causes

Positivist theories of crime underline the search for the causes of crime. These theories assert that human behavior is determined not by free will but by external “macro” factors such as biological propensity, e.g. the traditional thesis of Lombroso of “born criminals”, or economic, social or cultural factors, e.g. economic necessity, greed, cultural transmission, lack of social control, and so on (Short 1997).

In Colombia this type of theories are also known as the “objective causes” approach since they explain criminal behavior in terms of the social and political conditions in which the individuals live; it means that factors such as poverty or the marginalization of people constitute causes of violence or crime (Martinez 2001). This perspective has been adopted by different sides. The guerrillas usually sustain positions and proposals under this argument (Posada Carbó 2002) and two former Colombian presidents, Belisario Betancur and Andrés Pastrana, based their political campaigns on such a view (Urrego 2002; Ramírez 2003).

This perspective also has been criticized. For instance, regarding poverty as cause of criminality, empirical evidence exists that shows no relation between criminality and poverty (Montenegro and Posada Carbó 1994) or between criminality and economic disparity (Beltrán and Salcedo-Albarán 2007). A second important criticism is that these theories are used by subversive groups to justify their actions (Gaitan Daza and Montenegro 2006).

2.2. Rational choice

On the other hand there are the *classical* or *neoclassical* theories based on choice. In fact, criminal justice systems in modern societies assume that crime is a rational act, otherwise there would not be any basis for establishing punishment. Short (1997) summarizes this rational-choice view: “Scientific criminology has, by definition, accepted rational choice as ‘worldview’ in the sense that humans are viewed as organisms motivated by self-interest to evaluate and choose between alternative actions; and human actions are regarded as purposive” (p. 63).

There are several examples of this type of theories for explaining crime. A prominent case is the popular self-control theory proposed by Gottfredson and Hirschi (1990); in short, they affirm that there are persons who tend to be risk-seeking, shortsighted, and insensitive to others; these “low self-control” persons desire immediate reward and, since they are more vulnerable to momentary temptations, they tend to engage in criminal acts. In contrast, those with “high self-control” are less likely under all circumstances to engage in criminal activities.

A well-known approach is the economic theory of crime usually associated with the ideas of Gary Becker (1968; 1993). A person’s decision to commit a crime can be understood as a rational choice through which individuals anticipate the effect of their acts based on a cost-benefit analysis to maximize their profit. Although Becker does not sympathize with the idea of a thief as a victim of social pressures, he does recognize the implications of the social and political conditions of the environment and includes factors such as the possibility to get a job, the law and the punishments in the opportunity cost of his theory. There has been numerous additional proposals that complement this view. For instance, Fajnzylber, Lederman and Loayza (2002) include the moral barrier of the person. According to them the individual decides to commit a crime when the net benefit of it, which includes the probability of capture, the length of the sentence, the loot from the crime, the cost of planning the criminal action and the opportunity cost of not having a legal job, exceeds his/her moral barrier.

For the Colombian case, Rubio (1997) introduces and documents the “perverse social capital” based on the roles played by drug cartels, guerrilla groups, and gangs. These groups corrupt whole communities where incentives for crime are high; here social capital may have the contrary effect of reinforcing crime choice. And Thoumí (2002) suggests a supplementary thesis which states that social and punishment can be negative since there are cases where the individual is rewarded by the society for being a criminal; moreover, he also highlights that State punishment can also be negative since often the living conditions in prison are better than living conditions outside prison.

Various weaknesses of the rational-choice theories have been indicated. For example evolutionary y economy underlines that the such an approach pretentiously assumes that the individual is able to have full information and to do sophisticated calculations in order to make a decision; moreover, it also takes for granted that each and every individual works under the very same rational premise (Nelson and Winter 2002). Furthermore, the neoclassical economic theory considers the average individual as a no-memory organism (Rubio 1999) excluding learning and improvement processes. This criticism is examined in the next perspective.

