How has the Brazilian Amazon been constructed as a problem? Presidential speeches and transnational politics since 1985

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Abstract

Presidential speeches can influence the ways people think and act towards the environment, but they are understudied. We propose a framework to investigate how the Brazilian Amazon has been constructed as a problem across transationally across settings. Using supervised machine learning, we classify statements about the Amazon in 6240 transnational presidential speeches since 1985. We find that national and international events drive the frequency at which the topic of the Amazon is mentioned in presidential speeches. While constructing the Amazon as a problem of economic integration are the most common until the mid-2000s, environmental conservation and social development constructions temporarily surpass economic integration from 2010 to 2015. In turn, constructing the Amazon as an issue of sovereignty increases since 2010. Lastly, presidents usually construct the Amazon as an issue of environmental conservation internationally. When speaking within the Amazonian region, presidents tend to construct the Amazon as an issue of social development and economic integration.

Keywords: discourse analysis, transnational governance, environmental policy, Brazilian Amazon, supervised learning, deforestation

Word Count: 8299 (including abstract, text, references, and footnotes)

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1. Introduction

We need to protect the Amazon from foreign interests. We need to exploit the Amazon's natural resources. We need to provide better living standards for the people in the Amazon. We need to preserve the Amazon as a standing ecosystem. Each of these statements contains an implicit assumption of what needs to be solved, or in other words, it constructs the Amazon as a particular problem. Scholars studying the Brazilian Amazon often identify different governments throughout Brazilian history as proponents of a view of the region, its people, and forest (Drummond and Barros-Platiau 2006; Pádua 2012; Franchini and Viola 2019; Capobianco 2019; Pereira and Viola 2021). While the military dictatorship (1964-85) is, for example, associated with understanding the Amazon as issues of national sovereignty and economic integration, Sarney's (1985-1990) and Lula's (2003-2010) presidencies are often tied to environmental conservation. Yet, such monolithic representations advance the view that governments understood and acted consistently towards the Amazon as a specific problem, masking government diversity of discursive constructions and policies.

In this article, we show how the Brazilian Amazon has been constructed as a problem transnationally in presidential discourses since 1985. Building on Bacchi (2009)'s theory of problem-representation and Keck and Sikkink (1998)'s theory of transnationalism, we offer a framework that ties discursive problem issue representations to relationships that transcend nation-states to identify and explain variation in problems-constructions. We shift the focus from governmental policy to discourse to capture a broader range of understandings for policy objects, problems that demand dedicated policy attention, that introduce, shape, and justify outcomes to broad audiences (Zarefsky 2004; Gillion 2016). Although problem-constructions take place in a series of instances, we analyze the case of official presidential discourses. The Brazilian executive branch of government, led by the president, has historically been the primary actor in shaping public policy in Brazil (Pinto 2016). Working with presidential discourses also allows us to identify variations in how the Amazon is discursively constructed in transnational politics beyond environmental policies. Whereas understudied in the Amazonian context, presidential speeches legitimize perceptions about the Amazon that are key for policy adoption and implementation (see Alesina and Giuliano 2009; López et al. 2020). This is especially pertinent for deforestation in the Amazon as expectations of local actors, generated from material and discursive governmental practices, are crucial in decisions to deforest on the ground (Assunção, Gandour, and Rocha 2015; Capobianco 2019, 2021; Campbell 2015). As crucial participants in transnational politics, presidents deploy different problem-constructions according to the transnational audiences they are speaking to.

To investigate how the Brazilian Amazon has been constructed as a problem in presidential speeches, we create a dataset containing 6240 official presidential speeches by all Brazilian presidents since 1985. Next, we identify all instances where presidents refer to the Amazon in their speeches. We develop a codebook grounded in Amazonian historiography to code how each of these statements constructs Amazon as a particular problem. With this codebook, we manually code a randomly selected training set of statements and use supervised machine-learning to label the remaining observations. We then conduct a descriptive analysis of when, where, and how presidents construct the Amazon as a problem.

Our findings are threefold. First, we find that the frequency in which the Amazon appears as a topic in presidential speeches is driven by domestic and international environmentally-related events. Second, we find that presidents are more likely to construct the Amazon as an issue of environmental conservation outside of the Amazon region, this is especially true when presidents speak internationally. Within the Amazon region, presidents tend to construct the Amazon as an issue of social development and economic integration. Third, the same government adopts a diverse range of problem-construction. While the constructions of the Amazon as an issue of economic integration were more salient from 1985 to the mid-2000s, environmental conservation and social development problem-constructions steadily grew since the 2000s, temporarily surpassing economic integration as a more salient construction from 2010 to 2015. Constructing the Amazon as an issue of sovereignty steadily increased after 2010. This article provides the first comprehensive overview of when, where, and how the Amazon is constructed as problems in presidential speeches.

2. Theory: problem-constructions, transnational settings, and presidential speeches

2.1 Governments and problem-constructions

Social scientists often describe federal governments as proponents of a cohesive set of policies toward the Amazon (Drummond and Barros-Platiau 2006; Pádua 2012; Franchini and Viola 2019; Pereira and Viola 2021). The 1964 military dictatorship, for example, is associated with securing sovereignty in the region by populating it and integrating it into the national economy (Drummond and Barros-Platiau 2006). Whereas governments from the late-1980s up to the late-2000s are associated with a turn towards policies that focus on environmental conservation (Pádua 2012). The presidencies of Dilma (2011-2016) and Temer (2016-2018) are connected to the de-prioritizing of environmental conservation policies, and Bolsonaro (2019-2022) is generally associated to the dismantling of environmental policies (Capobianco 2019). Although these works are important to understand how different governments acted towards the Amazon, they represent governments monolithically by bundling them into policy periods, or policy cycles, with one all-encompassing view of the Amazon.

We know, however, that there is more variation within a specific government policy, especially if we consider the Amazon a policy object demanding dedicated policy attention. For instance, while many argue that environmental activism in Brazil emerged despite the military dictatorship (Hochstetler 2000; Wood and Schmink 1993), Rajão et al. (2021) demonstrates how the strengthening of the Forest Code in 1964 was also a military priority. Furthermore, a substantial part of Lula's administration (2003-2010) effectiveness in reducing deforestation in the Amazon was achieved because of deforestation leakage to other biomes (Garret, 2022). At the same time, Lula's administration (2003-2010) provided record high subsidies to the expansion of agriculture in Brazil (Capobianco 2021). That is, we must look at the Amazon beyond the environmental domain as a forest, region, and peoples.

We argue that the reason behind these monolithic representations of governments is concep-

tual: many studies of the Brazilian Amazon contain an explicit, or implicit assumption, of what the Amazon problem is. Bacchi (2009, 10) posits that policies have a cultural dimension as they take "shape within specific historical and national or international contexts". The existence or proposal of a policy implies that there is a (public) problem that needs (governmental) action to be fixed. The alleged problem is not always explicitly stated in a policy, but policies are represented as solutions for both explicit and implicit problems. If the Amazon is represented as an "environmental" problem, as is often the case in the literature, then it demands an "environmental" solution. Consequently, studies focus on understanding environmental policies (Capobianco 2019), the work of environmental NGOs (Silva-Muller and Faul 2022), or the rise of global environmental governance (Liliana B. Andonova and Piselli 2022). Alternatively, studies looking into the developments of social and fiscal policy in the region during the last decades are scarce (Acker 2017). We acknowledge the quality and importance of all these studies. Still, we argue that it is crucial for scholars to study the Amazon as a biological, social, political, and geographical policy object. We conceptualize the Amazon as a policy object that demands dedicated policy attention of a specific nature. Hence, governments can highlight diverse explicit and implicit problems related to a policy object that need political attention. This is what we label as problem-constructions.

