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# ICT Regulation Process: Habermas Meets The Multiple Streams Framework

*Completed Research*

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## Abstract

The speed of emerging technology evolution and the concerns about the adverse outcomes put pressure on the incremental pattern of lawmaking. We conducted an empirical study by using Habermas' Theory of Communicative Action with the help of the Multiple Streams Framework in order to answer the question: what are the difficulties in the Information and Communication Technology (ICT) regulation process in Brazil? It is a qualitative research, applied to the three levels of the political-technocrat environment. The focus is the archival analysis of public records produced by specialized Science and Technology Committees from legislative houses in 2019, for an exploratory assessment of the difficulties. We aim at contributing to fill the gap in the studies of the regulation process of emerging technologies, which can become an additional competitive hurdle to a developing country.

## Keywords

ICT regulation, Habermas, Multiple Streams Framework, legislative committees.

## Introduction

It is time to regulate. The matter is how to do it without hindering innovation and autonomy. The previous statements increasingly echo in different arenas where emerging technologies are discussed. Obviously, it is a common discourse among governments, politicians and bureaucrats. However, it is a concern raised in scientific forums, media, organized civil society, and business as well. Due to the uncertainties and risk of adverse outcomes of these new technologies for the Sustainable Development Goals (SDG), a movement that is highly supported by International Multilateral Organizations (e.g. UN Agencies, OECD) is giving rise to the call for an omni-stakeholder approach to the public policy process ("UNESCO promotes a human-rights based approach to AI development during the Regional Forum on AI in Latin America and the Caribbean" 2019).

This kind of technology fear is not new. It motivated the Technology Assessment movement in the early 70's, when the U.S. Congress created a structure to assist lawmakers with technical issues. Such assistance no longer exists and is missed today (Gedye 2019) when the speed of evolution and potential scale of the effects of a new technology are greater, pressing the incremental pace of lawmaking that has worked so far. In this scenario, government ICT regulation towards the 'shared value' concept by Porter and Kramer (2011) is and an ideal difficult to achieve.

The importance of the theme for an emerging country like Brazil, with a civil law system, multiple level of administration with a complex distribution of regulatory power, and that faces constraints on physical infrastructure and human resource capacity (Walden and Christou 2018), is that the lawmaking process can become a competitive hurdle to the insertion in the 4th industrial revolution. Additionally, what makes the Brazilian context of ICT law-making interesting is the past leadership and the supposedly successful ICT law-making experience (Freedom of Information Act and Civil Rights Framework for the Internet), its conjuncture (right-wing wave, economic stagnation and high unemployment rate), competing legislative agendas (e.g. moral, economic, social security, corruption, environment, violence), its structural bottlenecks (e.g. lack of basic infrastructure, poor educational performance) and its cultural trait (distrust of politicians, and the 'Brazilian way of fixing things').

The main findings of our Systematic Literature Review on the ICT regulation process (Galhardo 2020) were: the opportunity for empirical studies and Habermas' theoretical framework as main reference to study the ICT regulation process (North-Samardzic 2019), the production imbalance in favor of the study of ICT-related ethics in the governance chain composed of ethics principles, technical and business standards (soft rules) and regulation (hard rules) (Winfield and Jirotko 2018), and the study of the regulation process to assure public trust in new technologies as the main gap observed. To help fill this gap, the question this research intends to answer is: what are the difficulties in the regulation process of new technologies in Brazil?

The ICT regulation process embraces the conception of rulemaking of laws and subordinate rules by all levels of government (OECD 1997) and of public policy process, considering the interactions of actors, events, contexts, and outcomes in the process (Weible 2017).

The proposal is to take advantage of a vivid legislative debate involving emerging technologies to conduct an empirical study on the political-technocratic environment of the legislative branch, at the three levels of Administration (Federal, State and Municipal), whose purposes are: identify the actors; understand the rule making process in all levels of administration; identify and investigate the effectiveness of the communication channels with Academia; and identify and investigate possible reasons for difficulties.

The study has a critical research philosophical position, based on Jürgen Habermas' Theory of Communicative Action (TCA) (1984, 1987), as we intend to go beyond the understanding and explaining of the phenomena and try to question the established social structures and norms in the ICT policy-making scenario. To help provide a bridge between the real world and Habermas' idealized conception of "Lifeworld", we will use some of the assumptions and conceptions from the Multiple Streams Framework (MSF) (John Kingdon 1995, Herweg et al. 2017).