2.3. Crime as a Profession

The component of learning has been delineated in Ronald Akers's "social learning theory of crime and deviance" (Akers and Jennings 2009), one of the core theories in the field based on positive social capital that enhances crime knowledge through social learning. In short, "the individuals who a person differentially associates with are those that expose the individual to the normative definitions, values, and attitudes favorable and unfavorable to a particular behavior... If a person is differentially associated more with those who are involved in criminal and deviant behaviors or demonstrate pro-criminal attitudes, then he or she is more likely to engage in the criminal/deviant behavior" (p. 106). Moreover, they combine this rational-choice approach with what they call "social structure" in which social structural variables affect the learning process, e.g. age composition, population density, gender, race, group conflict, patriarchy, peer groups, among others. However, they underline that these structural influences produce *indirect* effects. Individual choice comes first. This is an attempt to have the best of both worlds, that is, a rational-choice social-structure influenced approach to criminal behavior.

In their book "El crimen como oficio" ("the crime as a profession") Isaac Beltran and Eduardo Salcedo Albarán (2007), based on the Colombian case, think of crime in an entrepreneurial way. They propose that it is necessary to develop three fundamental components: the volitional component or the willing to commit a crime, the cognitive component, which indicates the required knowledge to commit it, and the emotional component, which allows to correctly react to the pressures of illegality. The level of these components is what defines the type of crime that the individual is able to perform. Furthermore, the proportional level of each one of these components in the individual is not static; it changes according to the own criminal experience. This is what they call criminal evolution.

3. Dynamic Approach: the Significance of Feedback

We have shown main approaches to have a theory of crime. It should be noted that all approaches assume crime as explained by a list of factors, in the same lines of the "laundry list" of Richmond (1993). That is, the simple-causality approach is seemingly the only way to think about crime, as it is in most science. The "laundry list" refers to the tendency to look for "factors", "causes", of a dependent variable, which in this case is *crime*. That is:

$$Y = a_0 + a_1X_1 + a_2X_2 + \dots + a_nX_n$$

Where

- Y = crime
- a_i = weights or "importance" of each cause
- X_i = causes or factors

Thus, in the "objective causes" approach the X_i variables are for instance, poverty, violence, inequality, income, etc. In the rational choice approach these variables are the factors that "cause" the positive decision to commit a crime, e.g. the probability of capture, the length of the sentence, the loot from crime, the cost of planning the criminal action, etc. Similarly, the social-learning theory "causes" of crime are for instance the

level of differential association with peers who commit and approve of delinquency, variables that are also indirectly affected by social-structure factors. This tendency to look for causes is in parallel furnished by the empirical worry of scientists in which the empirical validation of causal factors is the main goal so as to assess any scientific attempt. Thus, and following the legacy of David Hume (1740), criminology seems to be trapped in the view of *causation* to explain crime.

Yet, there are alternatives. A system dynamics approach makes possible to integrate the effect of the social context (“objective causes”) on the individual decision process and to represent concurrent interactions. It means that what happens at the individual level will produce changes at the collective level. We are not limited to isolate the effect of single variables; we can explore the simultaneous effect of several variables. Moreover, system dynamics models make possible to characterize the decision process in a continuous way by taking into account that the information obtained in previous iterations affects the further behavior of the system; this characteristic is essential to capture the accumulation of criminal experience and the consequent effect of this learning process.

But there is a further and more important advantage. System dynamics invites us to think differently. We are not limited to explain a variable in a limited simple-causality view of the world. In a truly dynamic worldview, a problematic behavior is explained in terms of the structure of the system; “structure” refers to the stock and flow organization, the feedback loops and the rules of interaction among several variables in order to establish how influential pieces of system structure give rise to important patterns of system behavior. This explanation is known as a dynamic hypothesis and is a core concept in order to provide understanding. These types of explanations are based on mechanisms as explanatory power (Olaya 2009) and not in simple causal relationships. This way of conceptualization is supposed to enhance understanding and the improvement of our mental models. Instead of looking for “causes”, we can develop systemic thinking in order to grasp feedback structures, more pervasive, more influential, more persistent, in order to explain complex patterns of behavior. And crime is a good example of such a challenge.

4. First Elements for a Dynamic Theory

The conceptualization proposed here is in essence an approach to the criminal decision process integrated in a social context considering the role that the criminal learning plays on it, as seen in the Colombian research on crime. In this sense is both an indigenous and a dynamic theory of crime. Figure 1 presents an overview.