2.2 Transnational settings and the variation in problem-constructions

The possibility of different problem-constructions for the same policy object in political discourses, requires an explanation of why they would vary. On the one hand, Putnam (1988) theory of two-level games in international negotiations can be adapted to explain variation in presidential speeches. Putnam (1988) argues that the outcomes of international negotiations lie within the overlap between the interests (and pressure) of domestic and international groups. At the national level, interest groups pressure the government to adopt favorable policies. Internationally, the government seeks to fulfill domestic preferences "while minimizing the adverse consequences of foreign developments" (Putnam 1988, 434). While the theory has been expanded to cover multi-levels games (see Collinson 1999), its core remains the same: the outcome of negotiations should lie within the overlap of diverse interest groups.

This two-level approach is, for example, the avenue pursued by Calderwood (2019) and Calderwood (2020) who investigates variation in American presidential speeches about climate change. Consistent with the two-level games, the author finds that presidents are more likely to mention climate change outside the US, though the location of the speech (domestic or foreign) has a small effect on the content of the mention (Calderwood 2020). However, the party affiliation of American presidents mediate how they speak about climate change (Calderwood 2019). Thus, adopting a two-level approach to analyze diverse discursive constructions implies that whatever presidents say inside and outside, lies within the policy expectations of domestic and foreign interest groups. Consequently, presidential speeches are not necessarily contradictory across venues but a common denominator of the interest of different groups.

On the other hand, Keck and Sikkink (1998) theory of international politics as transnational

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networks, developed in the context of value-based advocacy groups, provides an alternative explanation for variation in problem-constructions. The authors reject the dichotomy of international and domestic levels arguing that the identity and goals of state and non-state actors are not derived from their structural location vis-a-vis domestic and foreign interest groups. Rather, international politics as transnational networks have "a structured and structuring dimension" (Keck and Sikkink 1998, 4): state and non-state actors participate in and shape international politics. In this sense, the positions state actors as components of a transnational network derive from complex interactions in which their identities and goals that are malleable and can vary across time and space.

Important participants of transnational networks, as presidents, have a myriad of tactics to introduce, define, persuade, socialize, and pressure when interacting with other actors. Presidents can, for example, engage in information politics by creating politically meaningful information and/or moving it where they believe it can have an impact (Keck and Sikkink 1998, 24). As well, presidents can engage in leverage politics by leveraging institutions to realize symbolic or material gains. Transnational networks do not assume a consistent common denominator of problem-constructions. That is, presidents construct problems and attempt to inform or leverage transnational audiences for symbolic or material gains according to their expectations of said audience. This indicates that how presidents construct policy objects as problems can vary within the country (i.e. speaking at diverse states or different associations) as well as when speaking internationally (i.e. during a climate conference or after a catastrophe). We call these levels in which there could be variation in how presidents construct a problem a setting. The setting is a level of aggregation that encompasses one, or multiple, audiences and makes sense concerning the policy object under study, in this case, the Amazon.

2.3 Problem-constructions and policy

In addition to the setting where the speech takes place, it is natural that outcomes in policy adoption and implementation can affect when and how presidents construct problems. Gillion (2016) argues that there are two types of outcomes that can affect presidential discourses: institutional and societal. An institutional outcome relates to how presidential discourses can shape policy coalitions and the policy agenda. While the relationship between presidential speeches and policy may not be causal, they have the power to introduce, define, and justify public policy, as well as shape issue perception to broad audiences (Zarefsky 2004). This is particularly true in the Brazilian context where the executive branch of government, led by the president, have historically been the primary players in shaping public policy, especially after the 1988 constitution (Pinto 2016).

A societal outcome, instead, relates to how discourse informs attitudes and behavior of people on the ground and affects policy outcomes. In the case of deforestation, for example, Amazonian scholars argue that the expectations of local actors generated from governments' decisions (Assunção, Gandour, and Rocha 2015) and discourses (Capobianco 2019, 2021; Campbell 2015) are a crucial factor in choice to deforest on the ground. As presidents participate and shape transnational politics by constructing the Amazon as a certain issue,

discourses define policy agendas, direct "political officials' at multiple stages of the public policy-making process" (Gillion 2016, 19), influence people's decision on the ground, and justify previous decision or policy outcomes.

Considering the possibility of varied problem-construction, the relationship between policy and discourse becomes endogenous and co-constituted: problem constructions in presidential speeches can justify past outcomes and/or lead to future outcomes. A bad track record in climate change policy outcomes can be justified with a good track record in energy security. This was, for example, the strategy adopted by President Bush during the Kyoto Protocol negotiations (Calderwood 2020). As presidents participate in transnational networks, with malleable identities and goals, will refer to outcomes interchangeably, based on their expectations about the setting they are speaking at and the transnational audiences present. Policy outcomes, therefore, can be (re)constructed in presidential discourse in diverse forms to shape certain problem definitions and possible solutions.

3. Research Design: operationalizing Amazonian problem-constructions

3.1 Codebook (Amazonian historiography)

To capture the cultural dimension and historical contexts behind problem constructions, we rely on the Amazonian historiography literature. We refer to Amazonian historiography as the body of research conducted by social and environmental scientists that tell the story of diverse governmental programs that studies the Amazon region, forest, and its people. Within this literature, we identify three historical-political constructions: national sovereignty, economic integration, and environmental conservation. We argue a fourth separate one also exists: social development. The social development construction focuses on the constitutional rights and dignity of the inhabitants of the Amazonian region.

National Sovereignty

In the process of securing Amazonian borders since the 18th century, Brazil thwarted "the imperial ambitions of France, Britain, the United States, Belgium, Bolivia, and Peru" (Hecht and Cockburn 1990, 8), and when the dust settled and the scramble was over, more than half of the Amazon territory emerged Brazilian. While the Brazilian military diplomacy following the scramble was very successful, the process did not come without its traumas as, for example, the negotiations with Bolivia in 1902 to secure the state of Acre (Hecht and Cockburn 1990). These traumas were referred to, and offered context, to Amazonian discourses and policies that highlighted Brazil's sovereignty over the Amazon (Hecht and Rajão 2020). More recently, as we move to a world where non-state actors gain importance in international politics (Silva-Muller and Faul 2022; Liliana B. Andonova 2014; Keck and Sikkink 1998), sovereignty-related problems become more varied. Threats to national sovereignty,

consequently, broaden from nation-states to a wide set of actors. The sovereignty problem-construction advances the view that the Brazilian Amazon belongs to Brazil and any foreign or non-state presence in the region can be part of a broad strategy to take the region. The policy solutions to the issue of sovereignty included the monitoring of the borders and strict regimes related to entry into the region.