The methodological design is an exploratory archival analysis of public records produced by specialized Science and Technology Committees from legislative houses in 2019.

The paper is organized as follows: in the next section we present the theoretical foundation; then we describe the sources and method; the findings; the discussion; and the conclusion with limitations, expected contributions and next steps.

## **ICT Regulation Process Foundations**

In this research, we used Habermas' social TCA (1984, 1987) and its derived theoretical construction of discourse ethics (1990) and discourse theory of law and politics (1996). To bridge the gap between the two domains in the TCA framework, we used the Multiple Streams Framework (MSF) proposed by John Kingdon (1995).

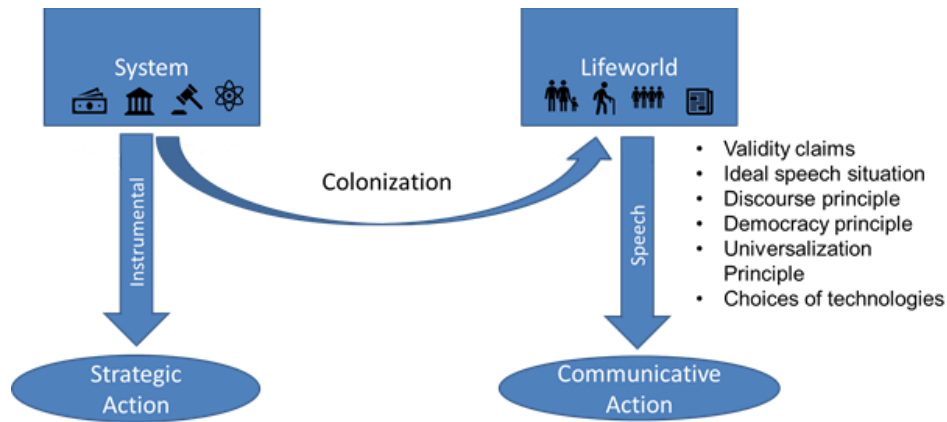
### ***Habermas' Social TCA***

Habermas' theory is recognized and has been used in different studies in the IS field (e.g. Lyytinen & Klein, 1985; Ngwenyama & Lee, 1997; Froomkin, 2003; Mingers & Walsham, 2010; Schlagwein, Cecez-Kecmanovic, & Hanckel, 2018). In two recent literature reviews involving ethical a regulatory aspects of emerging technologies (North-Samardzic 2019; Galhardo 2020), Habermas appears as the only author used as theoretical reference more than once. Therefore, the possibility of dialoguing with different authors makes Habermas' theoretical framework a natural alternative to study the ICT regulation process.

His theory offers a complex set of concepts and principles, and begins by classifying "Knowledge Interests" (Habermas 1972a) as "Technical", "Practical" and "Emancipatory", the latter being at the core of the Critical Social philosophy (Lyytinen and Klein 1985). Then he associates these Knowledge Interests with three different kinds of "Social Action" (Habermas 1972b): "Strategic", "Communicative" and "Discursive". In the TCA, he develops his most cited rational framework of society, from a deontological perspective, based on communication driven to a mutual understanding. Subsequently, he introduces, into this framework, ethical and moral questions to achieve a concept of "Valid Norm" (Habermas 1995) he uses in his idealized conception of "Deliberative Democracy" (Habermas 1996).

The TCA is within conflict management approaches by which inconsistent preferences are transformed through communicative processes of collective decision-making (March 1994). Habermas represents

Society in two domains of action, shown in Figure 1. One of such domains is called by him “System” and it is where the “Strategic Action”, aimed at private interests, occurs through rational-instrumental reasoning.



**Figure 1. Habermas TCA framework**

In the “System”, he places “Money” and “Power”, which can be institutional, bureaucratic, or scientific. The other domain he calls “Lifeworld”, and it is where people cooperate by using language on the basis of mutual understanding and shared knowledge of norms, conventions, habits and accepted world views. It is where he develops his reasoning of society and builds his contribution of concepts and principles, some of which are described in Table 1.

