Learning Process for Collective Decision-Making in Defense and Security: Inter-Agency Policy Building

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This work analyzes the decision-making behavior among security actors in cooperative inter-agency arrangements. To this end, we will use case studies of state officials' simulations, which target the improvement of the agents' relations in particular learning processes. Undeniably, Brazil's internationalization expanded practices related to the configuration of its homeland security model, especially after the attacks of September 11th, 2001. On the other hand, training and learning experiences were also internalized, expanding the common lexicon and coordinated policies and assignments. The paper's central objective is to identify the patterns of inter-agency decision-making processes, analyzing the possibilities for creating and disseminating practices that may ultimately constitute policies. For this purpose, the work begins with the apprehension of the Brazilian security inter-agencies practices typology, which emerged by an adequately built database.

Keywords: policy building, policy adaptation, simulations, inter-agency, security and defense

INTRODUCTION: GOVERNANCE AND POLICY BUILDING THROUGH PRACTICES

The adaptive approach of public policies suggests that policy building is dependent on the various perceptions of efficiency actors may have (Walker, Rahman, & Cave, 2001). Efficiency is mostly qualified by the original expectation that public policies will come from the arising demands, naturally and systematically organized by institutional processes. Both the expectations of the society and the electoral arena are conditioners of the demands that arise in public policies. Many theories were dedicated to explaining how public policies emerge and why institutional development is done (Shipan & Volden, 2008; Walker et al., 2001; Wallner, 2008).

Rational-choice theories point to a significant amount of rationality inside the process of institutional development (H. Simon, 1957; H. A. Simon, 1991; H. A. Simon et al., 1987), while institutionalists put their eyes on the various frameworks that eventually sub-judge interferences. Within an institutional theory,

there is the possibility of observing and understanding institutional process and policy building, considering the implications of the actors' trajectories inside natural institutional development. As Walker has stated, "most policies must be devised despite profound uncertainties about the future" (Walker et al., 2001). This paper concludes that institutions are interfered with by their developments, although with components previously foreseen. If not, a system of rules may eventually be inefficient to accompany how society changes, as institutions created to guide it may be obsolete (Innes & Booher, 2003; Jones, 2003; Paasi, 2005).

Simultaneously, the governance schemes are built to observe the necessity of changes and institutional evolution, but there are fewer efforts dedicated to appropriate practices and experiences than the general view from the top side of institutions. Scenarios or long-term planning are part of strategic thinking, which is rarely manifested from micro-processes. Whereas developments are integrated naturally, and actors along those institutional lines of communication may incorporate them, this appropriation is not visible. From the bottom side of the institutional processes, practices are mostly considered natural responses of the institutional development level and strides (Bardach, 1998; Chhotray & Stoker, 2008; Plessner, Betsch, & Betsch, 2011).

So, there are two main problems connected to this proposed study: guaranteeing more visibility of how policy innovation is manifested through institutional developments and how to achieve this appropriation from actors' learning systematically. To study this, we propose to gather information from an original database where we have organized inter-agency security and defense initiatives and detect which variables configure those initiatives where specific decision-making processes are exhibited. This database is a way to achieve the above-cited objective, but the research is also supported by a second way to achieve policy building and diffusion, which is how simulations can be a way to enhance visibility and the diffusion of best practices.

Walker's adaptive approach diagnostics that policymaking is different in three different aspects, once it is the option: the analytical approach, the types of policies considered, and the decision-making processes (Walker et al., 2001). First, the paper will focus on simulations as methods of observing and analyzing institutional change. In sequence, the proposal is to add to the simulations and gaming in security and defense discussion, the inter-agency cooperation schemes as they are already identified in the literature. Then, contrasting the database and the simulations we have led, observe how policy building has been occurring, what are the challenges, and finally, how the methodization of practitioners' experiences can add to the well-functioning of the inter-agency security system, both as an individual and institutional learning process.

As a result, the main argument here meant is that governance patterns lie on adaptive developments and invisible micro-relations that affect inter-agency processes in security and defense. Considering that "governance seeks to understand the way we construct collective decision-making" and "governance theory is about the practice of collective decision-making," we wish those findings can help the improvement of policy planning and agents' compliance in the area (Chhotray & Stoker, 2008).