Economic Integration

The Vargas dictatorship (1937-46) and the military dictatorship (1964-89) took over the task of modernizing the Amazon (Capobianco 2019; Becker 2005). In 1966, the Brazilian Military launched 'Operation Amazon', a policy to modernize the region based on three assumptions (Acker 2021). First, it assumed that nature should be conquered by mankind. Second, it assumed that exploiting natural resources would render the Amazon region economically profitable. Third, it assumed that populating the region was necessary to integrate it into the country and exert control over the territory. Concretely, this meant a series of major infrastructure projects, incentives for settlers to expand the agricultural frontier, and the establishment of a tax-free zone in Manaus to attract industry. The economic integration problem-construction advances the view that the Brazilian Amazon needs to be developed and modernized. These policy solutions have at their core the development of the necessary infrastructure (physical, fiscal, or monetary) to integrate the region into the national and international economy.

Environmental Conservation

The rapid economic changes in the region from the 1960s to the 1980s were matched with the birth of environmental institutions (Drummond and Barros-Platiau 2006). Arguably, the creation of these institutions stemmed from the impression of the lack of control over the environment following the efforts to economically integrate in the region (Acker 2021; Capobianco 2021; Hecht and Cockburn 1990). This process accelerated in the late 1980s with the birth of modern environmentalism (Viola 1987), epitomized in the 1992 Earth Summit in Rio de Janeiro (Hochstetler 2021; Capobianco 2021). The environmental conservation problem-construction emphasizes that the Amazon should be preserved, deforestation should be halted, and the sustainable practices of indigenous and local peoples should be maintained through the protection of their territories and rights to self-determination (Hochstetler and Keck 2007). The policy solution implies, for example, further investments in command-and-control institutions, the valuation of standing ecosystems through incentive schemes, and the creation of protected areas.

Social Development

Governments can emphasize the lack of hospitals, sanitation, and schools concerning peoples' dignity, standards of living, and other constitutional rights. However, such emphasis can be masked within both the economic integration and environmental conservation accounts.
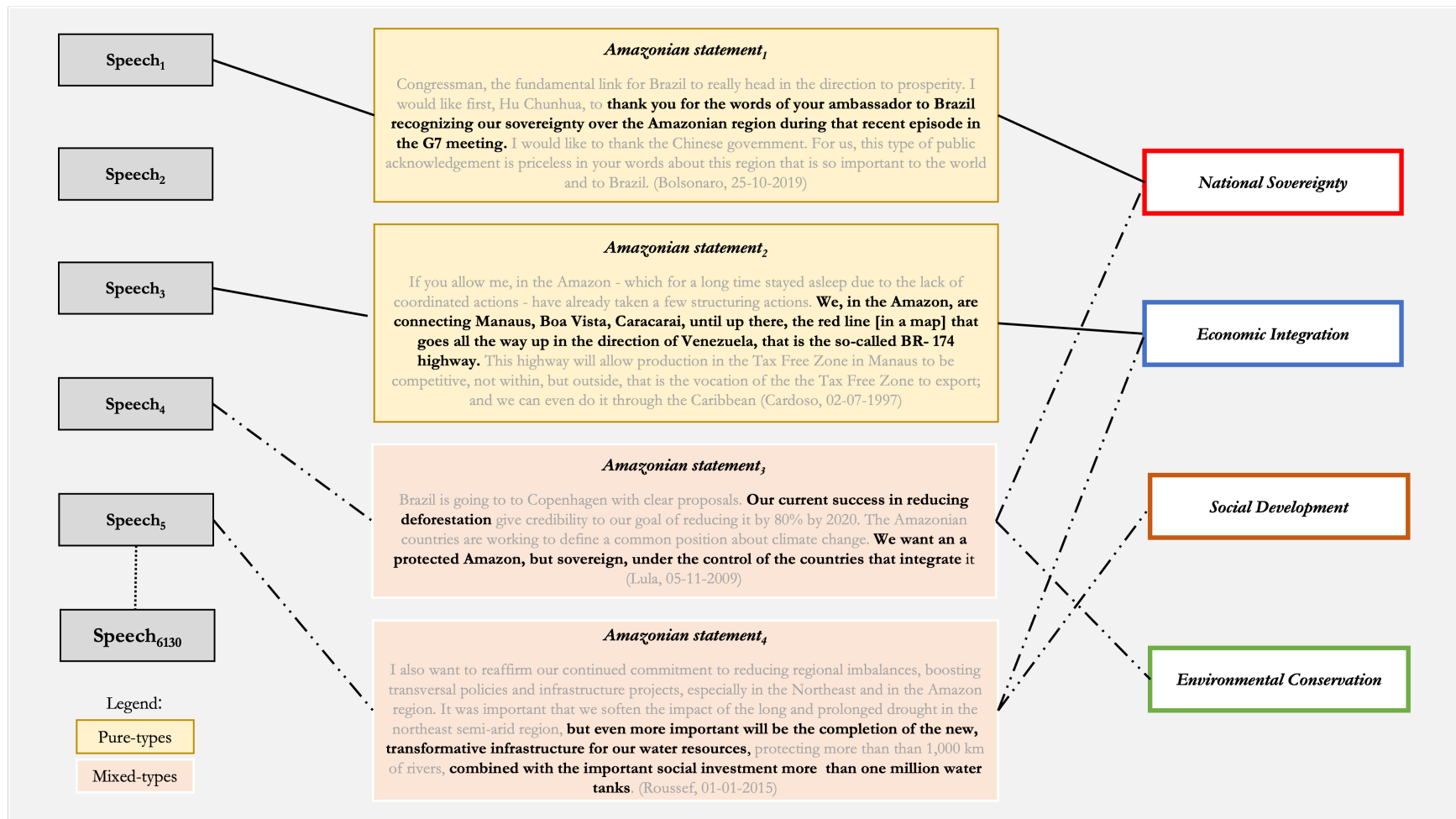
While for some groups, such as indigenous peoples, constitutional rights and preservation of the forest go hand in hand, providing better standards of living to large portions of populations of the Amazonian states and conservation are not necessarily connected. As democracy established itself in Brazil, especially with the 1988 constitution, settlers in the Amazon became electorates with constitutional rights. Social development is a problem-construction that focuses on constitutional rights, citizenship, and dignity. The policy solution to social development implies the policies to facilitate access to water, sanitation, electricity, internet, and radio, as well as the construction of schools and hospitals locally.

