

Overview of discourses on innovation and development in the academic field: the debate on the Legal Framework of Science, Technology and Innovation

Panorama dos discursos sobre inovação e desenvolvimento no campo acadêmico: o debate do Marco Legal de Ciência e Tecnologia e Inovação

Panorama de los discursos sobre innovación y desarrollo en el campo académico: el debate sobre el Marco Legal de Ciência e Tecnologia e Inovação

Erico Lopes Pinheiro de Paula^I

José Carlos Rothen^{II}

ABSTRACT

The main associations of academics, also from the productive sector, had a decisive role in the process that culminated in the publication of Law nº 13.243/2016. In order to identify and interpret the discourses, we carried out an investigation into the legislative process of the project (between 2013 and 2016). Based on documents from the National Congress, we found the main institutional actors. We expanded the dataset with references produced by the associations themselves. Finally, we retrieved from the economic sciences some empirical and theoretical sources that allowed us to criticize the partiality of the analyses and the idealism contained in the speeches. As a result, we find discourses based on liberal dogmas — such as austerity and free trade — in which the university becomes a means for satisfying market interests. Our findings serve as a support for the proposal of a leading university in mission-oriented national development.

Keywords: Innovation. Higher Education. Public Policies.

RESUMO

As principais associações de acadêmicos, também do setor produtivo, tiveram papel determinante no processo que culminou com a promulgação da lei n. 13.243/2016. Com o objetivo de identificar e interpretar os discursos, realizamos investigação sobre a tramitação legislativa do projeto (entre 2013 e 2016). Com base em documentos do Congresso Nacional, encontramos os principais atores institucionais, ampliamos o conjunto de dados com as referências produzidas pelas próprias associações e, por fim, recuperamos nas ciências econômicas algumas fontes empíricas e teóricas que nos permitiram realizar a crítica à parcialidade das análises e ao idealismo contido nas falas. Como resultado, encontramos os discursos pautados em dogmas liberais — como austeridade e livre comércio —, nos quais a universidade se torna meio para a satisfação dos interesses de

^IUniversidade Federal de São Carlos, São Carlos, SP, Brazil. Email: ericolpp@gmail.com  <https://orcid.org/0000-0002-1942-0895>

^{II}Universidade Federal de São Carlos, São Carlos, SP, Brazil. Email: joserothen@ufscar.br  <https://orcid.org/0000-0002-5360-1913>

mercado. Nossas constatações servem de esteio para a proposta de uma universidade protagonista no desenvolvimento nacional orientado por missão.

Palavras-chave: Inovação. Ensino Superior. Políticas Públicas.

RESUMEN

Las principales asociaciones de académicos, también del sector productivo, tuvieron un papel decisivo en el proceso que culminó con la publicación de la Ley nº 13.243/2016. Para identificar e interpretar los discursos, realizamos una investigación sobre el proceso legislativo del proyecto (entre 2013 y 2016). A partir de documentos del Congreso Nacional encontramos los principales actores institucionales. Ampliamos el conjunto de datos con referencias elaboradas por las propias asociaciones. Finalmente, recuperamos en las ciencias económicas algunas fuentes empíricas y teóricas que nos permitieron criticar la parcialidad de la economía y el idealismo contenido en los discursos. Como resultado, encontramos discursos basados en dogmas liberales –como la austeridad y el libre comercio– en los que la universidad se convierte en un medio para satisfacer los intereses del mercado. Nuestros hallazgos sirven de sustento a la propuesta de una universidad líder en el desarrollo nacional orientado a la misión.

Palabras clave: Innovación. Educación Superior. Políticas Públicas.

INTRODUCTION

This work summarizes the research on the discourses presented in the public debate that preceded the enactment of Law No. 13,243/2016 — the Legal Framework for Science, Technology, and Innovation (*Marco Legal de Ciência, Tecnologia e Inovação* — MLCTI). In the thesis defended in 2021, we tried to explain who the protagonists were, the representatives of academia and the productive sector, and with what arguments they tried to influence the legislators in the hearings. In this text, we aim to highlight the main findings of the research to broaden the debate on the role of universities in Brazil's economic growth.

It should be noted that the country's political environment was tumultuous during the historical period studied, especially with the impeachment of Dilma Rousseff approaching. The main data used in the study came from the passage of bills in the National Congress, which took place more objectively between 2013 and 2016. However, we found a relatively surprising convergence of interests (Dias, 2009) and discourses between civil society and parliamentarians. In general, the represented entities showed similar perspectives, except for some specific defenses of eminently technical aspects, as well as some speeches by representatives of external control bodies. We can assume that the protagonists positioned themselves in defense of the economic development subordinated to the technical-scientific development resulting from the production of knowledge.

Given the role that today's society assigns to universities in this process (Cunha, 1980; Kerr, 1982; Maassen and Olsen, 2007), we conducted research on how the current consensus that directly links scientific results to economic development was built. Essentially, we sought to identify which actors were most prominent in the public debate, assuming that they had some connection to the university sector.

As a hypothesis, we looked for arguments and reasoning linked to two original metaphors. To characterize the figures more objectively, we distinguished between discourses that seduced

by appealing to the symbolic power instituted in the exercise of science, which we identified as “siren song” strategies. On the other hand, speeches that were particularly notable for concealing important aspects of economic reality or even the complexity of the university were related to the “confidence trick”. In this way, we were able to identify rhetorical strategies in the public hearings of the Chamber that appealed to national underdevelopment and the impact of university actions on this scenario.

METHOD ISSUES

According to a large body of literature (Morel, 1979; Schwartzman, 1980; 2001; 2008), scientific ventures in Brazil became institutionalized and federalized only after the mid-20th century. Beginning in the 1970s, various policies linking academia and industry expanded innovative activities in research institutes and public universities. The economic perspective was then conditioned by studies of (under)development and dependency, such as those of the Cepalinos¹ (Furtado, 1964; Bielschowsky, 2000).