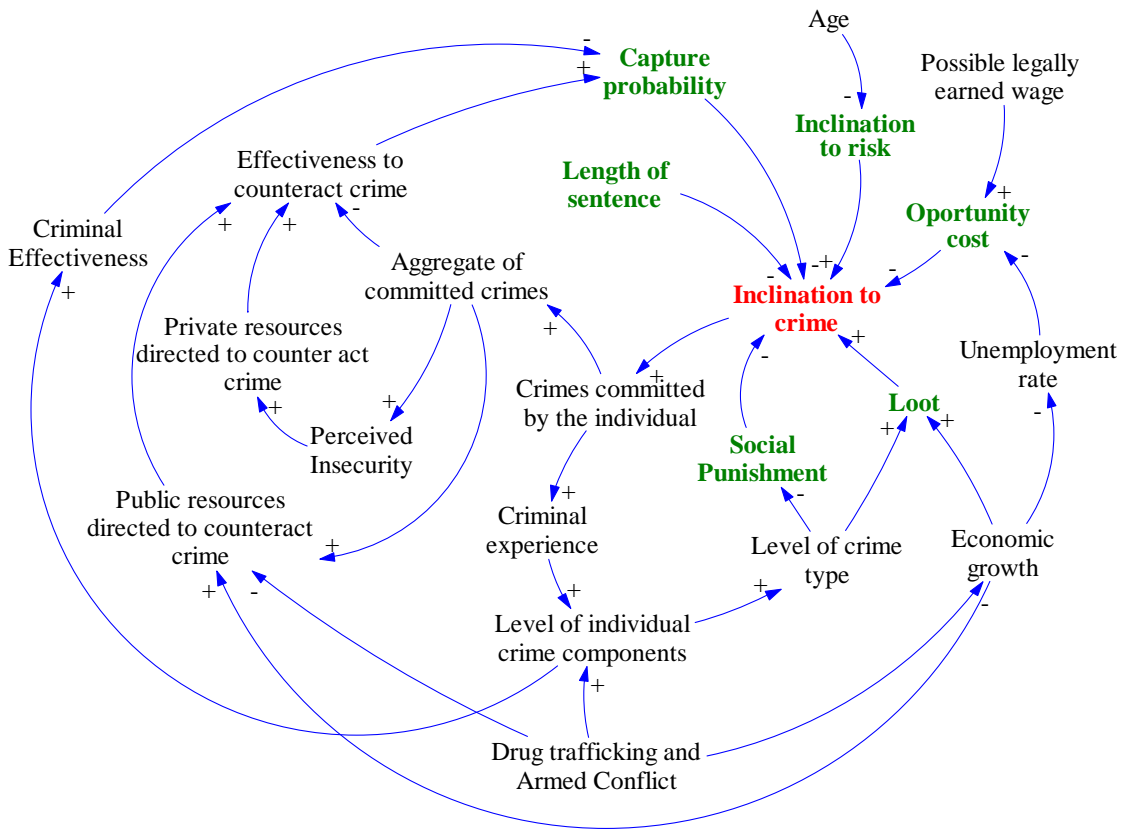


Figure 1. A first dynamic theory of crime based for the Colombian society

The main variable of the model is the inclination to crime; it refers to the tendency in a person to commit a crime as explained by several types of elements. We consider the factors suggested by the rational-choice approach to crime (in green color): capture probability, length of sentence, social punishment, loot from crime and opportunity cost. This is the individual level and the resulting inclination to crime impacts positively the amount of crimes committed by the individual. System dynamics also permits to include social factors that indirectly affect the decision to commit a crime linking the individual decision process to the social, economical and political conditions of the environment.