3.2 Data and Operationalization

To identify varied problem-constructions, we focus on presidential speeches. By focusing on presidential speeches, rather than specific policy domains, we analytically avoid hinging our analysis on an underlying assumption of what the problem is. Thus, we are not necessarily prioritizing an environmental, economic, or sovereignty-based view of the Amazon. We build upon Cezar (2020) dataset, which contains all official speeches by Brazilian Presidents from 1985 to 2019. We update the dataset by scraping and adding all official speeches from 2020 to 2022. The final dataset encompasses 6240 speeches. We proceed to identify speeches that refer to the Amazon as a region, people, or forest. We do so by detecting all speeches in which the stem "amazon" appears. In Portuguese, the stem captures terms such as "Amazonia", "Amazonica", "Amazonidas", "Amazonense(s)", "Amazonas", among others. We find that 968 speeches are, at least partially, about the Amazon. Using the poldis R package (Sposito 2021), we extract two sentences before and after the sentence in which the stem "amazon" appears. We opt for picking two sentences around, rather than words, because sentences usually contain a cohesive idea. This is how our unit of analysis, Amazonian statements, are generated. This process yields 2048 unique Amazonian statements about the Amazon. On average, an Amazonian statement contains 131 words.

We code Amazonian statements in three steps. First, we develop a codebook for coding Amazonian problem-constructions identified with the Amazonian historiography (see appendix). In their conceptualization, each problem-construction is mutually exclusive; that is, they cover different forms of constructing the Amazon as a problem. However, an Amazonian statement can be coded as referring to multiple problem constructions (see Figure 1 below). Amazonian statements, thus, can be pure-type statements (i.e. constructs the Amazon as a single problem) or mixed-types (i.e. constructs the Amazon as multiple issues).

Figure 1: Operationalization of problem-constructions

Speech$_1$

Speech$_2$

Speech$_3$

Speech$_4$

Speech$_5$

Speech$_{6130}$

Legend:

Pure-types

Mixed-types

Amazonian statement$_1$

Congressman, the fundamental link for Brazil to really head in the direction to prosperity. I would like first, Hu Chunhua, to **thank you for the words of your ambassador to Brazil recognizing our sovereignty over the Amazonian region during that recent episode in the G7 meeting.** I would like to thank the Chinese government. For us, this type of public acknowledgement is priceless in your words about this region that is so important to the world and to Brazil. (Bolsonaro, 25-10-2019)

Amazonian statement$_2$

If you allow me, in the Amazon - which for a long time stayed asleep due to the lack of coordinated actions - have already taken a few structuring actions. **We, in the Amazon, are connecting Manaus, Boa Vista, Caracarai, until up there, the red line [in a map] that goes all the way up in the direction of Venezuela, that is the so-called BR- 174 highway.** This highway will allow production in the Tax Free Zone in Manaus to be competitive, not within, but outside, that is the vocation of the the Tax Free Zone to export; and we can even do it through the Caribbean (Cardoso, 02-07-1997)

Amazonian statement$_3$

Brazil is going to to Copenhagen with clear proposals. **Our current success in reducing deforestation** give credibility to our goal of reducing it by 80% by 2020. The Amazonian countries are working to define a common position about climate change. **We want an a protected Amazon, but sovereign, under the control of the countries that integrate** it (Lula, 05-11-2009)

Amazonian statement$_4$

I also want to reaffirm our continued commitment to reducing regional imbalances, boosting transversal policies and infrastructure projects, especially in the Northeast and in the Amazon region. It was important that we soften the impact of the long and prolonged drought in the northeast semi-arid region, **but even more important will be the completion of the new, transformative infrastructure for our water resources,** protecting more than than 1,000 km of rivers, **combined with the important social investment more than one million water tanks.** (Roussef, 01-01-2015)

National Sovereignty

Economic Integration

Social Development

Environmental Conservation

Second, with the codebook in hand, each one of the authors separately hand-coded 1024 randomly selected Amazonian statements. This amount refers to 50% of all the Amazonian statements identified. We chose to hand code half of the observations because there are several nuances in how presidents talk about the Amazon over time. As well, since we have four different code categories, the size of the training set should be increased (see Grimmer, Roberts, and Stewart 2022). The hand-coding strategy provides a robust and reliable number of observations to be used for training and validation of the automated model. Once hand coding was completed, the average intercoder agreement for hand-coded categories was 85%. For each non-matching coded observation, the authors discussed and sorted their disagreements, which were subsequently specified in the codebook.

Third, the hand-coded data is randomly divided into a training set, containing 80% of the data (819 observations), and a validation set, containing the remaining 20% of the data (205 observations). We employ a support-vector machine (SVM) algorithm, a non-probabilistic linear classifier appropriate for binary categories, to label texts (Meyer et al. 2021; Noble 2006). To validate the model, the SVM algorithm is trained using the hand-coded training set and employed to classify observations in the validation set. As a final robustness check, the authors randomly select 100 automatically coded statements and find that the automated model is 95% accurate in coding these statements as the authors would. Automating the coding of the remaining half of the observations is estimated to have saved the authors over one month of work in comparison to manual coding. The final dataset for analysis, excluding false positive matches, contains 1924 coded Amazonian statements.

3.3 Analysis and Limitations

To analyze our data, we model the share of a specific pure problem-construction, as the dependent variable, relative to the settings in which a particular speech happens, as our independent variable. This means we predict the probability of a president constructing the Amazon as an issue of (1) environmental conservation, (2) economic integration, (3) social development, and (4) national sovereignty, separately, and in relation to the remaining problem-constructions (see table 1 below). We focus on single problem constructions to provide unambiguous interpretations and more robust findings. We divide settings in terms of non-Amazonian Brazilian states, Amazonian states within Brazil, Brasilia, Amazonian countries, and international. This level of aggregation refers to geo-political settings that make sense in light of the Amazon, as our policy object. This aggregation combines different expectations presidents can have about transnational audiences in each of these settings. Brasilia, specifically, is treated as a separate setting due to its unique location and since most presidential speeches are delivered there. The model controls for yearly deforestation rates, inflation, election years, and peak years for Amazon in presidential speeches.

	Description
Model	
Fixed-effects logistic regressions indexed by the president	The regression method allows to control for variables not measured (e.g. ideology) related to individuals (i.e. presidents) [see @allison2009].
Dependent variables	
Problem constructions	Pure environmental conservation; pure economic integration; pure social development; and pure national sovereignty.
Independent variable	
Settings	Setting where speech occurs as (1) non-Amazonian Brazilian states, (2) Brasilia, (3) Amazonian countries, and (4) international, in relation to the reference category of Amazonian states within Brazil.
Control variables	
Deforestation rates	Lagged yearly deforestation rates as a control for the possible relationship between deforestation rates and Amazonian problem-constructions.
Election year	Election years are controls for possible discursive changes related to the Amazon for these years.
Inflation rate	Average yearly inflation rates as a control for a possible relationship between economic conditions/fluctuations and problem constructions.
High-profile environmental event	Years in which high-profile environmental events occurred control for the frequency and, possibly, how the Amazon was constructed as a problem in discourse for those years.

Table 1: Model description

The main limitations of our approach are threefold. First, related to our subsetting and coding strategies, we classify statements as Amazonian based on a dictionary composed of a single lexicon stem: "amazon". We chose to do so knowing that a few speeches about the Amazon might not contain the lexicon "amazon", for example, when the president says, "the forest" or "deforestation". However, we consider this safer as we cannot be sure that mentions of the forest or deforestation do not correspond to other biomes such as the Cerrado or the Atlantic Forest.