The developmentalist impulse cooled off, and a true national science, technology, and innovation system, anchored in a national industrial policy, never really took shape (Corder, 2004; Carlotto, 2013; Bresser-Pereira, 2016). From the 1990s onwards, initiatives stemming from the neoliberal prescription expanded, while, in the early 2000s, economic underdevelopment and deindustrialization returned as constant themes in public debate and in the National Congress (Castelo, 2013). From the point of view of academia, especially public universities, we then saw the enactment of a series of laws aimed at overcoming this situation, with a focus on the concept of innovation (Silva Junior, 2009; Carlotto, 2014; Mancebo, Silva Junior and Schugurensky, 2016).

In our reading, the content of the new legal framework for science, technology, and innovation (ST&I) has been conditioned from the moment innovation was established as a national commitment, enacted in 2004 (Silva Junior, Catani and De Azevedo, 2004; Silva Junior and Sguissardi, 2005; 2009; Silva Junior, 2009; 2017; Dagnino, 2016), based on the Innovation Law (Law No. 10,973 [Brasil, 2004]). This has led the federal government’s public policy to provide fiscal and tax incentives (such as Laws 11,196/2005, 11,774/2008, 12,712/2012, among others), including access to biodiversity for research purposes (Law 13,123/2015), and even changes to the Federal Constitution (such as Constitutional Amendment 85/2015). The legal framework for ST&I, drafted and enacted in this context, summarizes and consolidates the main changes to foster the national knowledge production system (Rauen, 2016; Fonseca, 2017).

In our research, we focused on the influence of academic and industrial associations on the legislative process. We chose the process of adopting the legal framework for ST&I as an example to interpret the actions of teachers-researchers through the discourses conveyed by the represented entities. This motivated us to seek a deeper understanding of the interests at stake and the terms of dispute, considering the oppositions that reverberated inside and outside the arena, nuanced both by the criticism of unions and some scientific fields, and by the applause of other academic departments and funding foundations.

1 The Economic Commission for Latin America and the Caribbean (ECLAC), one of the five regional commissions of the United Nations (UN), has become the beacon of a consolidated approach to economic policy and development. During the 20th century, Brazil had to some of the greatest names in national economics, such as Celso Furtado (1920–2004). According to the organization’s website (<https://www.cepal.org/pt-br/sobre/historia-cepal>), “[i]n the early years, the influence of Keynesian thought and the Central European historicist and institutionalist schools was decisive. In recent years, the focus has been on the renewal of Keynesian thought, the new theories of international trade and industrial organization, the evolutionary theories of the firm, and the new institutionalism.”

In particular, we have tried to make progress in identifying more precisely the problems and solutions demanded by the actors in the public debate, to gain access to the interests defended institutionally (Paula and Rothen, 2021). With this strategy, we recognize that a consensus was materialized in the speeches of the entities that in practice guided the members, whether in politics or in the research (and teaching, as in the case of universities) institutions themselves. In the detailed study of the public hearings, we aimed to shed light on the way the lecturer-researchers of these associations perceived the university, as well as its mission and the challenges for (especially) public higher education.

The theoretical framework used in the first moment allowed us to analyze the texts as collective productions, linked to a core of demands that were debated with society, with the aim of exercising hegemony over public policies in the field (Bourdieu, 1975; 1998; 2006; 2011; Gramsci, 1999; 2007; Filippini, 2017). Meanwhile, we had hoped to find elements that would bring us closer to a public performance marked by the attribution of prestige, disputes over interpretations, and accusations related to the social status claimed by each group. These questions went beyond the strict limits of technical knowledge and even led to ideological positions. This was also a warning from theory (Santos, 1978; Shinn and Ragouet, 2008).

Our conceptual choices also led us to view the official speeches of the organizations as rhetorical pieces that, while expressing the conscience of a particular professional body, were also presented as a series of arguments strung together to achieve persuasive goals. The rationale was also used to explore some nuances that stood out when we looked closely at arguments apparently coming from the same group (or even contradictory ones), demonstrating the web of reciprocal influences between fields and class fractions (Paula and Rothen, 2021).

With this scope in mind, we proceeded to collect data, focusing on the consensus within the organizations and the coalition that was being built during the debate on the legal framework for ST&I. Our initial research led us to an in-depth understanding of the legislative path of the bill, starting before it was presented to the Chamber of Deputies, identifying the chronology, the main actors, and the documents resulting from each round.² The texts were collected and cataloged from institutional websites. The public hearings, for which only audio recordings were available, were transcribed to provide the material for content analysis. Finally, the speeches were categorized for the purpose of interpretation.

We also had an initial contact with technical productions on the legal framework for ST&I published by the protagonist organizations on their institutional websites. We found indications that, in the preliminary phase, the arguments were anchored in a specific field of economic thought. In addition, at that time it became increasingly clear that the production of knowledge in universities was linked to the productive system (especially manufacturing) as a *sine qua non* for overcoming the problems of material growth.

We then began to select literature from economics to meet the challenge of identifying the most salient aspects of the emerging institutional positions (Schumpeter, 1984; Romer, 1990; Hausmann and Rodrik, 2003; Chang, 2004; Reinert and Reinert, 2011; Reinert, 2016). We were able to establish that the discourses of the entities were conditioned by a perspective of the state more in line with what we understand to be the neoliberal perspective of economic thought (Harvey, 2007; 2011; Oliveira, Maia and Mariano, 2008; International Monetary Fund, 2011; Ostry, Loungani and Furceri, 2016).