USING SIMULATIONS TO IDENTIFY PATTERNS

One can state that observe how institutions move is challenging, because methods of analyzing it are dependent on the way information is disposed. One of the bases of the adaptive approach is the consideration that information is diffused because actors have a bounded rationality (Arthur, 1994; Jones, 1999, 2003; H. A. Simon, 1991). Chotray & Stoker expresses that governance is puzzling due to the rapid evolvement of the way decision making is made, especially within states (Chhotray & Stoker, 2008).

If the observation of system structures is difficult also because of the number of policies embedded, the system also is important because it is interpreted by its actors. This is about compliance, but not only. This is also about how it is manifest throughout and how much of its efficiency is dependent – or condemned – by individual choices. Interest in decision making is undergrowth because many of the in-place governance structures are not avoiding risk, which is rooted in its motives.

In the actually visible models of inter-agency relations in the specialized literature, there are many concepts that may define the agencies' arrangements. Cooperation, collaboration, coordination, networks, integration, and inter-agency partnerships are among these concepts. However, we can observe that the concepts and arrangements are based on the perspectives of a better possible model of the relationship in between agencies, whether prioritizing the sharing of information, resources, and experiences.

For Bardach (1998), inter-agency collaboration as a concept adopted by the author, presupposes an increase in the value of agencies in the face of a joint work. This means that inter-agency work becomes efficient and highly relevant because it can further enhance the potential of the agency, expanding resources, reducing costs, and time within a process. When considering the public value given the collaborative tasks among agencies and their effectiveness, Bardach recognizes that it is not so easy to achieve this proximity in inter-agency relationships. Given the differences in organizational cultures in the form of communication and information channels created based on trust, there is the need to know the role that each institution plays. So, if the arrangements made in between them do not have well-defined variables of this relationship, collaborative work can become counterproductive.

To find appropriate definitions and patterns for detecting the models of inter-agency relations, simulations and games can offer knowledge and continuous learning, in addition to training individuals and their organizations in cooperative work, in the collaborative decision-making process, in recognition of their tasks and responsibilities. The establishment of a common language, and the use of non-individualized practices in the inter-agency process are under some of the critical variables.

Therefore, some conditions are necessary to favor a cycle of learning and improvement of inter-agency models. Bardach (2001) states that the basis of this process is to observe creative capacity, intellectual capital, network implementation, advocacy group, network communication, trust, and acceptance of leadership. These variables together would favor a clear direction in the joint work of the agencies.

Another relevant aspect in the search for inter-agency cooperation models is to consider the more in-depth forms of relationship among agencies, looking for the cooperation dynamics. As the role of each agency is inserted in different levels of performance and decision, there is the need to establish consensus among the actors involved (Beatrice 2008). The inter-agency cooperation model builds consensus because the success of the inter-agency operation or process depends on the contribution and efforts of each of them to a common goal. The creation of consensus in inter-agency cooperation can show, create, and implement public policies. The relationship and dialogue among agencies strengthen common knowledge and stimulate creativity to contribute to a possible solution for the ends. This means that collaboration can elucidate different points of view and assist agencies in the construction of laws, governance, and policies.

However, for inter-agency cooperation to be successful, there is a need to mitigate the problems involving the relationship within different agencies, among which are the differences in organizational cultures, mainly in the information mechanisms. Even expanding information bridges, the difficulties in establishing trust and training agents in institutionalized behavior are expressive. Some of these barriers can compromise cooperative, combined, or joint work, thus, generating a conflict of priorities and an inability to make the best use of resources. Inhibiting the fluidity of decision-making based on consensus, it can also generate an environment of competitiveness among the actors involved. The result, if there is no control of these barriers, is the poor compromise with the solution, with the minimum possible impact on society (Beatrice 2008).