Second, our dataset covers only what is considered an official speech. Presidents, though, give interviews, appear in debates, talk at campaign rallies, and, more recently, post on social media. Problem-construction within presidential discourse, thus, happens in different public, private, and online settings for which we do not account or differentiate in this paper. Furthermore, we aggregate levels to socio-political-cultural settings that make sense in light of the policy object in question and the data at hand. Therefore, we are aware that a category as "international", for instance, encompasses speeches delivered by presidents in a wide variety of countries, institutions, and venues to diverse audiences, which are not differentiated.

Third, as presidents participate and shape transnational politics, we assume that presidential discourse, policies, and outcomes are co-constitutive. Discourses capture general problem constructions that can be used to introduce, discuss, and/or justify policy and outcomes. Throughout the analysis we carefully discuss how presidential discourses relate to, for instance, deforestation rates and political outcomes by pointing at some of the patterns and correlations but without making any causal claims.

4 Analysis

4.1. In time

Figure 2: Amazonian speeches in time

Share of speeches that mention the Amazon per year

Sample composed by all 6130 speeches since 1985
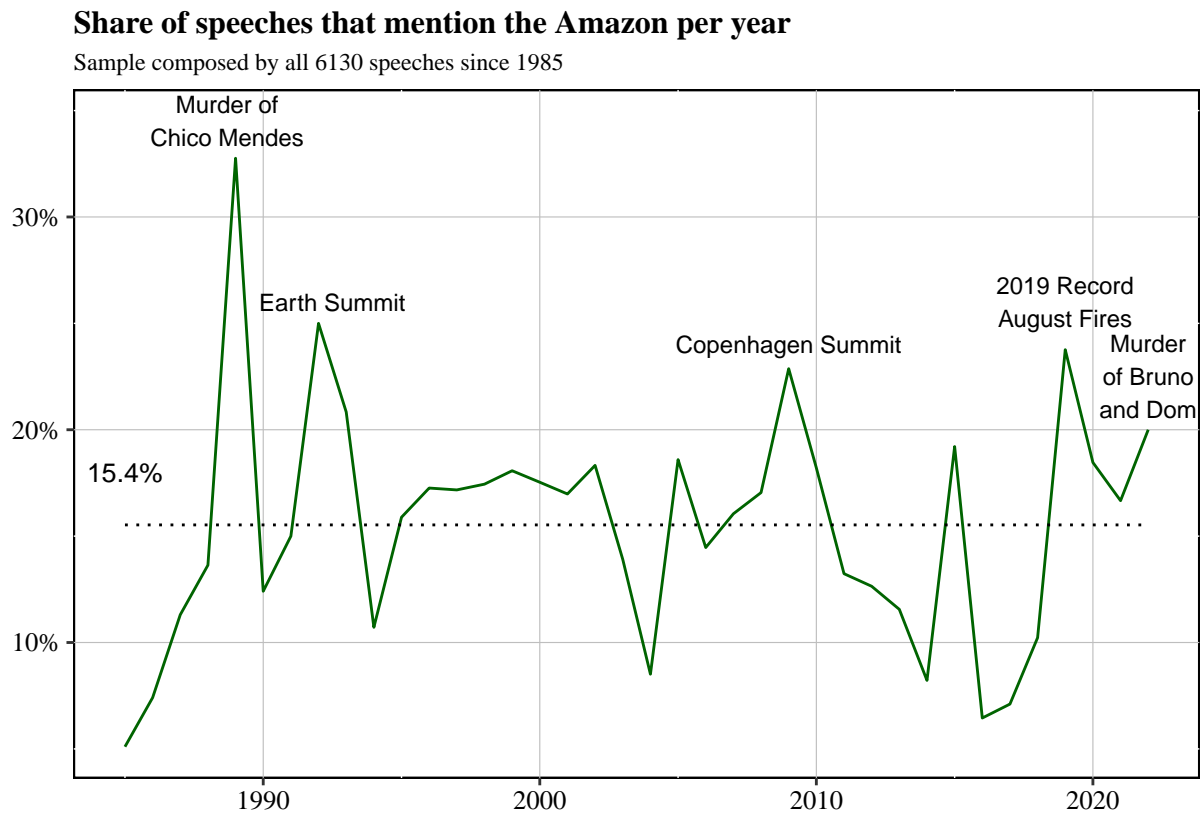
4.2. Model

	Dependent variable:			
	Environmental Conservation	Economic Integration	Social Development	National Sovereignty
	(1)	(2)	(3)	(4)
Non Amazonian States	0.042*	−0.001	0.002	0.035**
	(0.022)	(0.027)	(0.020)	(0.015)
Brasilia	0.115***	−0.069***	−0.025	0.028**
	(0.021)	(0.026)	(0.019)	(0.014)
Amazonian Countries	0.016	0.092**	−0.097***	−0.0004
	(0.032)	(0.039)	(0.029)	(0.021)
International	0.217***	−0.050	−0.059**	−0.005
	(0.031)	(0.038)	(0.028)	(0.021)
Deforestation	−0.004**	0.012***	−0.001	−0.0001
	(0.002)	(0.002)	(0.002)	(0.001)
Inflation	0.0001**	−0.0001***	0.00002	−0.00001
	(0.00003)	(0.00004)	(0.00003)	(0.00002)
Election Year	0.046**	0.008	0.009	−0.009
	(0.022)	(0.026)	(0.019)	(0.014)
High-profile Events	−0.005	−0.019	0.019	0.082***
	(0.028)	(0.034)	(0.025)	(0.019)
Observations	1,887	1,887	1,887	1,887
R^2	0.043	0.035	0.012	0.018
Adjusted R^2	0.036	0.027	0.004	0.010
F Statistic (df = 8; 1871)	10.616***	8.385***	2.772***	4.258***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: Fixed-effects logistic regressions by president with controls