On the other hand, our choice of critique has brought us closer to the authors of development economics (Diniz, 2006; Lopes, 2011; Hausmann *et al.*, 2014; Mazzucato, 2014; 2021; Mazzucato

² This step was completed by consulting the institutional websites of the Chamber of Deputies and the Federal Senate.

and Penna, 2016), especially the neo-developmentalists (Gala, 2006; 2017; Carvalho and Gala, 2020; Carvalho and Cardoso, 2021). As far as possible, we were able to trace the trajectory of these matrices of economic thought from the second half of the 20th century, focusing on how they approached the phenomenon of innovation in its relation to the enrichment of nations.

After identifying the conceptual tools used, we moved on to describe the stages of the investigation. First, we described the theme and objectives of the work to clarify the institutional postgraduate program. Next, we presented the theoretical references in detail, exploring the fields of political economy, development economics, and conceptions of society, science, and the university. Some basic ideas of this movement have already been presented at the beginning of this text.

The next stage revealed the contextualization of the object, with a focus on the processing of the Legal Framework for Science, Technology, and Innovation in the Chamber of Deputies, starting in 2011, in the form of a bill. First, we listed all the organizations involved in some way in the legislative debate, and then highlighted those most representative of the university and production sectors. As described, the leading organizations participated actively either in the drafting of the proposals or with additional suggestions during the public hearings (or in the working group of the Chamber's Special Committee).

We also sought academic literature that would allow us to examine the country's ST&I policies from a procedural perspective. In preparation for immersing ourselves in the daily life of the legislature, we searched for criteria on the history of scientific endeavors in Brazil which explained the state of affairs at the beginning of this century. We also discovered data on how the state has acted in relation to science and technology in the past, searching for possible perspectives for its actions in the future.

Finally, we present the legislative journey of the legal framework for science, technology, and innovation itself, starting with the proceedings in the Chamber of Deputies. We show the stages the process went through and how it related to the bill introduced at the same time in the Senate. Once the rite of passage in the House had been exhausted, we went on to review the bill's progress in the Senate. The final stage of the legislation was the presidential process, when the vetoes took place. The final subsection shows the direction of the technical analysis that followed the changes that were made.

As far as methodological issues are concerned, the inclusion criteria for the material that made up our sample have yet to be described. We can summarize the procedures involved both in terms of data collection via the Internet and analysis based on categories, as follows: the sample consisted of primary material (records in PDF format of votes, substitutes, opinions, shorthand notes, and audios in MP3 format, collected from the institutional websites of the Chamber of Deputies, the Senate, and the Presidency of the Republic) and secondary material (various texts collected from the institutional websites of the entities). To process the data, we first read the texts, modified the digital formatting of the files (so that the shorthand notes could be edited), and transcribed the audio. The resulting material is available in the university's institutional repository.

The material collected from congressional and government websites was essential for contextualizing the actors' participation. It was only from these sources that it was possible to identify the entities, understand the rite and gather the main material. As for the secondary material, it was important for us to find more elements that could anchor our interpretations of the entities' speeches. We even recognized speeches that contradicted the consensus established in the hearings. These served as a counterpoint — since they were silenced in the debates in Congress — both because some organizations were not invited and because some speeches were not included in the final result of the enactment.

Finally, we would like to highlight the use of metaphors — the trick and the siren — which we used throughout the analysis. We have used them as a language resource that would make the expression and understanding of what we observed more accessible. With these phrases, we understand that we are reaching a wider audience, which interests us as a possibility of interlocution with other fields of knowledge. Even though this is a stylistic literary resource, we were able to consider two criteria to approximate the institutional speeches to one or another figure.

First, we classified them according to the content of the arguments: if the defense in the speech explored a “partial perspective,” we considered the metaphor of the vicar as an example. This image highlights the elements of masking reality and the harmful effects that a short-term response can have on economic growth. This observation brings to light the elements (content) most defended by the entities in the neoliberal, ahistorical, and decontextualized perspective.

At the same time, when there was evidence, we used the criterion of “seduction” to identify speeches that were in line with the siren metaphor. It was always clear to us that, when the representatives presented themselves as teacher-researchers, when they invoked the role of holders of academic knowledge, they were trying to take a position as legitimate representatives of university interests (unanimously). Thus, we identified in this rhetorical exercise (form) the simulation of representativeness of university interests, while at the same time emulating the totality of academia represented by this specific coalition between capital and technical knowledge.

RESULTS AND ANALYSIS

The economic sciences now have enough empirical data and historical sources to recognize that the market, when it operates in an excessively deregulated manner, produces a concentration of wealth and exclusion, which in itself is contrary to the full development of the productive forces in a society. Often, the institutions have only voiced demands from outside the academy, stuck in a managerial model based on the demonization of public service and the naive glorification of the free market. At other times, the institutional statements merely represented the desire of some academic fields to share in the profits of the knowledge economy, which we attribute to a selfish, short-term concern — or a siren song (Garcia, 2007).

As a result, we consolidated the view that the institutions’ agenda of the did not deal with essential points for the growth of the nations, but was directed towards corporate interests, which for us constituted a narrative similar to the confidence trick (Dias Júnior, 2003).

Today, for example, the way the code is, I do molecular biology, so I have to buy these little plastic tips, which is a pipette, which I take in an adjustable volume: 0.2 microliters, 01 microliter, 10 microliters, 20 microliters, etc. This is extremely... accurate. I’ll use those tips that cost very little. With R\$1,000.00 we can buy 20 or 30 thousand of those little tips. They have different qualities and meet different specifications. Some even have a filter because I can’t get the sample dirty. Then I put it out to tender. Then I have to publish it on the website, in the Official Gazette, I have to put it out to tender, I have to do this and that, etc. Look at the red tape. (Santana, 2013)

Without giving due attention to a national project with long-term guidelines (mission), without alternatives for the promotion and public induction of supply and demand, and without support for initiatives to chain and consolidate production, the organizations’ proposals have become hostage to an abstract and sterile economic orthodoxy. It is precisely this orthodoxy that subjects academic interests to financial and speculative dynamics that can compete with the core activities of universities, even to the clear detriment of undergraduate teaching.

