

The Border Ecosystem: Viewing Border Security as Part of a Complex System

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ABSTRACT

The United States in the last 35 years has invested in and implemented stricter border enforcement strategies. Yet, the concept “border security” is an understudied research area at the intersection of fields like international relations, policy, and criminal justice. To address this interdisciplinary gap, we propose a preliminary conceptual model of border security. The resulting model we term the “border security ecosystem,” is a complex system composed of a diverse array of actors, interests and action tied to legitimate and illicit entities. Within this environment legitimate actors aim to facilitate trade and travel for economic and pro-social reasons. However, the same environment is exploited to mask illicit activities such as drug, money, weapon, and human smuggling. If this is possible so is the smuggling of a terrorist. Although the model is preliminary and requires further validation and refinement, it provides an exploratory conceptual framework, a prerequisite for growing the academic literature on border security.

Keywords: Border Security, Problem Structuring, Ecological Systems Theory, Complex Systems

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INTRODUCTION

Due to political pressures in the early 1990s, regional border enforcement efforts in El Paso, Texas and San Diego, California introduced a new concept of border security based on deterrence (Bach, 2005). The paradigm shift in enforcement tactics involved the notion of moving border security officers from the interior of border cities to patrolling the immediate border, which was aimed at discouraging the illegal entry of humans and contraband. The advancement of the new tactic proved to be the basis for the current border security strategy. The tactic includes clearly delineating the international border, in many areas for the first time, with some form of border barrier. In addition, the strategy calls for placing officers in highly visible locations to discourage the entry of illegal entrants. The fundamental goal of this strategy is the protection of a distinguishable line re-enforcing the long held idea that borders are simply demarcations intended to clearly delineate one sovereign nation from another.

None of the known individuals involved with the September 11, 2001 terrorists' attacks on the United States entered the country illegally, but the events of that day marked a significant shift in the conceptualization of the border from illegal immigration control to a national security issue. The nation developed a sense of insecurity that stemmed from the perception our borders had been violated. After the terrorists' attacks and prior to the creation of the Department of Homeland Security on March 1, 2003 the term, 'border security' entered into the common lexicon of the American public. As result, the link between terrorism and border security became institutionalized (Manjarrez, 2015). The ideological shift placed a heavier emphasis and resources on improving the security of the external borders of the United States, which emphasized the demarcation of borders.

Eventually, the new realities of the September 11, 2001 terrorists' attacks challenged the idea of defending a static line against global threats originating outside of the United States. It is in the aftermath of the attacks that we began to understand that border security does not start at the actual border, but rather at locations far away from U.S. land, water, and air ports

of entry (Bersin, 2012). In essence, we realized border security was far more complex and marked by flows in which security, legitimate trade, national/international political discourses, environmental and humanitarian crises are not independent variables. Each of these dimensions are independent considerations and are meaningful in their own right, but ultimately in a border security context, they are indistinguishable from each other. The intent of this essay is to offer the notion that border security should not be viewed as a linear proposition demarcated by lines drawn a map, but instead reflects a complex ecological system. By providing a more comprehensive picture of the environment in which border security takes place, this article seeks to deepen existing knowledge and offer a contemporary framework to better understand the interactions of direct and indirect activities within a border security system.

BORDER SECURITY MISSION

Adding to the complexity of an already emotional topic is a fundamental challenge of defining the term border security and the related operational missions. Based on a wide variety of positions taken, any assessment of the security of the border is assuredly going to depend on the perspective of the individual or organization. The terrorists' attacks of September 11, 2001 redefined the issue into a national security imperative (Haddal, 2010). The demand to secure the border was made in absolute terms, which was unprecedented relative to past expectations. The Secure Fence Act of 2006 (Public Law 109-367) is illustrative of this new sentiment. In the legislation, Congress used the term 'operational control' to help contextualize border security. The term was defined as 'the prevention of all unlawful entries into the United States'. The definition has proven to be problematic since any entry of any unlawful person or contraband is a failure of border security. The definition is rooted in the notion that border security is the defense of a demarcated line.