Based on the presented model the reinforcement of crime is highlighted in Figure 2. In three positive feedback loops it is possible to see how the criminal learning can cause a continued force for the growth of criminality because of the increase of the level of crime components in the individual. When the volitional, cognitive and emotive components grow, the individual is able to perform crimes which demand more expertise and permit a higher level of earnings (high positions in organized crime for example) (Beltrán and Salcedo-Albarán 2007) furtherly increasing the individual's inclination to commit a crime. In addition, there is evidence that in countries like Colombia, where the "redistribution" is approved by society, a person who executes crimes of "high level" actually are rewarded by their social circle with respect and admiration (the aforementioned perverse social capital), this negative social punishment impacts positively the inclination to crime. Finally, the third reinforcement loop is associated to the positive relation between the criminal effectiveness and the level of criminal components, which in turns diminishes the capture probability (Beltrán and Salcedo-Albarán 2007) increasing again the individual tendency to felony.

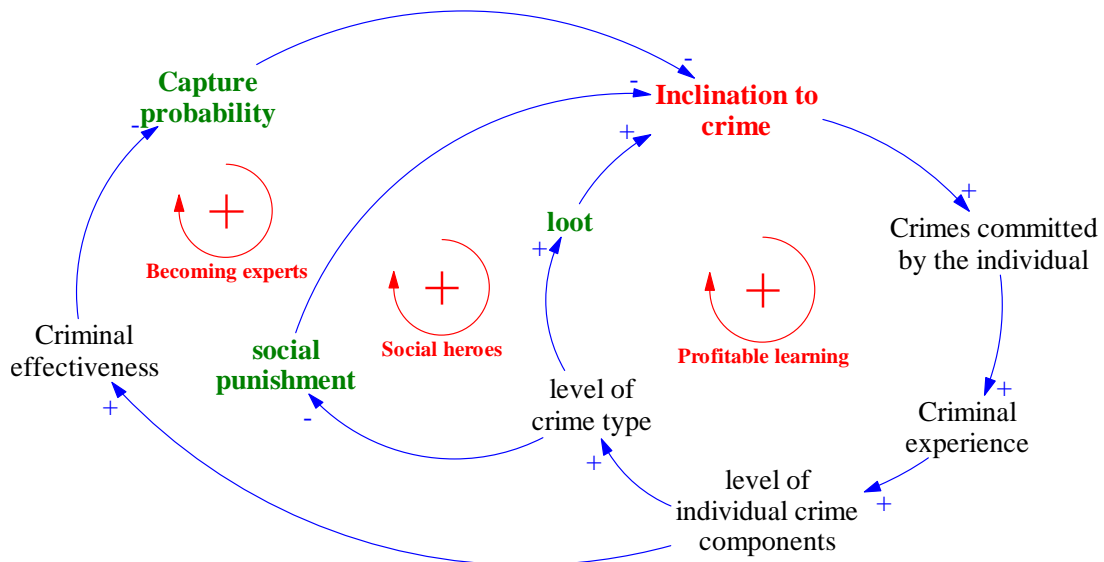


Figure 1. Reinforcement of crime

These loops underline the inertia of crime that is seen in some societies. No doubt this perspective helps to understand the persistence of crime in Colombian society despite the efforts by authorities. It should be noticed that such an effort is usually based on attacking “the causes” of crime. And thus, a simple-causality view cannot deal with the dynamics of crime.

To balance the previously described reinforcements, the government and the civilian population invest money in neutralizing of criminality (González and Posada Carbó 2001). This public/private distinction is central to the Colombian case since the failure of the State to fight crime has promoted the development of private justice. Both efforts are directed to increase capture probability (Figure 3).