For the prevention of negative impacts and unexpected results, simulations, and training programs, including software based, can be important instruments. These simulation models use theory and practice regularly, dialoguing, and diagnosing patterns and methods that can accentuate the positive aspects of inter-agency cooperation (Bardach 2001). As to improve the learning and simulation processes, as well as discover through acceptable practices the best path for decision-making in inter-agency cooperation, it is necessary to consider: how theories are applied and used in practice; how they are interpreted and improved for the effectiveness of the process; and yet, according to Crowston et al. (2004), we need to recognize the success factors and identify those that need further research and improvement.

Authors who work with cooperation, coordination, and inter-agency collaboration have identified important variables throughout their observations and research. One of the most essential references

addresses the issue of networked information and the need to establish a mechanism capable of securely disseminating information, with all agencies being able to share information quickly and safely (Kapucu 2006).

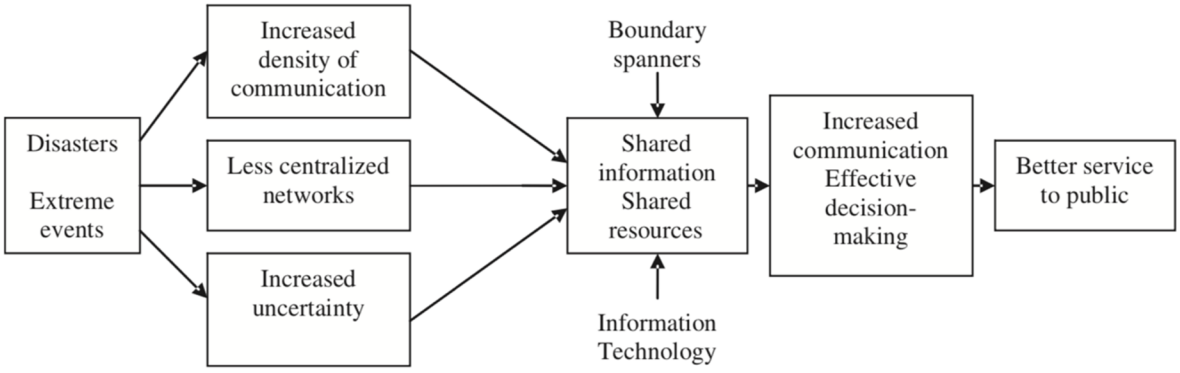
In inter-agency cooperation, one of the striking points is the trust between the actors; thus, inter-organizational communication (Kapucu 2006) is a relevant factor and demonstrates that the development and deepening of cooperation are marked by effective communication and social capital that can positively influence the decision-making process in emergencies. The goal is that network communication can establish links in between the agencies so that there is no overlap of tasks, so that everyone really knows what their roles throughout the inter-agency model are.

Considering that communication and the information systems are strategic elements of an inter-agency cooperation model, we observed over several simulations carried out based on security issues that the effectiveness in sharing information was essential. The collection, interpretation, mining, and creation of a databases capable of supplying agencies with information, could permit that the decision at the strategic level would guide tactical-operational actions.

Information sharing in inter-agency operations appears in most of the literature as a dominant variable for the success of the process. This is because in situations of emergency crisis, the conditions produce uncertainties and take the agencies out of routine activities to respond to immediate actions and which need quick decisions, often without sufficient planning time for actions. This means that training, simulation, and capacity building activities become even more relevant to establish criteria and standards to assist in emergency situations.

Network communication in inter-agency operations is a challenge (Kapucu 2006), but it is essential to understand how the communication process will take place from top to bottom and horizontally, among agencies during a crisis. Establishing reliable communication channels and in which agents will make the connection for the correct receipt of information and proper interpretation, is essential for the actions to be carried out effectively and consistently.

FIGURE 1
INTERORGANIZATIONAL COMMUNICATION AND COORDINATION IN EMERGENCIES



(Kapucu, 2006 p. 212)

Another relevant aspect is the common use and understanding of the concepts and regulations involved in inter-agency schemes (Hura et al. 2000). During simulations, we realized that the organizational culture and the structure of understanding the concepts and doctrines directly affect the way the agent will understand the process and often lead to a different result than expected in the resolution of the crisis. The direct impact of these concepts understood differently, or even the lack of knowledge of standard regulations, can impact the interpretation, interoperability, and level of information sharing.