Nonetheless there are clear objectives in securing an international border. In the last 35 years, the United States has focused on the traditional

missions of stopping both the illegal entry of individuals and the smuggling of illicit contraband (primarily narcotics) into the United States. In the aftermath of the terrorists' attacks of September 11, 2001, a new counterterrorism mission was added to the existing objectives rather than supplanting them. In reality, the three mission objectives are intertwined under the premise that the locations, pathways, and techniques for individuals and contraband to enter the United States illegally, whether for economic, criminal, or terrorist motives, overlap (Lewandowski et al., 2017). Accordingly, aiming to prevent illegal border entries into the United States is designed to fulfill all three mission objectives. By extension, this focus also serves goals that receive less attention, such as preventing the movement of bulk U.S. currency, stolen goods, protected technologies, and intellectual property violating goods from crossing the border.

How Is This Accomplished?

Securing the land borders and coastal waterways of the United States is primarily the responsibility of the Department of Homeland Security, specifically the U.S. Customs and Border Protection. At designated ports-of-entry, the inspection of legitimate trade and travel is the responsibility of the Office of Field Operations (OFO) within U.S. Customs and Border Protection. OFO has the arduous task of performing border security functions at 328 ports of entry without hindering legitimate trade and travel entering the United States (U.S. Bureau of Transportation Statistics, 2019). The responsibility of border security in between designated ports-of-entry is the function of the United States Border Patrol (USBP), which is also part of U.S. Customs and Border Protection. The advantage that the USBP has over OFO is that incursions into the United States, not at a designated port-of-entry, are at least a customs law violation and immediately apparent. USBP agents rarely process legitimate activity in their daily duties unless performing duties at inland traffic checkpoints. Nevertheless, both OFO and USBP have the same border security missions.

The 1,954 miles (Beaver, 2006) of the United States southwest border have been the focus of increased personnel, infrastructure improvements, and equipment resources the last 35 years, which has primarily been the result of the large levels of legitimate and illegitimate trade, travel, and immigration activity (Bersin, 2012). The United States Customs and Border Protection at/and between the ports-of-entry uses the strategy of detecting, classifying, responding, and resolving transnational incursions into the United States. The accomplishment of this sequence of tasks in relation to entries into the United States, legitimate and illegitimate, are bound by time as CBP must attend to a constant flow of activity. Moreover, the process of inspecting the high number of individuals and cargo is not done in isolation, but rather in a complex environment that is affected by local and national policy, mass media, local and national politics, immigration and commerce flows, various priorities, trade agreements, foreign social and economic variables, and public sentiment.

UNDERSTANDING THE COMPLEXITY

The flow of activity across the border does not exist in a stable state, but rather ebbs and flows. Non-routine challenges continually create complex conditions and disruptions to border security, such as acute periods of mass migration. For example, the southwest border witnessed an unprecedented rise in credible fear (asylum) claims by individuals crossing this land border alone, increasing from 55,584 in 2017 to 92,959 in 2018 (U.S. Customs and Border Protection, 2019). Given the legal requirements and policies associated with the administrative processing of asylum seekers, such mass migration absorbs considerable amount of personnel resources and thereby reduces the capacity of U.S. Customs and Border Protection to effectively detect, classify, respond, and resolve the more serious threats (National Center for Border Security and Immigration, 2014). Clutter can also be produced by more assertive actors along the border. Organized crime related homicides in Mexican states along the border greatly increased from 1,152 in 2006 to over 12,000 in 2017

(Calderon et al., 2017). The level of violence and narcotic smuggling brings state and local law enforcement agencies along the border into a border security nexus as their communities are likely impacted by the illicit activity.

While the dynamics of mass migration and transnational criminal organizations continually challenge the capacity to secure the border, they pale in comparison to the clutter created by legitimate trade and travel across the southwest border. In 2019, United States goods and services with Mexico totaled approximately \$614.5 billion (United States Census Bureau, 2020) across the 52 land and bridge ports-of-entry. The volume of trade makes Mexico the United States' third largest trade partner after Canada and China. The U.S. Department of Transportation data shows nearly 5 million commercial trucks, 9 thousand trains, over 54 million passenger vehicles, and over 36 million pedestrians entered the United States from Mexico in 2019 (U.S. Bureau of Transportation Statistics, 2020). This level of activity creates an immense amount of chaos and clutter through which to sift to detect and classify illegal crossings of individuals and contraband. Additionally, there is a considerable amount of pressure from political officials and the business community to facilitate the rapid movement of goods and people through these ports-of-entry (Ireland, 2009; Jones & Seghetti, 2015). The pressure in turn further reduces the time to detect and classify any potential threats entering the United States.