Concept	Description
Validity Claims	Idealized assumptions for a reasoned agreement: mutual understanding of the same things by the same words and expressions (truth); mutual self-consideration to be rationally accountable (sincerity); and the reached consensus is supported by sufficiently confident arguments as being not false or mistaken (rightness).
Ideal Speech Situation	Procedural aspect of practical discourse to test the validity of norms being hypothetically proposed, which is based on the assumptions: equal opportunity to participate and question any claims or assertions made by anyone, or to propose any new one; freedom to express their own attitudes, desires, or needs; without any kind of internal or external coercion, overt or covert.
Discourse Principle	Norms deserve to be valid when they get the approval of the potentially affected ones as long as they participate in rational discourses.
Valid Norm	For a norm to be valid, the consequences and side effects of its general observance are freely accepted by all the affected ones.
Democratic Principle	To claim legitimacy, a norm must receive all citizens’ assent through a legally constituted discursive legislative process.
Pragmatic Questions	Involves bargaining and negotiation between competing interests to reach an agreement on goals and values (e.g. business questions).
Ethical Questions	Involves genuine differences between individuals and groups that can be tolerated (e.g. ethnic or gender questions).
Moral Questions	Involves considerations of fairness for all and require the agreement by all the affected ones (e.g. environmental or scientific questions).
Moral Principle	For the justification of moral norms, the discourse principle takes the form of a universalization principle.

**Table 1. Habermas TCA concepts and principles of interest for the research**

Source: Adapted from Habermas 1995; Habermas 1996; and Mingers & Walsham, 2010.

Habermas argues there is an increasing instrumentalization of “Lifeworld”, which he calls “Colonization”. Science, or the technical elite, together with a specialized bureaucracy form a group of experts who play a role in this colonization process, in which economics and engineering began to dominate all spheres of life (Klein and Huynh 2004, O’Donnell and Henriksen 2002).

However, the “civil-social periphery”, comprising “intellectuals, concerned citizens, radical professionals, self-proclaimed “advocates,” and the like”, has played a relevant role in detecting and disclosing new problems involving the new collective goods of the “risk society” (e.g. environmental destruction, radiation poisoning or lethal genetic damage, and the uncontrolled side effects of large technological operations, pharmaceutical products, scientific experimentation, etc.). Role that “exponents of the state apparatus, large organizations, or functional systems” have been unable to fulfil (Habermas 1996).

The solution to this kind of “risk society” problem requires laws with “relational programs” goals that induce those who cause the danger to take a new direction. In other words, laws acting as a catalyst for self-monitored changes (Habermas, 1996). According to Habermas (1996), these new problems will only reach the “public agenda” when they are assumed and presented by the mass media to the larger public and echo to the political system.

At this point, we start to wonder how we could assess this idealized framework in the real world.

### ***The Multiple Stream Framework***

Inspired by some empirical articles that used another framework to bridge this gap between the two domains (Ferraro and Beunza 2019, Eberlein and Radaelli 2010, Kleinschmit 2012, Knox 2013, Jong et al. 2012), we got to the MSF alternative (Kingdon 1995). The intention is to use some of the framework’s assumptions and the concepts of “Policy Entrepreneur” and “Agenda Window” and see how they move from the “System” domain to human “Lifeworld”.

The MSF proposed by John Kingdon in 1984 derived from Garbage Can Model (Cohen et al. 1972), in which a decision is seen as “an outcome or interpretation of several relatively independent streams within an organization”. Problems, solutions and participants flow until the occurrence of an alignment opportunity, which depends on a relatively complicated intermeshing of elements.

Based on such concept, the MSF - originally developed for the analysis of agenda setting -, assumes that “Problem Stream”, “Policy (solution) Stream”, and “Political Stream” are independent processes (Herweg et al. 2017). It emphasizes timing rather than rationality (Zahariadis 2007) in merging these streams into a window of opportunity for agenda setting and decision making (“Policy Window”) (Herweg et al. 2017, Weible 2017). Frequently, it takes advantage of “Focusing Events” (Birkland 2016) as a crisis, natural disasters and elections. And, of course, this is not achieved without a dispute between different subjects and different actors (Kingdon 1995, Birkland 2016, Herweg et al. 2017), in which “Policy Entrepreneurs” and receptive policymakers play an important role (Herweg et al. 2017).