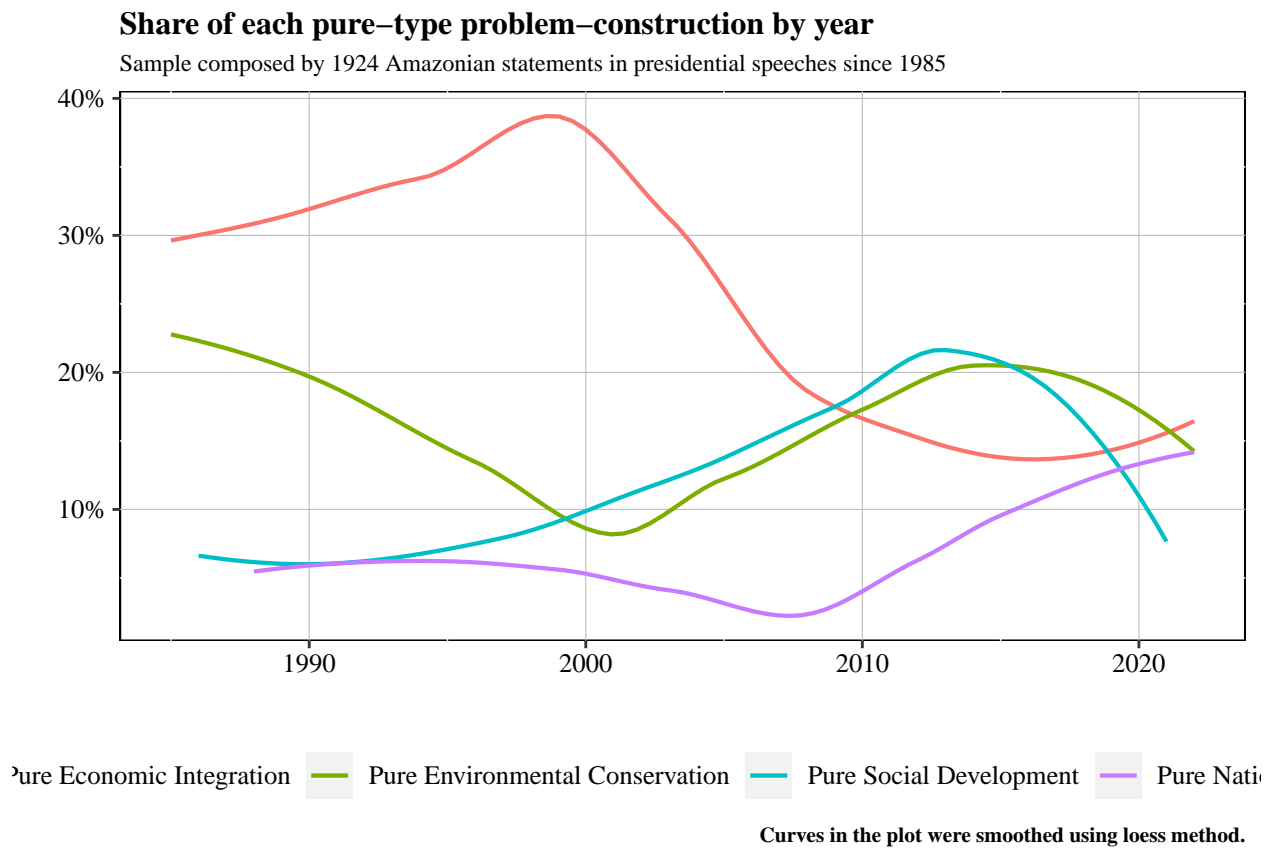## 4.3. Pure type

Figure 3: Pure-types in time

Share of each pure–type problem–construction by year

Sample composed by 1924 Amazonian statements in presidential speeches since 1985

Pure Economic Integration — Pure Environmental Conservation — Pure Social Development — Pure Nati

Curves in the plot were smoothed using loess method.

Figure 4: Pure-types across setting in time

Relationship between problem–constructions and deforestation rates

Bars indicated yearly deforestation level and curves indicated yearly share of problem–construction.
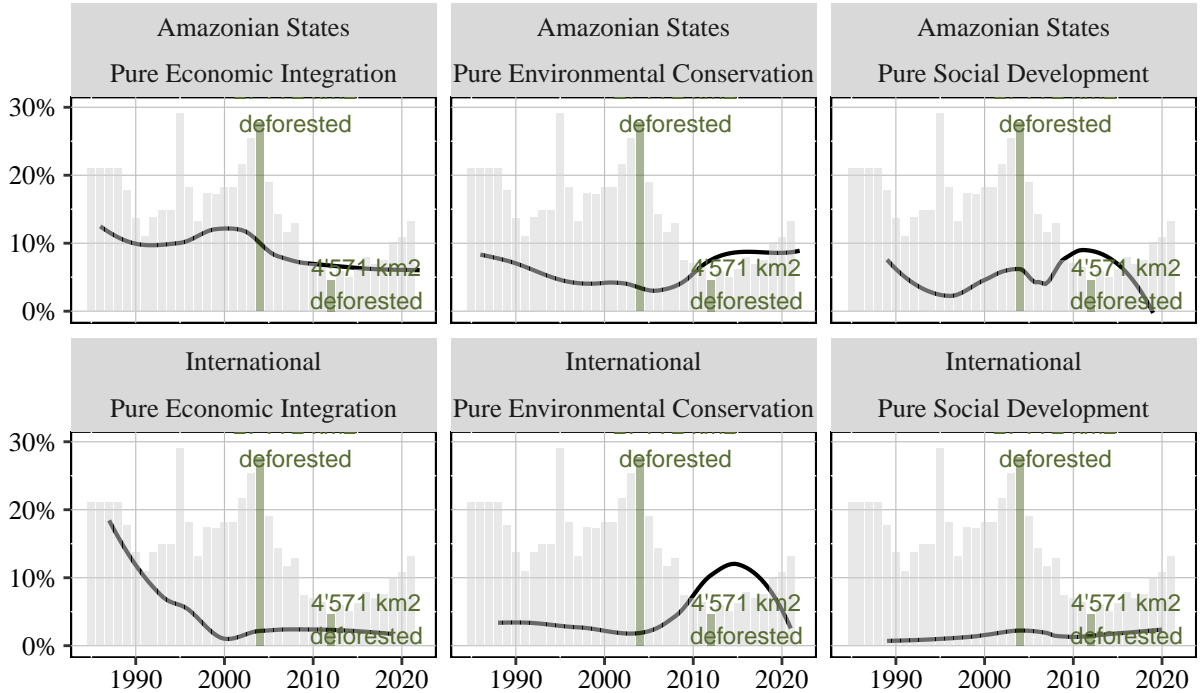
Curves in the plot were smoothed using loess method.

5. Discussion

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Disclosure Statement

The authors report there are no competing interests to declare.

References

Acker, Antoine. 2017. *Volkswagen in the Amazon: The Tragedy of Global Development in Modern Brazil*. Cambridge University Press.

———. 2021. "Amazon Development," Oxford research encyclopedia of latin american history.,. https://doi.org/10.1093/acrefore/9780199366439.013.837.

Alesina, Alberto F., and Paola Giuliano. 2009. "Preferences for Redistribution." https://www.nber.org/papers/w14825.

Andonova, Liliana B. 2014. "Boomerangs to Partnerships? Explaining State Participation in Transnational Partnerships for Sustainability." *Comparative Political Studies* 47 (3): 481–515. https://doi.org/10.1177/0010414013509579.

Andonova, Liliana B, and Dario Piselli. 2022. "Transnational Partnerships, Domestic Institutions, and Sustainable Development. The Case of Brazil and the Amazon Region Protected Areas Program." *World Development* 157: 105809.

Assunção, Juliano, Clarissa Gandour, and Rudi Rocha. 2015. "Deforestation Slowdown in the Brazilian Amazon: Prices or Policies?" *Environment and Development Economics* 20 (6): 697–722. https://doi.org/10.1017/S1355770X15000078.

Bacchi, Carol Lee. 2009. *Analysing Policy: What's the Problem Represented to Be?* Pearson.

Becker, Bertha K. 2005. "Geopolítica da Amazônia." *Estudos Avançados* 19 (April): 71–86. https://doi.org/10.1590/S0103-40142005000100005.

Calderwood, Kevin J. 2019. "Discourse in the Balance: American Presidential Discourse about Climate Change." *Communication Studies* 70 (2): 235–52. https://doi.org/10.1080/10510974.2019.1572636.