Collectively, the overwhelming flow of trade activity, along with legal and illegal movement of individuals across the border, creates high level of chaos and clutter that disrupts the ability of CBP (OFO and USBP) to identify and focus on more serious threats (drug trafficking organizations and terrorist activity) to border security (Manjarrez, 2015). The underlying premise of this logic is criminal and terrorist organizations will exploit the ability to hide their illicit activity in large volumes of legitimate trade and travel activity. Even within the large illicit flow of what is generally considered less serious (i.e. illegal economic migrant entries into the United States) criminal organizations will embed more serious violations and border security concerns (Lewandowski et al., 2017).

The issues of trade, travel, narcotics, and illegal immigration also highlight the challenge posed by multiple agencies having law enforcement roles along the southwest border. While both the U.S. Border Patrol and the Office of Field Operations are under the U.S. Customs and Border Protection, these two entities largely operate independently in their day-to-day functions. In addition, there are federal agencies that have overlapping jurisdictional boundaries or operations along the border that have actual or potential contact with illegal incursions, such as Immigration and Customs Enforcement, Federal Bureau of Investigation, Drug Enforcement Administration, U.S. Fish and Wildlife Service, U.S. Forest Service, and the Bureau of Land Management (Haddal, 2010). The operational space of the U.S. Border Patrol also has jurisdictional overlap with four state law enforcement agencies, 27 sheriff offices, and numerous local law enforcement agencies on or near the southwest border that have convergent concerns and enforcement responsibilities (U.S. Government Accountability Office, 2013). Lastly, there have been repeated deployments of the National Guard on the southwest border since the 1980s to support counter-narcotic efforts (Richiter & Garza, 2015). The deployments of National Guard units on the border without law enforcement authorities adds an additional layer of complexity and confusion.

The complexity of missions, sources of clutter, and overlapping jurisdictional responsibilities reflect a more complicated picture of border security than a simple static defense of a line on a map. Along the border, the interrelationship of different processes and their contextual variation shape the border security environment. The shaping environments evoke responses from the variables within the border security environment that create ecological niches because each layer within the border security environment has different properties and responds differently. Recognizing the many facets of a border security environment helps us understand the potential responses and consequences. The complexity of border security no longer allows us to view it as a singular or linear process in isolation, but rather the result of nonlinear interactions among numerous components that exist within a system.

Moreover, the pursuit of border security objectives across a number of overlapping entities is further complicated by the local, national and global settings in which they exist. Border security functions, over time, are impacted by non-operational settings (social, cultural, political, environmental, and economical) that may not directly influence the agencies performing the duties, but certainly have a shaping affect. The complexity, as the result of nonlinear interactions among a large number of system components with numerous variables, make any process challenging and at risk for failure (Wu & David, 2002). The variations in the interactions result in emergent dimensions, unexpected dynamics, and characteristics of environmental self-organization that simply make operational environments even more complex. What is missing is a conceptual framework for organizing and improving our understanding of these complex operational environments, which we suggest may be found in an ecological systems approach.

BORDER SECURITY AS A COMPLEX ECOLOGICAL SYSTEM

The ecological perspective finds its origins in the study of plants and animals, focusing on the interaction of geographical space, resources, and species populations. A central focus of this work is the importance of the dynamic and evolving interdependence of species that emerges through migration, resource competition, and succession (Cowles, 1899; Adams, 1908; Adams, 1935). Thus, understanding of a species' existence is gained not only through the study of its characteristics in isolation, but also the environment in which it exists. The geographic space, resources, competing species, and a myriad of other conditions subsequently represent the ecological system of a given species of interest that shape its existence. Early twentieth century scholars expanded this framework to suggest human behavior, individual and collectively, is also explained, in part, by environmental characteristics and conditions (Park & Burgess, 1925; Park, 1936; Hawley, 1944). Similar to plants and animals, humans exist in ecological systems composed of geographic space, resources, institutions, competing interests and a host of other variables that create an

interdependent social life. Human ecological systems are dynamic environments in constant flux, with occasional radical change that significantly alters the patterns of human behavior within them.