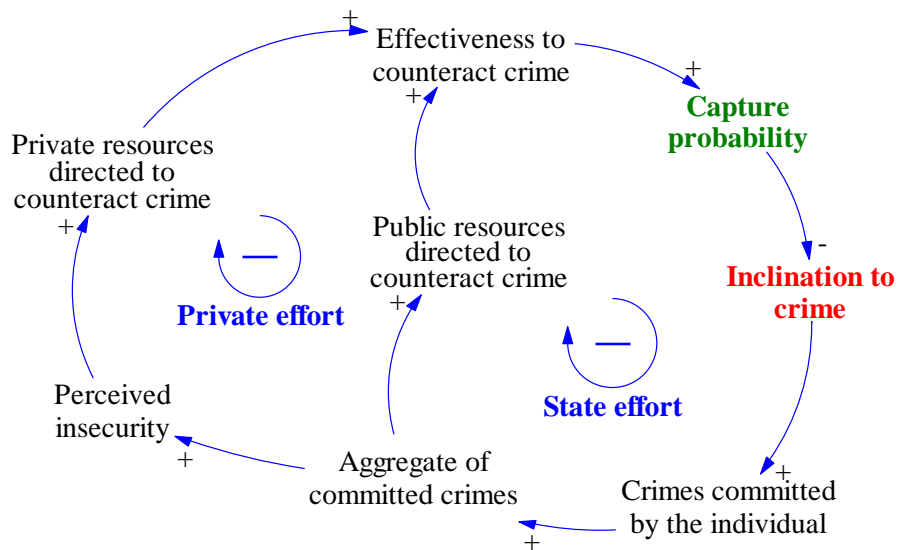


Figure 3. Regulation of crime

This feedback loop approach shifts the discussion from a “which factors are more important” (the current and eternal discussion in Colombia) to “which loops are dominant (when and why) over other ones” in order to explain crime. This is a way of approaching crime that is absent in both theory and practice. We are interested in underlining the dynamic nature of crime, that is, the fact that crime is part of continuous processes affected by both individual choice and social-structural elements whose incessant interplay through time should be included in any policy directed to fight crime.

5. Discussion

The approach proposed in this paper looks for planting the seeds for having a theory of crime that acknowledges both i) its indigenous character ii) its dynamic nature. Such an approach contrasts with current core theories of crime that are mainly i) universalistic and ii) static (or simple-causality based).

The development of standard crime theory is criticized by several authors. One of the main reasons is its failure to account for an explanation of crime with all its complexities. Perhaps is time to call for a stop in the search for universalistic theories, as Szockyj and Geis (2002) conclude: “criminological theory very likely has overreached the existent quality of available data, and criminologists might well retreat from general theories” (p. 284). The aforementioned call for indigenous theories of crime able to account for particular subtleties and societal elements of diverse societies seems a more prudent and relevant approach. The elements for a dynamic theory for societies that share with Colombia the aspects of learning and perverse social capital can be benefit from our approach.

Various academics have noted the systemic characteristics of crime without having — paradoxically—systemic conceptualizations. For example, Mears (2007) notices that “self-adjusting systems changes are perhaps just as common. Here, a policy is implemented, but because of adjustments in other parts of the criminal justice system, no change in outcomes occurs” (p. 673). In fact the line of attack of Mears is the so-called evidence-based approach, an empiricist view in which several causes are looked as elements for explaining crime but, still, usually in a simple-causality view, that is, a sort of “laundry multi-list”: “multi-faceted policies that target multiple causes of crimes using principles of effective intervention are more likely to reduce crime than those that target fewer crimes and that do not rely on these principles” (p. 672). Indeed we share with Mears this call. But more than an evidence empirical causality-based approach to crime we believe that a systemic dynamic approach to crime corresponds to what we see: individuals that each time take decisions, incessantly, based on personal choice which in turn is affected by environmental factors determined by the decisions of individuals.

Our proposal makes evident the need to formulate policies that counter-*balance* the reinforcement dynamics of crime, policies that discourage criminal evolution. For example, one possible policy would be to design sentences according to the stage of the criminal formation of the person within the hierarchy of the criminal organization. We are here reporting our first findings in the direction of having a dynamic theory of crime

that should support policy-making processes in Colombia. Simulation and testing are the next steps.

The design of policies against crime requires a crime theory behind. Hence, the relevance of such a theory is at the heart of any policy aimed at combating crime. This statement sounds obvious. But the fact is that the use of crime theory for developing crime policies is a rare endeavor. Of course every policy has an underlying theory (let us call it “assumptions”) behind. But an explicit articulation of policy design with solid crime theory is usually missing (Mears 2007). A system dynamics model shows the possibility of studying the simultaneous interactions of diverse elements involved in the criminality problem, both at the individual-choice level and at the societal level. This is truly the path to speak of *systems* of criminal justice in which the phenomenon of crime is seen as part of a complex whole affected by choice and by environment. But, moreover, a dynamic view demands us to shift from a simple empiricist view to a complex multi-causal feedback view, the first step to start to win the fight against crime.

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