———. 2020. "Going Global: Climate Change Discourse in Presidential Communications." *Environmental Communication* 14 (1): 52–67. https://doi.org/10.1080/17524032.2019.1592005.

Campbell, Jeremy M. 2015. *Conjuring Property: Speculation and Environmental Futures in the Brazilian Amazon.* Illustrated edition. Seattle: University of Washington Press.

Capobianco, João Paulo. 2019. "Avances y retrocesos de la sostenibilidad en la Amazonia: un análisis de la gobernanza socioambiental en la Amazonia," January. https://gredos.usal.es/handle/10366/139311.

———. 2021. *Amazônia: Uma Década de Esperança.* 1ª edição. São Paulo: Estação Liberdade.

Cezar, Rodrigo Fagundes. 2020. "Brazilian Presidential Speeches from 1985 to July 2020." https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/M9UU09.

Collinson, Sarah. 1999. "'Issue-Systems','multi-Level Games' and the Analysis of the EU's External Commercial and Associated Policies: A Research Agenda." *Journal of European Public Policy* 6 (2): 206–24.

Drummond, Jose, and Ana Flavia Barros-Platiau. 2006. "Brazilian Environmental Laws and Policies, 1934-2002: A Critical Overview." *Law and Policy* 28 (1): 83–108. https://doi.org/10.1111/j.1467-9930.2005.00218.x.

Franchini, Matias Alejandro, and Eduardo Viola. 2019. "Myths and Images in Global Climate Governance, Conceptualization and the Case of Brazil (1989 - 2019)." *Revista Brasileira de Política Internacional* 62 (September). https://doi.org/10.1590/0034-7329201900205.

Gillion, Daniel Q. 2016. *Governing with Words: The Political Dialogue on Race, Public Policy, and Inequality in America.* Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781316412299.

Grimmer, Justin, Margaret E. Roberts, and Brandon M. Stewart. 2022. *Text as Data: A*

New Framework for Machine Learning and the Social Sciences. Princeton, New Jersey Oxford: Princeton University Press.

Hecht, Susanna, and Alexander Cockburn. 1990. *The Fate of the Forest: Developers, Destroyers, and Defenders of the Amazon, Updated Edition.* Chicago, IL: University of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/F/bo10387801. html.

Hecht, Susanna, and Raoni Rajão. 2020. "From "Green Hell" to "Amazonia Legal": Land Use Models and the Re-Imagination of the Rainforest as a New Development Frontier." *Land Use Policy* 96 (July): 103871. https://doi.org/10.1016/j.landusepol.2019.02.030.

Hochstetler, Kathryn. 2000. "Democratizing Pressures from Below? Social Movements in the New Brazilian Democracy." *Democratic Brazil: Actors, Institutions, and Processes*, 167–84.

———. 2021. "Climate Institutions in Brazil: Three Decades of Building and Dismantling Climate Capacity." *Environmental Politics* 30 (sup1): 49–70. https://doi.org/10.1080/09644016.2021.1957614.

Hochstetler, Kathryn, and Margaret E. Keck. 2007. *Greening Brazil: Environmental Activism in State and Society.* https://doi.org/10.1215/9780822390596.

Keck, Margaret E., and Kathryn Sikkink. 1998. *Activists Beyond Borders: Advocacy Networks in International Politics.* 1st Edition. Ithaca, N.Y: Cornell University Press.

López, Matias, Graziella Moraes Silva, Chana Teeger, and Pedro Marques. 2020. "Economic and Cultural Determinants of Elite Attitudes Toward Redistribution." *Socio-Economic Review*, May. https://doi.org/10.1093/ser/mwaa015.

Meyer, David, Evgenia Dimitriadou, Kurt Hornik, Andreas Weingessel, and Friedrich Leisch. 2021. *E1071: Misc Functions of the Department of Statistics, Probability Theory Group (Formerly: E1071), TU Wien.* https://CRAN.R-project.org/package=e1071.

Noble, William S. 2006. "What Is a Support Vector Machine?" *Nature Biotechnology* 24 (12): 1565–67.

Pádua, José Augusto. 2012. "Environmentalism in Brazil: A Historical Perspective." *A Companion to Global Environmental History* 1: 455–73.

Pereira, Joana Castro, and Eduardo Viola. 2021. *Climate Change and Biodiversity Governance in the Amazon: At the Edge of Ecological Collapse?* Routledge.

Pinto, Julio Roberto de Souza. 2016. "The Legislative and Public Policies in Brazil: Before and After the 1988 Constitution." *The Journal of Legislative Studies* 22 (4): 484–505.

Putnam, Robert D. 1988. "Diplomacy and Domestic Politics: The Logic of Two-Level Games." *International Organization* 42 (3): 427–60. http://www.jstor.org/stable/2706785.

Rajão, Raoni, Roberta Del Giudice, Richard Van der Hoff, and EB de Carvalho. 2021. "Uma Breve História Da Legislação Florestal Brasileira: Contém a Lei No. 12.651, de 2012, Com Comentários Criticos Acerca Da Aplicação de Seus Artigos." *Expressão, Florianópolis, SC.*

Silva-Muller, Livio, and Moira V. Faul. 2022. "Protecting the Amazon and Its People: The Role of Civil Society in Local Effectiveness of Trasnational Partnerships." In *Partnerships for Sustainability in Contemporary Global Governance*, 83–103. Routledge. https://doi.org/10.4324/9781003148371-6.

Sposito, Henrique. 2021. *Poldis: Tools for Analyzing Political Discourse.* https://github.

com/henriquesposito/poldis.

Viola, Eduardo J. 1987. "O Movimento Ecológico No Brasil, 1974-1986: Do Ambientalismo à Ecopolítica." *Revista Brasileira de Ciencias Sociais* 3 (93): 5–26. http://anpocs.com/images/stories/RBCS/03/rbcs03_01.pdf.