BEHAVIOR IN INTER-AGENCY COOPERATION SCHEMES

Some themes are listed in this article precisely because of the implications generated from these relationships. Therefore, identifying these relationships and individual behaviors to reveal the patterns of institutional behavior and making it possible to increase public policies, is central to security studies. Managing critical uncertainties for the future of international society, such as climate, security, environment, and epidemics, is at the frontend of those inter-agency challenges (Walker et al., 2001).

The use of simulations to identify some of these possible patterns is influenced by both decision theory and game theory (Edwards, 1961; Hallegatte, Shah, Lempert, Brown, & Gill, 2012). While game theory is concerned with each decision in the formulation of third-party decisions, decision theory is focused on the observation of the reasons and implications of decisions in the conjunctures and related environments (Cavusoglu & Raghunathan, 2004; Raiffa, 1994). Whereas the reasons for decisions are the scope of analysis of Decision Theory, in Game Theory, the interdependence in between them based on agents is the focus.

Somehow, the study of security agents and decisions points to both acknowledgments because agents are eventually influenced by their rationality over the decisions of others, at the same time, institutional evolution points to the creation of more rational expectations and with impact on the different conjunctures.

Cognitive theories related to social sciences focus on models of learning, memory, and distribution of knowledge among social agents so that interactions are also conditioned. In the diachronic cognition model, in addition to individuals being influenced and influencing decision-making processes, they are also influenced by their interpersonal relationships (Neumann & Cowley, 2016; Secchi & Neumann, 2016).

Part of the cognitive studies is related to modeling, game theory, and decision theory studies due to the possibilities that those areas offer in terms of testing reflexes of behaviors, perceptions, and learning outputs. Modeling in agent-based systems (ABM), for instance, allows observing architectures of inter-agency relationships over time and according to variables combined in artificial scenarios. Behavior, in that sense, is part of spontaneous schemes that are "(…) constellations of inter-agency and distributed agency materialized" (Neumann & Cowley, 2016).

Behavior studies and complexity studies are linked to policy studies and the possibility of policies being more efficient given the adherence to processes, their implementation, their distribution, and spreading to other agents and systems. There is a common assumption, therefore, that behaviors are conditioning factors of the complexity that forms the interaction systems and subsystems, including politics. This type of consideration of a behaviorist character stems from a dynamic understanding of the processes in which the consequences of a decision condition the others (Edwards, 1961). For this reason, attempts to observe possible behaviors in environments controlled by (more or less) rational variables add to the understanding of how policies and organizations develop.

It is observed that the governance systems, in addition to providing the democratic visibility that is demanded, mark regimes of regulatory and agent interactions in a characteristically horizontal and dependent on adhesion scheme. As said by (Krahmann, 2003):

> "The highest decision-making authority rests with national governments. Subnational or international decision-making bodies are subordinate to them. Within governments, decisions are taken according to the democratic principles of qualified or absolute majority voting. In international organizations, decision-making is based on a consensus among member governments. Governance, on the contrary, is defined by the horizontal dispersion of authority among public and private actors at different levels. Decision-making proceeds through negotiation and the formal and informal acceptance of structural inequality, for instance, through weighted voting procedures" (Krahmann, 2003).

The materialization of relations and interactions in the political environment allows the formulation of more reasonable operating schemes that characterize governance. Governance systems, therefore, serve to stabilize efficient behavioral systems in horizontal environments. But if the most stable characteristic of the

policy seems to be precisely its verticality, since formulated and introduced from top to bottom, its efficiency seems to depend on model structures based on agents conditioned by them, in some degree of spontaneity or naturalness. This spontaneity in the relationships among agents reaches varying levels of trust, often determined by personal conditions. Notably, the processes that equate relations at the level of interaction among agencies have been treated more personally than by visible and stable governance processes.