The work on human ecology that has the most relevance to the present discussion on border security is the conceptual frameworks for examining communities and crime. Early scholars suggested the levels of crime in a defined geographic space (e.g. community or neighborhood) is influenced by social and economic factors, which will vary across these defined areas (Shaw & McKay, 1942). Later refinement of this model argued that additional socio-structural characteristics also play an important role in shaping the level of crime. The characteristics include primary relational networks (e.g. family and other interpersonal networks), secondary relational networks (e.g. relations afforded through educational, religious, business and other institutions), and external resources (e.g. law enforcement and other government entities) (Bursik & Grasmick, 1993). These three components and the resources they provide (relational and material) shape the capacity to regulate illegitimate activity or crime in a focused geographic area. When these primary, secondary, and external resource characteristics are strong they are able offer legitimate support and opportunities to diminish the value of engaging in illegitimate activity, and the capacity to effectively intervene to stop illegitimate activity. Thus, the varying strength of these characteristics shapes the levels of crime across geographic areas.

We submit this human ecological framework for understanding variations in crime levels across communities has utility for improving our understanding of border security threats and vulnerabilities. Similar to levels of criminal activity across communities, levels of illegitimate activities (e.g. illegal crossings, human smuggling and trafficking, trafficking in narcotics and other illegal contraband) vary across geographic sections of a given border. While the characteristics of communities that predict levels of crime may not be directly analogous to a border context, the idea that there are socio-structural characteristics that influence levels of illicit activity in a given geographic border area has relevance. There are social and economic characteristics that shape the

relative presence of legitimate and illegitimate opportunities along geographic areas of the border, including the varying presence of networks and organizations that can influence the levels of illicit activity. There are also infrastructure and terrain issues that shape patterns of illicit activity across borders. For example, port-of-entry facilities that can handle large legitimate flows of people and goods across the border also provide the opportunity to intertwine the illicit flow of people and goods. By the same logic, varying levels of detection resources can similarly impact the ability to hide this illicit flow in the broader legitimate flow. Varying levels of border security and law enforcement staffing, resources and activity can shape the regulation of illicit activity across a border segment similar to the way external resources are argued to influence the capacity of communities to control crime.

Our goal here is not to articulate every relevant strategic driver for an ecological system in a border security context. Rather, we are making the more general argument that an ecological systems approach provides a desired framework for pursuing future research that more definitively identifies the relevant variables that influence the illicit flows of people and goods across international borders. With this in mind, we also suggest that the communities and crime approach drawn from human ecology alone is incomplete for the border security context. Human ecology scholars have long recognized that factors external to a community can influence shifts of activity within the community (Park, 1936), though little effort is given to incorporating these external influences into the ecological model. Within the context of illicit movement of people and goods across borders, these external factors require inclusion. For example, the movement of illicit drugs across different sections of the southwest border of the United States has been shaped over time by changes in broader enforcement policies, illicit organizations, consumer demand, and other factors. Thus, understanding the flow of illicit drugs, or changes in the flow, along a specific segment of a border requires an ecological model that includes these more distal influences.

In order to incorporate these distal factors, we draw on Bronfenbrenner's articulation of complex ecological systems for

explaining human growth. Bronfenbrenner suggests an individual's growth is bound by context, dominant beliefs, ideologies, and the dimension of time, which are interrelated in their influence (Bronfenbrenner, 1999). His approach reflects a multi-layered ecological system illustrated through the use of concentric circles representing microsystems (the individual), mesosystems (provide the connections and structure), exosystems (the larger social system), macrosystems (the layer comprised of beliefs and ideology), and chronosystem (the dimension of time) (Bronfenbrenner, 1979/1999; Bronfenbrenner & Crouter, 1983). Similar to the use of the communities and crime framework, Bronfenbrenner's concentric ecological systems theory model does not allow for direct application to a border security interest in the illicit movement of people and goods, but it does provide an abstract conceptualization for forming a model that incorporates distal influences on activities at specific border geographies.