The MSF has been applied to parliamentary systems and even autocracies. But it was originally devised for the federal republican political system of the USA (Herweg et al. 2017) in which the president is independent of the legislature and has full executive power (head of state and government). The same political system in Brazil, which is also recognized by the dominant role of the president in the agenda setting (Almeida and Gomes 2018). This common trait may explain why the MSF has been frequently applied to the Brazilian reality (Almeida and Gomes 2018). It is also applicable to subnational and multinationals levels (Herweg et al. 2017), such as EU (Ackrill et al. 2013).

Additionally to the stream independence, the MSF works with a set of basic assumptions that characterizes what Cohen et al. (1972) called “Organized Anarchies”, described in Table 2, and which are the key interest elements for this research.

Basic Assumption	Description
Ambiguity	The MSF denies the existence of a rational solution to a given problem and assumes the possibility of multiple solutions. More information does not

Basic Assumption	Description
	reduce ambiguity.
Time Constraints	The quantity of issues and time constraints limit the range and number of alternatives to which attention is given.
Problematic Policy Preferences	Preferences emerge during interaction and are driven by actor's overarching label (e.g. health, education, security, environment or morality) and by the information taken into account.
Unclear Technology (Strait Individual Awareness) <sup>(a)</sup>	The concept refers to a strait individual awareness of the responsibilities and role of the job to the overall mission of the organization.
Fluid Participation	Both legislators and bureaucrats, especially high-level civil servants, have a high turnover.

**Table 2. MSF "Organized Anarchies" Basic Assumptions adapted from Herweg et al. (2017)**

Note: (a) In order to avoid confusion with the technology concept related to the ICT subject matter of this paper, we will hereafter refer to the basic assumption "Unclear Technology" within the text as "Strait Individual Awareness".

In the next section, we describe the method, which aims at identifying how the MSF assumptions and concepts appear in the ICT law-making landscape in the three levels of administration.

## Method

This is a qualitative research, applied to the three levels of the political-technocrat environment. This paper focuses on the archival analysis of public records produced by specialized Science and Technology Committees of legislative houses in 2019, mainly video/audio recordings of meetings, public hearings, and seminars. The research design is halfway between a tight and a loose design (Miles, Huberman, & Saldaña, 2014), with the aim of gaining insight for a critical research (Myers & Klein, 2011) through an exploratory coding method. We mixed holistic and provisional coding (Saldaña, 2009), performed by one encoder.

### *The Political-Technocrat Legislative Environment*

We studied the three levels of public administration and their respective legislative houses. In addition to the central government, the study focused on São Paulo state and capital. The city and state of São Paulo are the most populous in Brazil with 12.25 million and 45.92 million inhabitants, respectively, and represent 10% (city) and 30% (state) of the country's Gross Domestic Product. In each legislative house, we identified the specialized committees where discussions and preliminary law proposals involving new technologies are concentrated, as well as their members. A summary of the object of the study is presented in Table 3.

Level	Legislative House	Committee	Members <sup>(a)</sup> Alternates <sup>(a)</sup>	Meeting records Sample
Central/ Federal	Chamber of Deputies (CD)	Science and Technology, Communication and Informatics Commission (CCTCI/CD)	30 40	53 15
		Special Commission for the Bill 2303/2015 of virtual currencies (CEVC/CD)	34 26	13 3
	Federal Senate (FS)	Science, Technology, Innovation, Communication and Informatics Commission (CCT/FS)	17 16	49 5

Level	Legislative House	Committee	Members <sup>(a)</sup> Alternates <sup>(a)</sup>	Meeting records Sample
Regional/ State/ County	São Paulo State Assembly (ALESP)	Science, Technology, Innovation and Information Commission (CCTII/ALESP)	11 9	10 2
Local/ Municipal	São Paulo City Council (CCSP)	Transit, Transport and Economic Activity Commission (CTTAE/CCSP) <sup>(b)</sup>	7 0	39 11

**Table 3. Specialized Committees on ICT in the Legislative Houses of All Levels of Administration**

Note: (a) Quantities refer to the number of designated politicians on Jan 26th, 2020.

(b) There are no specialized Committees on ICT since the Innovation and Technology Study Committee was closed. We selected the Committee whose purpose seemed to be the most similar to the purpose of the study.

**Archival Sample and Analysis**

To select the sample of recordings, we analyzed the briefing note for each meeting, looking for a broad representation of the issues discussed. For the federal legislative houses, in addition, the selection favored the recordings in which members of the state of São Paulo appeared as authors of the proposal or responsible for reporting it.