Then we have a doctrine in Brazil that complicates things. Because here's the thing: we have to do everything in Brazil. Then we delay a product for ten years, six years, or five years because I have to do the research here. But what I want is the product, the innovation. And a product is 20 technologies. If I buy one and develop the other 19, that's fine. You have to change your mind a little. In this sense, what innovation is [...] include a chapter on changing the policies of development instruments, support for the R&D phases associated with scaling, application approval and modeling, and the implementation of manufacturing [...] How do I make grants and specific, independent funding for the prototyping, scaling, and modeling phases of manufacturing, post-testing the concept? It's not explicit in the code yet. I think it's fundamental. Why is that? This is the big bottleneck for why we don't have mid-sized technology companies in Brazil. And we're unlikely to have any under the model we have today. The model that favors the big company, the funding, the startup, is dead. (Dantas, 2013a)

In summary, we present the main references of the last decades in economics to signal the direction of our critique. A first point of emphasis concerns the relationship between innovation and economic growth, which generates externalities (spillovers), promotes increasing returns (economies of scale and scope), but also tends to be monopolistic. It is precisely to counteract these negative effects that the consistent action of the state is fundamental, which runs counter to the agenda of flexibilization and debureaucratization defended first and foremost by the entities.

Another essential point identified by economic research in recent decades concerns the concept of productive complexity — as well as productive learning. The comparative analysis between countries, as proposed by the organizations themselves in their arguments, quickly made us realize that the countries cited as examples of success in terms of innovation and productivity did not follow the same trends in public policies for ST&I as Brazil. When comparing the narratives of the legislative debates, elementary factors were always overlooked to explain the dizzying growth of some countries (especially those in Southeast Asia), such as strategic planning, the ubiquity, and diversity of exports, or even the construction of value chains through government intervention.

I would also like to mention that we are giving money back to FINEP, yes. In four years, we haven't been able to... We made the bid for the third time, the equipment hasn't arrived, and we're going to return the money. The equipment hasn't arrived, and the team is at a standstill. What is the loss of a team that is down for a month, two months, or three months when the biggest cost is the researcher himself? We have to look at these things. (Gargioni, 2013)

The third focus of our economic interpretation questions the role of the university in Brazilian society. This concerns the concept of knowledge as a public good. Because of the aspects highlighted above, the issue of social values (public) and financial values (private) must be properly addressed if we are to achieve sustainable growth and overcome dependency and underdevelopment. We believe that it is impossible to change the national productive structure without a targeted effort based on public investment (mission-oriented policy) and broader social control over the achievements of national science.

For us, the expansion of relations between universities and the productive business sector is perfectly understandable and justifiable. We believe that the existence of government support mechanisms to guide private initiative in the provision of quality public services and goods is fundamental. Our disagreement with the content of the organizations' agendas, however, concerns the manner in which this should be done, precisely because the underlying technical orientation is

based on a supposedly false relationship between the public and private sectors — paradoxically, in the same sense that the organizations themselves complain about the “U system” bodies.

I can't wait; it slows down Brazilian science; it slows everything down. And a company can't wait for this kind of thing, either. You know that companies need to do things quickly, and in this country we know: what is public moves slowly, when it does move. The code, if we have to have one, could also be an improvement on the laws; it doesn't matter. The important thing is that we take a step. But a safe step: transparency and flexibility. (Santana, 2013, emphasis added)

In Paula and Rothen (2021), we bring together the analysis with a detailed account of the results. We began by characterizing the congressional and government documents used in the triangulation — between data from parliamentary activity (especially opinions and substitutes), the speeches of the entities (speeches at the hearings), and the law passed in 2016. The chronological segmentation helped to identify the stages of influence, as well as the consensus that prevailed in each of them. This comparison made it possible to achieve the objectives of identifying the influence of the entities on the debate, as well as the discourses they mobilized to ensure hegemony.

Finally, we achieved the goal of revealing the terms of the debate, as well as the problems and solutions envisioned by the organizations, by breaking down the analytical categories. In classifying the material, we found six nuclei of meaning around which issues related to the concepts of innovation, technological risk, differentiated purchasing regimes, accountability, biodiversity, and exclusive dedication regimes orbited. These categories brought together defenses of sometimes conflicting positions, but which consolidated a set of demands and claims with great repercussions in Congress and civil society. At the end of the day, it is clear that their influence was decisive and directed the legal framework for ST&I towards a perspective that does not meet the challenges imposed on the field.

The first point to emphasize when problematizing the discourses introduced into the political arena by the entities is that we are dealing with a hegemonic strategy to implement (above all) two urgent demands: a. flexibility and b. reduction of bureaucracy. These two elements, often present in the defense of institutional positions, represent in themselves the ideological content of neoliberalism. The consensus of the entities is derived from the orthodox (mainstream) economic literature in the light of neo-developmental theories, and with this we come to the conclusion that the agendas defended are linked to a conception of an inert (austere) state and a rational (entrepreneurial) market. This is the same conception that has accompanied the managerial reforms that have been underway in Brazil since the 1990s — and that have since reverberated in the national ST&I field. We will now continue with a summary of the discussions on the categories.

The concept of innovation as seen by the organizations contrasts with the current concept of productive learning, which explains the wealth of nations and the nature of knowledge as a public good. Some organizations emphasized the marginal (or symptomatic) aspects when pointing out the reasons for backwardness. These arguments ignored the non-rivalrous and partially exclusionary nature of knowledge because we recognized that they were based on technological optimism and the linear diffusion of technology. Limited to one aspect of innovation — “Technological Innovations in Products and Processes” (OECD, 2004) — the speeches at the hearings only highlighted the bottlenecks that strangle production from a commercial standpoint. What the neo-developmentalists show us is that this defense ignores the systemic view of the structure of national economy, the prohibitive costs of innovation for private agents, and the indispensability of massive investment in ST&I to maintain (or increase) employment and income in a society.