A brief description of the risk of credible fear (asylum) claims of individuals entering the United States provides a simplified example of how this multi-level conceptualization of ecological systems theory has utility for border security. The significant rise in asylum claims by individuals (U.S. Customs and Border Protection, 2019) has challenged the government's ability to perform the objectives of detecting, classifying, responding to, and resolving other illegal incursions into the United States. While USBP agents between the ports-of-entry or CBP officers at ports are dealing directly with mass migration events (clutter), they are forced to constrict their operational profiles. A case in point, on March 29, 2019, the Department of Homeland Security declared the migration flow of asylum seekers had overwhelmed their capacities to perform all their mission objectives. The department responded by reallocating personnel from other missions to respond to the migration event. The result is that border security agencies are unable to respond to other border incursions (Nielsen, 2019).

The Department of Homeland Secretary claims the increased flow of asylum seekers is a result of outdated laws and misguided court decisions that make quick adjudication of asylum claims practically impossible. Nearly all of the asylum seekers are released into the United States pending

the final disposition of their claim. As a result, most individuals will never be removed from the United States even if they are here unlawfully (Nielsen, 2019). Both domestic and foreign mass media outlets and non-governmental agencies are promulgating the lack of consequences of the illegal entry, which in turn is encouraging additional migration. None of the influencers on the increased flow of individuals is in the direct purview of border security entities, but the dynamic certainly affects the ability to perform border security functions at different locations along the border.

Drawing from the ecological framework for this example, at the microsystem level are specific geographic areas of the southwest border of the United States, which have varying levels of illegal entries of people and goods similar to communities having different levels of crime and deviance. Then there is an increase in individuals making entry at designated ports of entry and between designated ports of entry making asylum claims, and the flow of individuals with asylum claims varies across sections of the border. This variation in flow is driven by differences in routes of travel, terrain, presence of aid networks, and other factors. As a result, USBP agents and CBP officers along some segments of the border are overwhelmed with this flow, prompting the agency to reallocate personnel and resources from other areas along the U.S. border to these impacted areas. Even with additional resources, the demand resulting from responding and managing large numbers of individuals (mass migration) with asylum claims is reducing the capacity of CBP to detect and manage other illegal entries of people and goods. In turn, this reduced enforcement capability may potentially impact the flow of these traditional border security threats, where it may increase as a result of growing asylum claim activity to hide within.

Thus, micro ecological systems reflected in different segments of the border are changing in a way that highlights the interdependence of resources, actors and behaviors in these areas as ecologists have long articulated. However, even as highlighted in the above discussion, there are influences on these micro systems that are external to them. There are transportation routes beyond the specific geographic areas along the southwest border with Mexico that increase the likelihood that asylum

seekers or others looking to make illegal entry are more likely to utilize as opposed to others. In addition, the number of USBP agents and CBP officers, and the change in these numbers, are decided by officials away from these specific geographic areas that have a larger sphere of focus. These essentially represent Bronfenbrenner's mesosystem elements external to the microsystems that influence the latter through structuring to some degree what is present in the way of resources and actors in a given area, along with the behavior of some actors. Other mesosystem factors may include the priorities and policies of related government agencies on both sides of the border that have responsibilities for the area, transportation to and away from the border, and decisions of businesses to move legitimate goods through different segments of the border.

Parallels to Bronfenbrenner's other system levels are also evident in this example. Reflecting on the large social system level of exosystems, variables such as national policies, legislative acts, judicial interpretations, jurisdictional boundaries, trade agreements, mass media and other factors influence the meso and micro levels. These are more broadly influenced by the macrosystem factors of dominant public sentiment, political beliefs, and ideologies, which change over time to reflect the chronosystem concept and, in turn, reverberate through the lower order systems. Figure 1 provides a general illustration of this complex ecological systems paradigm for a border security context. Consistent with Bronfenbrenner's model, Figure 1 suggests border security agencies operate within a series of subsystems that cannot be defined without referencing each other (Wu & David, 2002). This infers that understanding border security cannot be done effectively without investigating the interconnections between the multiple ecological layers (Bronfenbrenner, 1979), from the direct operational environment along a given section of a border to the broader structures, social systems, and definitions and beliefs that surround them. As noted above, this discussion is not meant to be an exhaustive identification of influencing variables at these different levels, but more simply to reflect a conceptual framework for moving forward. The model has utility for traditional empirical studies to identify and measure the

influence of variables that predict the illegal flows of people and goods into a country.