We performed an exploratory archival analysis of the sample of Video/Audio recordings of meetings and Public Audiences, complemented by the information of the following sources: Reports; Meeting agenda, Proposals and Voting recordings; List of speakers and Multimedia Presentations; e-Participation platform recordings; and Taquigraphic notes/Minutes of Meetings. They are all public sources available on each legislative house’s web pages. For the analysis, we used the NVivo 12 software.

We used provisional coding, with a deductive approach, looking for explicit evidences in members’ speeches of the basic MSF’s concepts: Ambiguity, Time Constraints, Problematic Policy Preferences, Strait Individual Awareness, Focusing event and Policy Entrepreneur. The type of technology under discussion (e.g. AI & ML, Cybersecurity, Face recognition), problems raised (e.g. Bias, Country strategic dependency, False positive), other actors in the discussion (e.g. Specialized Bureaucrat, Business representation, Civil society representation) were other predetermined codes based on the literature review.

We used the holistic coding, with an inductive approach, to identify hidden signals of the same basic MSF’s concepts, in addition to those from TCA, as well as signals of the colonization process of Habermas’ “Lifeworld”. Besides, the method helped to identify unexpected problems, sometimes using In Vivo coding (e.g. “Ctrl-C Ctrl-V”, “Technology White Elephant”).

**Findings**

The main findings from the exploratory analysis are summarized in Table 4.

Findings	Committee: Codes or description
Main invited actors	CTTAE/CCSP: Business representatives, Business and labor associations or unions CCTII/ALESP: Academic experts CCT/FS: Specialized bureaucrats from the executive branch CEVC/CD: Specialized bureaucrats from the executive branch CCTCI/CD: Civil Society representatives
Main themes of	CTTAE/CCSP: Food delivery platforms, Ride-hailing platforms

Findings	Committee: Codes or description
discussion	CCTII/ALESP: Development future job skills/Education, AI & ML, Startups CCT/FS: Cybersecurity, Agriculture applied technology, Smart Cities CEVC/CD: Virtual currencies CCTCI/CD: AI & ML, Cybercrime, Face recognition & surveillance, Startups, 5G
Main problem or insights	CTTAE/CCSP: Regional tax disputes CCTII/ALESP: Contracting of innovative solutions by the Public Administration CCT/FS: Antennas to enable IoT and autonomous systems in the context of Smart Cities, Tax evasion or disputes due to a gap in legislation regarding new digital business CEVC/CD: Grey regulatory area, depending on whether cryptocurrency is considered as currency or as an asset CCTCI/CD: “Technology White Elephants”
Focusing Event	CTTAE/CCSP: Motorcycle driver death during a delivery service without assistance CCT/FS: Operation Car Wash leaks (Cimpanu and Mari 2019) CEVC/CD: Financial pyramid schemes

**Table 4. Main Findings from the Exploratory Archival Analysis**

Particularly, the result of the coding with the basic MSF’s concepts is summarized in Table 5.

MSF’s Concept	Committee: Finding	Example
Ambiguity	There were no clear signs of discussions around different alternative solutions. On the other hand, a general behavior at all levels of incessant search for more information, with the suggestion of specialists to be invited for future meetings.	“... I would like to suggest CPQD... which is among the five greatest information technology centers in the world...” (CCTCI/CD: Male, White, 1950’s Birth, Bachelor, Center)
Time Constraints	The wide range of topics discussed and some declared time conflicts with other agendas can be used as soft evidence.	... As you all know, Senators have no interest in the topic here today. You saw the turmoil that is. It’s everything at the same time. It is a very big competition. I myself will have to leave now to go to another committee ... ” (CCT/FS: Male, White, 1960’s Birth, High School, Right Wing)
Problematic Policy Preferences	CTTAE/CCSP: Member pro taxi (Male, White, 1950’s Birth, Bachelor, Right Wing) CCTII/ALESP: Member pro startups (Male, White, 1980’s Birth, Bachelor, Right Wing)	“... our great role here as legislators ... is to take the State out of the entrepreneur’s neck ... to create a simpler, less bureaucratic environment ...” (CCTII/ALESP: Male, White, 1980’s Birth, Bachelor, Right Wing)
Policy Entrepreneur	CTTAE/CCSP: Member pro taxi CCTII/ALESP: São Paulo Research Foundation (FAPESP) CCTII/ALESP: Member pro startups	“... The big goal here is for Dr. Brito Cruz to be able to talk a little about what has already been done in this Master Plan for Science, Technology and Innovation in the