Regarding the formation of spontaneous or artificial inter-agency cooperation networks and the decision-making process involved in the information problem, our diagnosis is driven by the observation that structures and rules that mobilize network relationships are dependent on efficient models of information exchange. In the case of inter-agency cooperation schemes that have an investigative impact, the obstacle between confidentiality and information sharing seems to be one of the main factors of distrust cooperative models.

Open-source information is treated as more than a tool to enhance adaptability to complex systems, made of tons of non-qualified data and the necessity to filter and make decisions. The more complex systems may be – as international environments such as international intervention operations – flows of information are critical. But, at the same time they are critical to operations success, there is the dilemma on how those flows should be governed (Hobbs, Moran, & Salisbury, 2014; Kent, 2014). In this sense, some characteristics are mentioned as conditioning factors for the growth of open-source information exploration: increasing volume, immediacy, and accessibility (Gibson, 2014; Wagenaar & Cook, 2003).

Several changes in technology have affected the theme of the uses of Open-Source Information in Intelligence (Open-source intelligence - OSINT) in the era of big data. Filtering and analyzing information seem to be the most challenging equation for formulating policies and strategies, but also for intelligence systems that already recognized the value of free information in the first decades of the Cold War.

Therefore, inter-agency cooperation in security and defense is home to an increasing number of experiences within the national and interstate level, which also encompasses processes of decentralization and new forms of governance. As new governance processes are applied, practices emerge and modify these processes reflexively. If practices do not obey a rational model of doctrinal obedience, new doctrines and policies can equate to institutional voids from successful and transferred experiences. The transfer of successful policies causes rationality and visibility to decision-making processes that depend on stable relationships and trustworthiness, such as those needed in cooperative arrangements.

> "Policy 'problems' do not emerge in the analyst's field of vision through 'objectification,' but are treated as both situated in and the products of collective practical problem setting and problem-solving" (Wagenaar & Cook, 2003).

Hendrik Wagenaar and Noam Cook point out that practices have their own value since objectifying them do not always allow observing processes in the way they happen (Wagenaar & Cook, 2003). For the authors, highly hierarchical governance systems have difficulties in adapting when placed in collaborative networked systems since the distribution of power should be more decentralized. A political observation based on practices, therefore, can better help to observe difficulties like this, especially when the subject is security and defense.

Thus, the institutional dimensions of inter-agency operations are many since they are endowed with institutional and practical cultures. The difficulties in creating efficient governance models for these relationships are in the inherent decision-making processes, manifested in the form of information exchange.

Inside NATO system, there is already a consideration of most of the information that is open source (80%) (Gibson, 2014). Andrew Williams (2010) proposes a methodology that starts from a multidimensional approach using the NATO maturity model for the purpose of interactions (Williams 2010). The main reason for the proposal is the diagnosis that, especially after the interventions in Iraq and Afghanistan, there is the recognition that no single agency can handle such complexity.

For this reason, it is necessary to tackle what governance models are derived from the various practices observed and how the practices are manifested in the form of transferable policies. For this study, in the environment of decision theories and theories of practice, the link between these arrangements and structures is dependent on the informational value involved. Since the volume of information in open-source challenges the importance of secrecy, it is not from this complexity that one can attribute the inefficiency of inter-agency experiences.

High complexity in terms of institutional cultures and diverse agents is dependent on the information management and the attribution of trust in processes, information, and agents, which is the main asset for more efficient processes.

Finally, it should be noted that the informational value of inter-agency arrangements is as relevant as that of information security. Thus, it seems to us the most relevant element is not the primary information, but the way that governance arrangements can guarantee the informational flows during the dynamics of relationships. Thus, OSINT should be an easier way to enhance processes and analysis within inter-agency schemes. For this, the issue of cybersecurity is an asset that does not seem to be associated only with the security of state operations of a strategic nature, but those relationships that are within the various structures that govern the security of states.