Wood, Charles H, and Marianne Schmink. 1993. "The Military and the Environment in the Brazilian Amazon." *Journal of Political & Military Sociology*, 81–105.
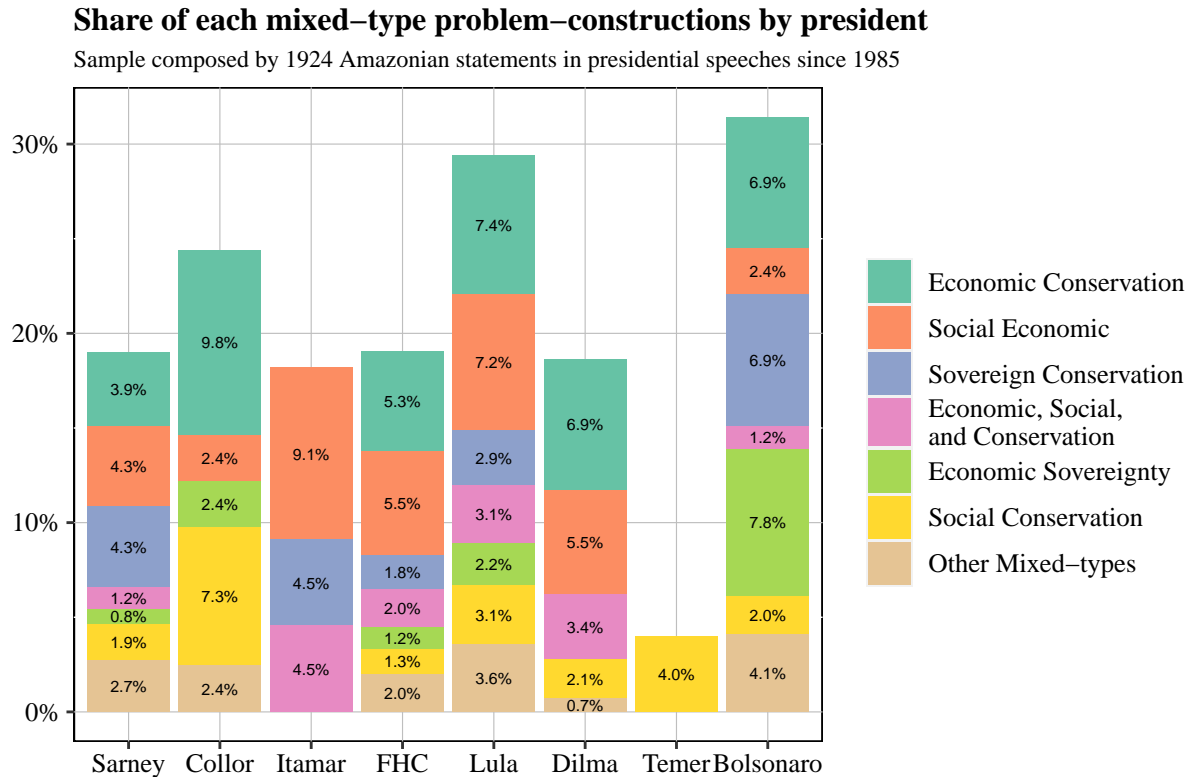
Zarefsky, David. 2004. "Presidential Rhetoric and the Power of Definition." *Presidential Studies Quarterly* 34 (3): 607–19. https://www.jstor.org/stable/27552615.

Appendix

problem-construction	Description	Example
National Sovereignty	This code constructs the Amazon region and/or forest as an issue of national sovereignty. We understand claims of sovereignty as a particular problem-construction that touches on imaginaries of external threats to territory. Relatedly, we also understand sovereignty as raising concerns about wrong perspectives and criticism from foreign and non-state actors about government action related to the Brazilian Amazon. In all, it advances the view that the Amazon is Brazilian, foreign, and non-state presence in the region needs to be monitored closely.	Congressman, the fundamental link for Brazil to really head in the direction to prosperity. I would like first, Hu Chunhua, to thank you for the words of your ambassador to Brazil recognizing our sovereignty over the Amazonian region during that recent episode in the G7 meeting. I would like to thank the Chinese government. For us, this type of public acknowledgement is priceless in your words about this region that is so important to the world and to Brazil. (Bolsonaro 25/10/2019)
Economic Integration	This code constructs the Amazon region and/or forest as an issue of economic integration. It advances the view that the Amazon needs to be developed and connected to the national economy. This includes expanding the agricultural frontier through incentives, creating a diverse set of infrastructure (roads, dams, internet, radio, energy), fostering differing industries (tourism, mining, cattle, agriculture and so on) through tax-free zones, as well as facilitating the exploitation of natural resources for developmental purposes.	If you allow me, in the Amazon - which for a long time stayed asleep due to the lack of coordinated actions - have already taken a few structuring actions. We, in the Amazon, are connecting Manuas, Boa Vista, Caracarai, until up there, the red line [in a map] that goes all the way up in the direction of Venezuela, that is the so-called BR-174 highway. This highway will allow production in the Tax Free Zone in Manaus to be competitive, not within, but outside, that is the vocation of the the Tax Free Zone to export; and we can even do it through the Caribbean (Cardoso 02/07/1997)
Social Development	This code constructs the Amazon region and/or forest as an issue of social development. It advances the view that Amazon is full of citizens who should have their rights guaranteed. This refers to the construction of schools and universities (right to education), of hospitals (right to health), and of housing (right to house). This also includes guarantees of a dignified life with decent employment, access to water and sanitation, as well as access to electricity, internet, radio, and light. Finally, this includes referrals to culture and the right to vote.	The state does not work for profits, the state needs to guarantee dignity, we find that a citizen who lives in the riverside of the Amazon river, 600 kilometers from Manaus, has the right to have the electricity in their house, to owe a fridge, to owe a television where to watch the soap operas. We have invested over 14 billion reais in this program, in three and a half years. Do you know how many electrical lines we have already built? One million kilometers of lines. (Lula 20/11/2009)
Environmental Conservation	This code constructs the Amazon region and/or forest as an issue of conservation. This problem-construction focuses on the value of a standing forest and of the preserved ecosystem in the region. The conservationist narrative advances the view that Amazon should be preserved, deforestation should be halted, and the practices of indigenous and traditional populations should be maintained and fostered. It advances the view that the emission of greenhouse gasses should be halted, that renewable energy should be supported, and that protected areas should be created.	I have put in place emergency measures, I have suspended the exports of wood logs, I have suspended the fiscal incentives and credits to projects that could damage the environment in the amazon and I have made a license mandatory to gold mining that prohibits utilizing mercury in the process. This began the restructuring of the governmental system of control and preservation of the environment, I have created the Brazilian Institute for the Environment and Natural Resources [IBAMA], which will be headed by Dr. Mesquita (Sarney 20/07/1989)

Table 3: Amazonian Problem-Construction Codebook

Figure 5: Mixed-types by president

Share of each mixed−type problem−constructions by president

Sample composed by 1924 Amazonian statements in presidential speeches since 1985

In a speech, presidents might mix multiple problem-constructions within an Amazon statement. Mixed-type problem-constructions in discourse offer more intricate understandings of the Amazon as a problem. Constructing the Amazon as multiple issues averages at 18% of all constructions over time. The most frequent mixed-type problem construction of the Amazon is economic conservation. This mixed-type construction, composed of Amazonian statements that construct the Amazon as a problem of both economic integration and environmental conservation, generally increased over time. This increase suggests that later presidents, along with being more diverse in how they construct the Amazon as an issue, increasingly find ways to reconcile the dictum between the economy and the environment that had prevailed in the previous years. The second most common mixed-type mixes social development and economic integration and appears, on average, in 5.4% of all statements. This is not surprising, as developing countries like Brazil repeatedly claim a "right to develop", when it comes to negotiating strong climate commitments and policies with a focus on both social development and economic integration. Nonetheless, there is a general increase of mixed-types over time, which is expected given the rise of global agendas understanding interconnections of social, environmental, and economic domains such as the Millennium Development Goals and the Sustainable Development Goals. Furthermore, both Lula and Bolsonaro construct the Amazon as a multifaceted issue more frequently than other presidents. Lula usually mixed economic integration with environmental conservation and social development when

constructing the Amazon as an issue, while Bolsonaro constructs the Amazon as an issue of national sovereignty and economic integration much more than any other president, mimicking the military dictatorship discourses and policies toward the region (Hecht and Cockburn 1990).