Therefore, the contribution that ANDIFES [National Association of Directors of Federal Higher Education Institutions] wants to make to this debate is this: let's leave the technical part aside, or delegate it to those who have the competence, and let's discuss in this house the political priority in this country. If we come to the conclusion that it is possible to export minerals, that it will distribute income, overcome regional inequalities, and make everyone literate, great. However, I believe that this conclusion will not be reached by intelligent people in this period of time. (Balduino, 2013b)

Seeing innovation as something external, or not yet included in the usual activities of the university, means an even greater isolation. To the extent that innovation is claimed as a "fourth leg", this opens up space for teacher-researchers to adapt their professional routines, considering (supposed) new attributions. Consequently, in the face of the concrete dilemmas of the university field (especially the public one), it is difficult to imagine that this new attribution is not an obstacle for undergraduate teaching. We say this based on the recognition that at no point in the arguments was there any mention of the undergraduate curriculum, nor of practical teaching opportunities in companies.

Another crucial point that emerges from the organizations' speeches is that the roles of the market and the state in the development of nations are anachronistic, based on a virtually certain and objective separation between their attributions. What's more, in their defense of an "inductive" state, the organizations stated that the problem with the state's actions is that it is too much of a "regulator" when it should be a "facilitator". A closer look reveals that the regulatory nature is often the only social control over the activity, while the facilitating role would imply a *laissez-faire* approach to the use of public resources.

At the same time, the organizations recognized that there is a deficit in the production of national knowledge and that this is the cause of regional inequalities. Meanwhile, the frontiers of knowledge in development science make it increasingly clear that, without a change in the productive structure and without public investment in activities with a high risk of failure, there are no examples in history of nations that have managed to climb the technological ladder.

From our perspective, what pollutes the agenda of the organizations is a misguided aversion to the functions performed by a developmentalist state, for "what is public moves slowly, if it moves at all", as emphasized above. For the organizations, once the bureaucratic obstacles are removed, the conditions for economic growth and development will naturally be in place. For us, this is evidence that they are oblivious to the role of manufacturing in providing good jobs, the social division of labor in increasing productivity, and the increasing returns to scale that result from the knowledge economy.

We do research together at the university, and we know that when it comes to choosing between equipment that has a 5-year warranty and one that has a 6-month warranty, you buy the 6-month one for R\$500.00... and then it breaks down and sits in the lab. It's an absurd lack of common sense. However, it's there in 8,666. We are supportive of changing the purchasing and contracting process in universities and public research centers. This is fundamental. (Dantas, 2013a)

Operationally, in the categories of differentiated purchasing regimes and accountability, we have summarized the main arguments of the entities in defense of a regulatory model for the use of public funds earmarked for ST&I. At the outset, it is instructive to hear the lecturer and researcher describe his life as an "open book". He wanted to make the audience aware of the fact that his life had already been scrutinized, and that this had never been a problem for him in building his career.

The real problem, he said, were the “unnecessary” requirements for submitting a project, or even the “rigidity” of the requisites for using the released funds.

They literally demanded a differentiated procurement regime, not content with the openings already granted in the Innovation Law (Brasil, 2004), nor in the Differentiated Procurement Regime Law (Brasil, 2011). In general, the speeches were subject to the dogma of the “macroeconomic tripod” (inflation, interest, and exchange rate targets) — a concept still widely supported by the government and Congress. There were also reports that some money was being returned because managers were afraid to spend, afraid to commit themselves legally. Finally, we saw a strong contradiction in terms of the (non-)availability of resources. In some places, we saw the diagnosis that financial resources for the maintenance of public universities were scarce, while in other places the argument was that resources were held back by excessive formalism.

When a beautiful ocean liner stopped in Rio de Janeiro, a number of renowned scientists from all over the world would get off, go to Copacabana to drink *caipirinha*, and then go to UFRJ to see Rector Levi: “Professor Levi, we want to work at UFRJ.” “Thank you, but you can’t. You have to apply for a job”. “Ah! I want to work for free.” “You can’t do that either.” So if money comes pouring down and a ship full of the world’s best scientists stops by, we have nothing to do with it. If you try, the regulations won’t let you. This is the paradox of S&T in Brazil [...]. I repeat the paradox: too much regulation, too many regulators, not enough money, not enough human resources, which in the end leads to what? A lot of punishment for managers, for scientists, and little innovation, little scientific and technological production. (Balduino, 2013a)

There was not a single argument about the inadequacy of public funding for ST&I. What became obvious was a submission to the dictates of austerity and discomfort with the work of the external audit. For us, it is certain that there is no problem in the structure of university knowledge production. The existing difficulties (maintenance, updating) stem from chronic underfunding, and this requires more, not less, from the state. In our opinion, the problems related to the productivity of Brazilian workers, *per capita* gross domestic product (GDP) and inequalities (between classes and between regions) stem from the structure of production and the export agenda — which requires a national project (project as mission) and long-term investments to change.

On the purchases and acquisitions side, the “debureaucratization” agenda for access to public funds and “exemption” for imports demonstrated the limitations of the entities’ influence on the enactment of the legal framework for ST&I. Even though the initial proposal of the consortium of entities was maintained in principle, although the model of the differentiated regime was adjusted during the legislative debate, the presidential vetoes finally removed this agreement from the body of the sanctioned legislation. We do not mean to emphasize that this was a defeat for the consensus of the entities, but only to recall that this was a controversial aspect of the relationship between the Congress and the government at the time, and that no consensus was reached.

On the accountability side, the main demands were an unwillingness of the control bodies to deal with the procedures required by the research projects, as well as a need to computerize the control instruments. According to the organizations, the actions of the control bodies did not consider the specificities of the field and even led to episodes of embarrassment and harassment of academic managers. In addition, the obsolescence of the tools used to justify spending was an obstacle to the dynamism that ST&I require. From our perspective, these defenses touch on a loss of social control over financial resources — something that even the Brazilian Court of Audit (TCU) representatives denounced at the hearings.