We also suggest it has practical utility to border security organizations. It is critical for any organization responsible for border security to map out the ecological system in which it operates. This includes not only examining the geographic space, resources, institutions, actors and competing interests in close proximity to the border, but also those factors more distal to the physical border that nonetheless shape operating conditions. Mapping these ecological characteristics then improves the capacity to understand current patterns and activity in the operational environment, along with the factors that underlie minor and dramatic changes in this environment. In short, working from an ecological systems theory approach can improve the intelligence capacity of border security agencies to define and respond to their operation environment.

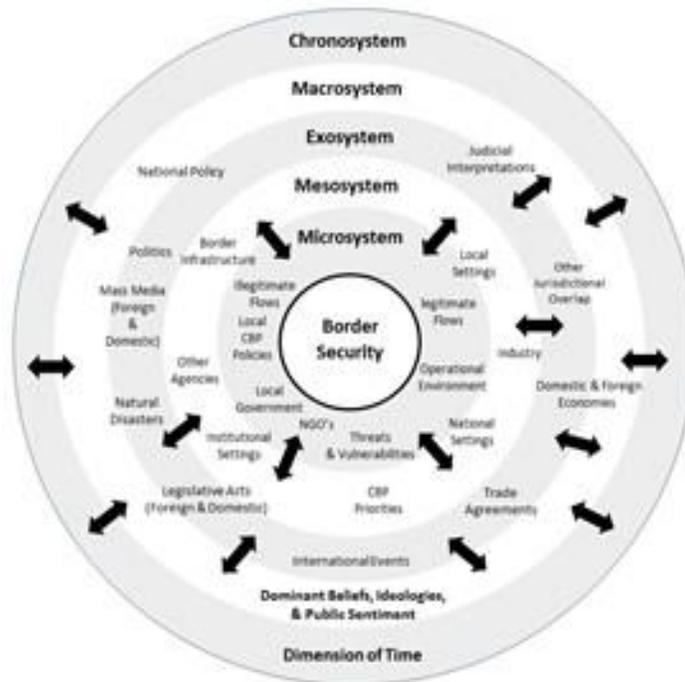


Figure 1. Conceptual framework of a border security ecology paradigm.

CONCLUDING REMARKS AND IMPLICATIONS FOR PRACTICE

In the last thirty-five years, border security in the United States has been viewed as the defense of a distinguishable line on a map. The perspective had served us well when we expected our borders to be controlled as opposed to secure. The difference between the two terms is that under a border control mindset, the United States exhibited a tacit acceptance of certain levels of illegal immigration (Andreas, 2009); whereas in a border security mindset no level of illegal immigration is accepted. The terrorists' attacks of September 11, 2001 ushered in the notion that our borders would now need to be secure. The primary missions of border security evolved to include counterterrorism in addition to stopping both the illegal entry of migrants and the smuggling of illicit contraband. We argue that a demarcated line on a map is not the start nor the end for border security, but rather part of a continuum. Viewing border security as a complex system with disparate variables provides a greater insight into the processes within the system that may expose national vulnerabilities to domestic and foreign threats.

Non-operational variables play a vital part in formally and informally shaping border security functions by exerting influence through the interaction with other social and environmental systems. We suggest there are multitudes of factors that are not conventionally viewed as having a border security nexus; but they certainly influence how border security is conducted and viewed. It is clear that a border security environment is comprised of systems that are intimately interrelated and an omission of information is likely to result in compromises to border security. By drawing on the insights provided by the human ecology literature, and specifically Bronfenbrenner's complex ecological systems theory, this article attempts to construct a better identification and understanding of the multitude of factors that influence the legitimate and illegitimate flows across the border and actions along this chaotic environment.

Viewing border security through an ecological systems framework allows us to organize data into patterns that we can interpret and

understand shaping pressures, and then act with consequence. The improved understanding could potentially manifest itself at three distinct levels. First, a deeper strategic level of understanding would provide a global understanding of the push and pull factors influencing border security. Policy and agency decision makers could re-evaluate long-term planning. Second, operational level components would be able to recognize sooner subtle nuances to operational changes. An earlier recognition of changes could provide the forewarning to reallocate resources to mitigate crisis levels of mass migration. Lastly, viewing border security through an ecological systems theory lens provides an exploratory conceptual framework in which to conduct research in order to help grow the academic literature on border security.

ETHICAL CONSIDERATIONS

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