DATABASE ANALYSIS AND RESULTS

One of the most relevant aspects of knowledge construction is the methodology applied to the data. Data science, which provides knowledge, expands information, and assists in the construction of elements of the decision-making processes, in times of crisis or stability. A database provides a series of information that, when crossed, highly increases the interpretation possibilities and helps in the logical and categorized construction of possible results. Interpretations based on data analysis become more reliable so that the decision-making process occurs as close as possible to the natural element to be treated, to a solution with low risk, and in an assertive manner. Therefore, at a high level, data collection and data mining corroborate for hundreds of probabilities that can reach a greater or lesser degree of interpretive proximity to reality, fulfilling a primary role in information, in the generation of knowledge, and in the application of auxiliary methods in the decision-making process. (Provost & Fawcett, 2013).

Once we have collected data from case studies, we are able to verify similarities and differences in a comparative way, establishing criteria and standards based on the absence and presence of variables. In addition to standardizing research, this methodological instrument establishes common elements that form a standardization or at least assist us in the analysis of more efficient or less efficient behavioral patterns in joint or combined frameworks of cooperation. Within the scope of this article, the decision-making process is evaluated based on individual and collective behavior, analyzing the patterns through simulations, requiring tabulated and robust information, with standard variables that can influence the decision to be taken.

The standards-based model, through the verification of databases, can strengthen decisions in crisis situations or even anticipate decisions in possible scenarios, such as in cases of natural disasters or other types of emergency crises. Once the standards and variables established in models of inter-agency relations are discussed, in which conditions of collaboration and cooperation are established hierarchically or not, we can establish an ideal type of inter-agency cooperation capable of achieving efficiency. Evaluating low risk, speed of actions, prompt response, and success, mainly when the event deals with a threat to human life, is one of the possible outputs when considering the best frameworks to interaction.

Decision-making process guided by database and categorization, makes it possible to standardization with adequate methods, processes, and techniques of data collection, mining, and typology. Data analysis does not happen in isolation, but it needs a correlation with other factors, in order to observe behaviors and patterns for a given experience (Provost & Fawcett, 2013). To understand data science and data-based thinking, Provost and Fawcett (2013) list a series of fundamental concepts for the development of data knowledge. The first fundamental step, according to the authors, is to keep a process in the mind of how to extract knowledge from the data; a second important concept is to evaluate the data considering the context

in which they will be used; a third concept is a need for correlation within data. It should be done in a non-vague way: if it permits crossed analysis it can promote efficiency that can indicate possible solutions to problems.

Thus, the systematization of the data and the knowledge that arises, the categorization, as well as the decision-making process guided by the data collection and the construction of a logical basis for its process require some fundamental steps to be carried out, in order to generate predictability or solutions to problems in different fields. As an experience using the database, Baptista (2019) carried out the first database structure focusing on inter-agency cooperation activities with the participation of the Brazilian Navy as a first case. The fact that the author used the Brazilian Navy as an object of study does not rule out the observation that it can make with the cooperative arrangements that include the participation of other agencies such as the Federal Police, Brazilian Army, Brazilian Air Force, Civil Police, Military Police, Ministry of Defense, Ministry of Foreign Affairs, Brazilian Intelligence Agency, federative public security bodies, national defense, and environmental security agencies.

This research guided a group of researchers from the Brazilian Naval War College to observe the role of agencies and their articulations in inter-agency environments, as well as the deeper or more superficial level of participation, ranging from the leadership of the operation to the only informational role it can offer. The author subdivided, according to the literature, three models of inter-agency relationship, namely inter-agency coordination, inter-agency collaboration, and inter-agency cooperation.

Baptista (2019) established 15 variables to identify some patterns and models of performance, as well as types of inter-agency operations of a more significant domain carried out by the Brazilian Navy. The database favors understanding and some practical elements, which once analyzed, bring us an understanding of the diversity of actions and the mechanisms used between strategic and operational elements. The database, as emphasized by the theory of data process, is a suitable method in the mining of information that can find common elements and corroborate in the establishment of standards and references necessary for the decision-making process.

TABLE 1
INTER-AGENCY COOPERATION VARIABLES

Variables Inter-agency Cooperation - Brazilian Navy	Actors
	Action
	Approach
	Year
	Month
	Source
	Report on the action
	Geographic distribution
	Region
	Modality
	Hierarchy/maturity
	Results
	Frequency
	Duration
	Observation

Source: Baptista, 2019.