Nobody wants it, and we don't want it — we told the prosecutor, the AGU [Attorney General's Office], the TCU — we don't want to be monitored. Our life is an open book. I think we are monitored nationally and internationally for what we do. Each of our publications is submitted to several colleagues. Therefore, we are supervised. However, there have to be some changes. If we continue with the import law that is in place, we'd better stop, we'd better remove innovation because there's also a law that says that everything is auctioned. (Nader, 2013)

For us, too, the abandonment of audits by the control bodies and their replacement by double-blind review mechanisms, or at least the limitation of the power of control to the highest collegial bodies of research institutions (in which the researchers themselves have a privileged place), could lead to setbacks in the transparency of spending. In this regard, the work of the legal offices of federal public universities was mentioned, always negatively. According to the organizations, ST&I managers have no legal support from the AGU. Like the control bodies, the legal offices lack competence and sensitivity to the nature of research activities. That's why they would always be inclined to veto projects in this area.

It is clear to us that the demands presented by the entities refer to a specific conception of public policy for ST&I, in which the state should withdraw from the scene and make room for private initiative — as if they were competitors or adversaries. From this perspective, the harmful effects of a neoliberal approach to the problems caused by the underdevelopment of the economy become clearer. According to the arguments presented at the public hearings, once the problems of operational control have been solved, national companies would naturally be able to compete on the world market.

As for the category of technological risk, an agenda translates into what could be called “risk-free capitalism”. The organizations defend the argument that companies would invest more in ST&I if they had maximum business security. We can see two neoliberal elements here: a naturalization of the curtailment of public investment in universities and optimism about the ability (or even interest) of private actors to invest in this area.

Both mainstream economists and IMF agents, in their recent findings, recognize as an empirical fact that austerity measures and macroeconomic targets, pursued at all costs in a decontextualized and ahistorical perspective, are not sufficient to trigger development. Moreover, according to these same experts, it is foolhardy to expect the private sector to take the reins of technological development in the national interest. According to the evidence we have examined here, the search for innovative knowledge depends on extremely risky investments of considerable sums. The monopolistic tendency of capitalism makes it even more prohibitive for small and medium-sized entrepreneurs to take the initiative.

Only the state is capable of taking so much risk and mobilizing so many resources in this endeavor. If gathered around long-term goals and strategically allocated, national capital would even replace foreign savings as the engine of growth. This was the formula followed in Brazil in the 1930s and again in the 1950s and 1960s, leading to the robust productivity gains of the 1970s and 1980s. It was also the policy of the Asian tigers and China, with some adaptations to local contexts.

The use of laboratories, the ceding of the so-called public space to private initiative to generate new knowledge for society. It must be obvious how this can be done because the interpretation that has been given is that 1 millimeter of public property cannot be used for private companies. That is the current

legal framework for our universities, Congressman. And it's not true. Society wants this asset, and today, with Reuni and the incentives we've had, which have grown strongly recently, we make our entire physical and laboratory infrastructure available to those who want to generate new knowledge in partnership with us. (Bermúdez, 2013)

What we mean by this is that there is plenty of room for both government and private enterprise (concomitantly) in this area. It is not necessary to demonize one side and acknowledge all the virtues of the other. Government support and guidance can generate chains and allow entrepreneurs to take advantage of the resulting demand. The strict view of innovation as incremental, as just another input in the production line, is detrimental if we want to increase the density of the industrial park and the complexity of the economy.

This view is also responsible for the demand that academic productivity criteria take into account the work of scientists in companies, participating in the supply of products and services as goods. Another demand concerns the participation of technical and teaching researchers (statutory civil servants) in company profits. Once again, we see that this argument is based on individualism, which presents the benefits of ST&I only in terms of immediate financial value.

Private R&D centers behave somewhat differently from public R&D centers. The private one has a problem: it has to have a payback. Naldo, payback? Are you kidding me? Yep. Of what they invest in R&D centers, they have to make multiples to pay for the investment. And how does a private R&D center pay for the investment, in other words, offer payback? If it doesn't exist in Brazil, it won't exist in Brazil. Because everywhere in the world they look for the payback. So what does it look like? Well, I can have the following: I make the technology, I have a factory next door, and the country is so agile, in terms of the transfer mechanism, that I leave R&D and the next day it's on the production line; I can test it; it goes back to R&D; from R&D it goes back to the production line; then I integrate equipment; it quickly becomes a product and goes out into society. Then somebody says: Wow, this is such a good place because I'm here, I'm already testing, I'm already piloting, I'm bringing it to market; I'm coming back. I'm fast. The R&D center here has a good environment in which to circulate. Unfortunately, this is not yet the reality in Brazil. We have plenty of restrictions. For example, if I buy eight trucks worth 8 million euros to make the autonomous mining system, after I finish the research, I have to put the eight trucks in the garage because it's research material. I can't put them into production. If I do, the TCU will explode: you can't do that. (Dantas, 2013b)

Our criticism is that it would be necessary to understand the production of knowledge as a public good (like the law of gravity or national defense), under penalty of "confusing the things of logic with the logic of things". There is no path to development if we think that all capital investments by companies must be made in the form of short-term profits — there is a tendency to underprovide what is socially necessary. As an antidote, we need the state as a risk-taker and as a financier of scientists who produce "nothing but" ideas — nothing "usable" yet.

At the same time, private initiative must follow and be encouraged to take advantage of the system's adjacencies. It is also desirable for private companies to receive credit from the Treasury, in which case they must be extremely committed to the long-term goals of the policy. Recently, we have noticed that subsidy policies for some sectors have not yielded the expected returns, precisely because of the lack of effective social control.