	CCTCI/CD: Two members from São Paulo State (Male, White, 1980's Birth, Bachelor, Right Wing) and (Male, White, 1950's Birth, Bachelor, Center)	State of São Paulo, that he was one of the creators back there ..." (Male, White, 1980's Birth, Bachelor, Right Wing)
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**Table 5. Findings with MSF's Concepts Provisional Coding**

An interesting occurrence at the end of the year, at the local Committee, was a note proposed by the four members addressed to the State level of administration (executive and legislative) in which they warned about the Ride-hailing platforms' fiscal impact on the collection of State tax on vehicles and the tax amount allocated to the municipalities. The impact would involve regional tax disputes, as the main car rental companies have their fleet registered in other States, which are being rented in São Paulo by Ride-hailing platform services drivers.

At the CCTCI/CD Committee, a remarkable warning by one of the invited representatives of civil society concerns the waste of public spending, despite the scarcity of resources, in solutions that will soon be obsolete or scrapped due to the high maintenance costs, becoming "Technology White Elephants".

## Discussion

The archival analysis of public records produced by specialized Science and Technology Committees of legislative houses, mainly video recordings of meetings, showed a useful exploratory source for the research purposes. We identified committees' members, specialized bureaucrats, legislative consultants, academic and practitioner experts, business and organized civil society representatives. Actors in Habermas "System" and "Lifeworld" domains. We draw a preliminary picture of members' "Problematic Policy Preferences", issues discussed, problems raised and signs of "Policy Entrepreneur" behavior. Additionally, we identified many "Focusing Events" that could enable a "Policy Window", but none seemed to be strong enough. The wide range of topics discussed and some declared time conflicts with other agendas can be used as evidence of the MSF "Ambiguity" and "Time Constraints" assumptions. On the other hand, it was not possible to recognize whether the nonattendance at the meetings or the silence of some members of the committees were related to "Time Constraints" or "Strait Individual Awareness".

Habermas' democratic principle was satisfactorily met by the legally constituted process of debate in the commissions. The "Ideal Speech Situation" in general was sought. There was no evidence of any type of restriction for the participation of members or guests. The time for presentations and debates was limited but managed without bias. Another positive point was the participation of citizens through e-Participation platforms. Some of the questions presented were read and answered during the meetings. We have superficially examined these contributions via the e-Participation platform and noticed few participants, apparently from groups with a certain cohesion on the issues. In other words, it is not possible to state that participation has had a minimum representation of all those potentially affected, neither if members care about it. Anyway, there is a platform that would allow the registration of a contrary statement.

The archival analysis did not allow identifying how the TCA's assumptions are manifested. It can be assumed that the rich participation of specialists and business representatives at the meetings contributes for the lawmakers to reach the assumptions of truth and rightness necessary for the Validity Claim of the arguments. However, this is a subjective impression and one that would need to be deepened to confirm the perception by the members themselves. A perceived difficulty in using these sources exclusively in video sessions is the impression that members often play a role in front of the cameras acting in a pre-programmed artificial way, speaking to their constituency.

## Conclusion

This empirical research took the advantage of an intense legislative debate involving emerging technologies in order to help understand the regulation process, identify the difficulties and obtain some preliminary information on the behavior of regulators in Brazil, a country with a civil law system and multiple levels of administration.

Some limitations of this research were: a complete understanding of the regulation process after the conclusion of a report on a subject or bill in the committees, understand how members select the

Academia's invited experts and identify what the communication channels are. And, most importantly, we hope the knowledge gained from the exploratory analysis with the help of MSF framework will allow us to find ways to deepen the analysis on how the actors in Habermas "System" world move to and interact in the "Lifeworld".

The next step of the research is to repeat the process, expanding the sample of recordings, performing a first cycle coding cycle with attribute coding of basic descriptive information of organizations and actors' characteristics or demographics, and with descriptive and In Vivo coding. Then, we will perform a second cycle using pattern coding to classify, categorize, and group the codes. The result of the archival analysis shall be used to plan interviews with committee members and specialized bureaucrats from the executive branch.

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