In the table above, we can see how the variables allowed the categorization of information and the systematization of data, seeking common and relevant elements for the understanding of inter-agency cooperation with the participation of the Brazilian Navy. Broadening the focus of our studies beyond issues

such as national security and defense, these categories may represent elements of interest for the study and observations in different actions, whether in emergency crises or simulated exercises.

Therefore, when evaluating the established categories through the database, we can group relevant information as the inter-agency relationship model: if there is a leader, how the groups are established and distribute tasks and resources, how long the operation will take, if it is continuous or with low durability, which regions are most in need of inter-agency operations, and which are the main themes or areas of more significant insertion of the collaborative or joint work. Once this study and categorization of this information have been made, we can establish a further qualification of agents from different institutions through training and theoretical courses on inter-agency relations, strategic intelligence, data process, decision-making process, information sharing, and information security.

BRAZILIAN BORDER SECURITY SIMULATION AND DATABASE COMPARISON

For the inter-agency cooperation studies, simulations and crisis games are instruments for training agents in various themes. Within the scope of this article, we present the results of the Brazilian Border Security Simulation conducted by the Brazilian Naval War College, Joint Command and Staff, Cabinet of Institutional Security of the Presidency of the Republic of Brazil (GSI, Institutional Security Cabinet), and the group of Performance Analysis researchers from the Simulations and Scenarios Laboratory (Brazilian Navy).

The cited simulation was focused on combating transnational crime, especially drug and arms trafficking. Several agencies participated: Customs, Federal Police, Road Federal Police, Brazilian Intelligence Agency, National Guard, Brazilian Navy, Brazilian Army, and state Military Police. The agents had access to the simulation information in a collaborative environment and were subsequently divided into two groups, group A and group B, from which they should carry out strategic planning and make decisions based on consensus. The Performance Analysis researchers group followed the discussions in the groups as observers and later in plenary, checking the relationship in between the agents and the possible results.

In group discussions, it was observed that group A presented high centrality of decisions, acceptance of leadership, and creativity. In group B, there was less participation of agents motivated to carry out joint strategic planning and, therefore, a more significant problem of coordination and implementation of ideas based on consensus. In both groups, we observed some risk factors in the model of inter-agency relationships, such as the agents did not have standard norms, that is, each reflected their organizational culture, difficulties in conceptual understanding, some agents stood out, especially the agents of the armed forces. Group A was clearly guided by rank status and armed forces institutional culture, which also reflects the fact that the military participate in various types of simulation of war games/crisis games throughout military training.

Through the analysis of the simulations, and the mining and interpretation of data carried out by Baptista (2019), we can identify some patterns that were factors of success during the process of inter-agency cooperation simulated. We describe these factors below so that we can clarify the improvement of the relationship among agencies in situations that demand this joint effort efficiently.

TABLE 2
VARIABLES' DESCRIPTION

VARIABLES	DEFINITION
Trust between agencies	Agencies need to establish trust between partners during inter-agency cooperation.
Knowledge of agencies	The agents must know their institutions and the institutions that will be working together, including what are their tasks and resources.

Leadership	In all simulations, regardless of the proposed model, there is always a leadership capable of managing cooperation and establishing a consensual dialogue between agencies. This factor was relevant to the progress of the operation, both in terms of strategic decision-making and in its operation. Agencies need to be flexible in accepting leadership.
Information sharing	One of the most relevant points in the inter-agency process is information sharing. Therefore, creating a secure and efficient information system or mechanism for all participating agencies is a fundamental point and directly impacts how the whole process will take place. The information must reach the agencies clearly and quickly.
Common concepts, Common lexicon	Just as information sharing is essential, the way it is also interpreted directly impacts the inter-agency cooperation model. Therefore, agencies need to have the same conceptual interpretation and the same understanding of procedures.
Norms and doctrines	Norms or doctrines common to the agencies are a factor that can facilitate understanding in different crisis situations that affect the security and defense of a State. The normative driving factors guiding the agencies must be clear to agents.
Agent behavior	The individual's behavior can impact the agency's performance. This means that people who behave with more significant leadership and proactivity can influence the decision-making process.
Institutionalization of process	The actions must be taken in an institutionalized way; even though the individual's behavior influences the process, the decisions must not be directed to the individual but the institution to which he/she belongs.
Continuity of process	The actions taken by the agencies in an institutionalized way allow the continuity of the process regardless of the individual who will be participating in the inter-agency cooperation. This is safer for agency representation.
Learning and training process	Finally, in all simulations, we observed the need for training/learning and improvement of agents and their agencies in the inter-agency cooperation models. In addition to the proposed learning and exchanges between theory and practice, the educational process also generates networks of trust.