Regarding the biodiversity agenda, the influence of the organizations has been very strong. The problems and solutions identified regarding access to genetic heritage for research purposes were widely accepted by the legislature. Although they were not the only entities responsible for the enactment of the new Biodiversity Law, the movement that took place during the processing of Bill 2.177/11 provided a favorable context for the implementation of bolder policies. In general, the demands revolved around making the rules more flexible and eliminating certain prior authorizations. Once again, the aim was to make access more agile, and only when the activity was profitable would authorizations from official bodies be necessary — translating as “efficiency,” less state regulation, and greater freedom for private actors.

Finally, when analyzing the category that deals with the career of teacher-researchers in public teaching, research, and extension institutions, the horizon on which the demands of the organizations are based became even clearer. An issue was hotly debated by all the main proponents of the project, not least because almost all the representatives were teachers and academic managers. Anchored in the status conferred by scientific knowledge and the social position of intellectuals, these representatives ascribed to themselves a special technical capacity to increase national productivity.

We, the public universities in this country, are suffering in the flesh. What is the great debate about the exclusive dedication — or not — of professors in federal universities? The pressure that comes with any private activity from the control bodies has been intense on university professors, and therefore this must be provided for in this regulatory framework. (Bermúdez, 2013)

According to the speeches, the greatest needs that stand out today in the relationship between universities and companies relate to the working conditions of university staff, both because they earn outdated salaries (the result of underfunding) and because they are prevented from working outside the premises of the institution where they are based. As a solution, they asked for leniency from the inspectorates to justify working hours in companies — obviously with fewer hours dedicated to the university. At the same time, they were looking for the chance to share in the profits of the company, which to us shows the prominence of particular departmental interests harming universal academic interests — not to mention the weakening of national interests.

So the key word should be “allow” and not “you can’t”. Everything is “can’t”, “can’t”. You have to allow it. Everywhere in the world, the researcher can. He can buy things at the last minute. He can do it. He can hire, and it works. So we already have important tools. (Gargioni, 2013)

The limitations we have reached in this work are due to three factors. First, we recognize that we did not have the time to delve more deeply into the theoretical lines that deal with the phenomena of technology and innovation — from a philosophical, sociological, and anthropological point of view. The literature that discusses the history of civilization’s technical development, combined with a rigorous discussion of its impact on sociability and the economy, could have provided more elements to ensure that the entities’ vision would be biased in other dimensions.

In addition, our proposal to verify how the organizations defended the interests of the university as an educational institution was frustrated precisely because they were silenced in the debate. This is certainly the result of the research, but it prevents us from commenting. We can see that the lack of mention means a discrediting of this role of the university, although it does not allow us to go further.

Finally, in order to adequately characterize the limitations of this research, it is important to emphasize our choice of a study focused on the university field. Our hypotheses already led us to believe that the representatives of the protagonist organizations used their academic (and management) experience and know-how to support their positions. In addition to being academic managers and entrepreneurs, we also thought these professionals had originally worked in higher education institutions. For epistemic reasons, we limited our focus to the daily work of teaching and research in universities (especially public universities).

FINAL CONSIDERATIONS

In terms of what we have delivered because of the research, our expectation is that the material presented will contribute to the debate on innovation and science. We have tried to understand how the professional associations representing science and research institutions (especially public ones) in Brazil have positioned themselves in the debate on national development. We are certain that we have presented a well-mapped set of discourses that can encourage other research to look at the interaction between universities and the productive system. We have also tried to explore the consequences of legislation on higher education, although the organizations have made little mention of this phenomenon.

Strictly speaking, our findings are the result of a study of the institutional speeches delivered at the National Congress hearings between 2013 and 2015 that approved the text of the new legal framework for ST&I. These speeches were delivered in a chronological series that, despite nuances, maintained a remarkable programmatic cohesion. The objectives of the study were achieved when we recorded the progress of the bill, identified the prominent entities, and broke down the speeches — by time and by category. This operation made it possible to build tables with the problems and solutions (according to the hegemonic view) seen by the actors, as well as to synthesize the sphere in which they were located, based on significant expressions.

We argue that this century's public policies for ST&I have been drafted by a few scientific organizations with a rhetorical foundation in neoliberal precepts (austerity). The premises from which these organizations start touch only one side of the most persistent problems of the national economy and propose partial solutions for growth (the vicar's metaphor). Silence on the problems of recent deindustrialization and the absence of a national development policy testify to the fact that overcoming backwardness is subject to the global dynamics of capital circulation. Obviously, the prescriptions of international agencies for the exercise of a political economy that limits government spending are not discussed. Public policy for ST&I is "market oriented", as it is in the short term because that is the horizon of the private agent's calculations.

In summary, an innovation perspective that is not systemic and structural is partial, outdated, and exclusionary. The organizations expressed this perspective effusively throughout the legislative process, and it became hegemonic in the legal framework for ST&I. We believe that development policies must recognize the role of innovation in the wealth of nations, but also protect it from the dangers of monopoly and the poverty trap. For us, a public policy that is up to the challenge must be mission-oriented, reconfiguring national industry as a way of organizing resources and needs from a long-term perspective — with a view to accelerating development. The role of Brazil's public universities in this process is essential, but it must also be linked to the interests of the national project.

Regarding the possible consequences for future research, there are two possible vectors. The concept of innovation as an activity external to the university's constitutional attributions

suggests that there is no direct relationship between this activity (innovation) and research or extension. However, we also found speeches from the organizations that linked innovation to research, especially when the organizations demanded flexibility in accepting projects, as if this were a duty and not a right of the researcher. In this way, a more accurate study of the scope of the concept of innovation in its relationship with research (and with university extension) would provide many elements for improvement — in terms both of the human and of the material resources allocated to each activity.