FINAL REMARKS

The inter-agency environment is complex and diverse, bringing a series of challenges to the agents and institutions involved. The decision-making process, the architecture between the agencies, the shared information, and the governance structure in an emergency crisis model are strategic points that need to be well defined as to permit efficient results in inter-agency cooperation.

Some factors affect inter-agency cooperation and have a direct impact on the decision-making process, and in the whole conduct of this relationship. This means that the variables need to be analyzed and put into practice effectively. These variables will be the mechanisms that will drive a more profound and more decisive cooperation process between the agencies, overcoming the difficulties of this relationship with different organizational cultures.

In order to understand the architecture of inter-agency cooperation, we have established some learning and observation parameters based on data collection through ostensible information. The use of the Open-Source Intelligence (OSINT) method for data collection, categorization, mining, and analysis of information is essential for the formulation of databases that are systematized instruments for cooperation development.

Therefore, data science studies are elementary in the collection of public information, since it assists in the arrangement of valid information, permitting analysts generate interpretations by crossing collected data. Thus, we can evolve the search for data mining, in which new possible arrangements are made to achieve standards within the information collected and, thus, form and inform new data. This is a continuous work that needs platforms for the organization of the tasks.

In this paper, we observed a database already organized by Baptista (2019) on the participation of the Brazilian Navy in inter-agency operations. The author established typologies and variables so that we could deepen the analysis of the inter-agency arrangements, observing the impact of these variables on the relationships between agents, in the decision-making process, and in the expected results in an inter-agency environment.

The results for a positive analysis in an inter-agency environment are not just the final success of strategic planning or operational performance in each action by the agents involved. We emphasize that the purpose of analyzing inter-agency relationships is to verify how the process that will lead to a specific result can be carried out in a quick, less costly, reliable, organized, and institutionalized manner.

The database offers information about the variables present in the operations and is interpreted with the help of the theory of inter-agency relations. However, only with simulations in an inter-agency environment, that is, by observing practice, we verify the real impact of these variables, their absence and presence, the critical capacity of agents, the need for common standards, and knowledge about inter-agency cooperation.

Thus, simulation is an educational, creative, and continuous model of learning in which we insert the theoretical elements to verify the practice, its possibilities, and arrangements. Simulation is a method of improving the performance of agents and their institutions, as well as of processes in an inter-agency environment.

The purpose of this article was to verify existing standards in inter-agency cooperation based on the verification of the database and the border simulation carried out at the Brazilian Naval War College. The comparison between both methods made it possible to describe existing patterns that affect the inter-agency decision-making process, in which Table 2 offers each of the patterns and definitions. Standardization in the inter-agency cooperation model is understood within the scope of this work as the standardization and systematization of the inter-agency relationship process. Therefore, each pattern described becomes a link in this process and needs to be present for the completion of a decision-making process and the practice of an inter-agency operation to take effect.

Each of these standards are interconnected boxes that need to be present at each of these agencies. Therefore, they must all have mutual trust in between institutions and agents, knowledge of the performance of their agencies, leadership, and participation, proactive behavior, information sharing, norms, doctrines and shared concepts, continuity of processes, and training. These standards are essential elements in conducting the inter-agency process without necessarily making the arrangements inflexible, since the particularities of the agencies need to be respected. Inter-agency cooperation is a dynamic, complex model with processes at different levels of improvement.

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