Finally, we have explored the naive defense of the role of private companies in generating jobs and income in the field of innovation, in parallel with the contingency of public investment in higher education and the loss of social control over the field of ST&I. Other perspectives, such as microeconomic mechanisms or global value chains, can be further unraveled by researchers in the field. Furthermore, for those dedicated to the study of discourses and public policies for ST&I in Brazil, the transcripts of the hearings recorded at the end of the research offer plenty of material for even deeper or more focused analysis.

REFERENCES

BALDUÍNO, Gustavo. **Fala Institucional da ANDIFES na 2ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília. Anexo II, Plenário 07, 7 maio 2013a. Available at: <https://imagem.camara.leg.br/internet/audio/Resultado.asp?txtCodigo=44078>. Access on: February 03, 2022.

BALDUÍNO, Gustavo. **Fala Institucional da ANDIFES na 4ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília: 2013b. Available at: <https://www.camara.leg.br/internet/sitaqweb/TextoHTML.asp?etapa=11&nuSessao=0559/13>. Access on: February 03, 2022.

BERMÚDEZ, Luis Afonso. A. **Fala Institucional da ANPROTEC na 3ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília. Anexo II, Plenário 09, 14 maio 2013. Available at: <https://imagem.camara.leg.br/internet/audio/Resultado.asp?txtCodigo=44182>. Access on: February 03, 2022.

BIELSCHOWSKY, Ricardo. Cinquenta anos de pensamento na Cepal – uma resenha. In: BIELSCHOWSKY, Ricardo (ed.). **Cinquenta anos de pensamento na Cepal**. Rio de Janeiro: Record, 2000. p. 490.

BOURDIEU, Pierre. The specificity of the scientific field and the social conditions of the progress of reason. **Social Science Information**, v. 14, n. 6, p. 19-47, 1975.

BOURDIEU, Pierre. **Contrafogos: táticas para enfrentar a invasão neoliberal**. Rio de Janeiro: Zahar, 1998.

BOURDIEU, Pierre. **As estruturas sociais da Economia**. Porto: Campo das Letras S.A., 2006.

BOURDIEU, Pierre. **Homo academicus**. 2ª ed. Florianópolis: EdUFSC, 2011.

BRASIL. **Lei nº 10.973, de 2 de dezembro de 2004**. Dispõe sobre incentivos à inovação e à pesquisa científica e tecnológica no ambiente produtivo e dá outras providências. Diário Oficial da União: seção 1, Brasília, DF, p. 2, 3 dez. 2004.

BRASIL. **Lei nº 12.462, de 4 de agosto de 2011.** Institui o Regime Diferenciado de Contratações Públicas – RDC; altera a Lei no 10.683, de 28 de maio de 2003, que dispõe sobre a organização da Presidência da República e dos Ministérios, e a Lei no 8.666, de 21 de junho de 1993, que institui normas para licitações e contratos da Administração Pública e dá outras providências. Diário Oficial da União: seção 1, Brasília, DF, p. 1, 5 ago. 2011.

BRESSER-PEREIRA, Luiz Carlos. **A construção política do Brasil:** sociedade, economia e Estado desde a independência. 3. ed. São Paulo: Editora 34, 2016.

CARLOTTO, Maria Caraméz. **Veredas da mudança na ciência brasileira:** discurso, institucionalização e práticas no cenário contemporâneo. São Paulo: Scientiae Studia/Editora 34, 2013.

CARLOTTO, Maria Caraméz. **Universitas semper reformanda?** a história da Universidade de São Paulo e o discurso da gestão à luz da estrutura social. Thesis (Doctorate in Sociology) – Faculdade de Filosofia, Letras e Ciências Humanas, Universidade de São Paulo, São Paulo, 2014.

CARVALHO, André Roncaglia de; CARDOSO, Fernanda Graziella. Elementos de complexidade na Economia do Desenvolvimento de Furtado e Noyola. **Economia e Sociedade**, v. 30, n. 1, p. 91-114, 2021. <https://doi.org/10.1590/1982-3533.2020v30n1art05>

CARVALHO, André Roncaglia de; GALA, Paulo. **Brasil, uma economia que não aprende:** novas perspectivas para entender nosso fracasso. São Paulo: Edição do Autor, 2020.

CASTELO, Rodrigo. O canto da sereia: social-liberalismo, novo desenvolvimentismo e supremacia burguesa no capitalismo dependente brasileiro. **Revista Em Pauta: teoria social e realidade contemporânea**, v. 11, n. 31, p. 119-138, 2013. <https://doi.org/10.12957/rep.2013.7562>

CHANG, Ha-Joon. **Chutando a escada:** a estratégia do desenvolvimento em perspectiva histórica. São Paulo: UNESP, 2004.

CORDER, Solange Maria. **Financiamento e incentivos ao sistema de ciência, tecnologia e inovação no Brasil:** quadro atual e perspectivas. Thesis (PhD in Scientific and Technological Policy) – Universidade Estadual de Campinas, Campinas, 2004.

CUNHA, Luiz Antônio. **A universidade temporã:** o ensino superior da Colônia à Era Vargas. Rio de Janeiro: Civilização Brasileira, 1980.

DAGNINO, Renato. A Anomalia da Política de C&T e sua Atipicidade Periférica. **Revista Iberoamericana de Ciencia, Tecnología y Sociedad-CTS**, v. 11, n. 33, p. 33-63, 2016. ISSN: 1850-0013

DANTAS, Naldo. **Fala Institucional da ANPEI na 2ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília. Anexo II, Plenário 07, 7 maio 2013a. Available at: <https://imagem.camara.leg.br/internet/audio/Resultado.asp?txtCodigo=44078>. Access on: February 03, 2022.

DANTAS, Naldo. **Fala Institucional da ANPEI na 7ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Faculdade de Direito da Universidade de São Paulo: São Paulo: 2013b. Available at: <https://www.camara.leg.br/internet/sitaqweb/TextoHTML.asp?etapa=11&nuSessao=0923/13>. Access on: February 03, 2022.

DIAS, Rafael de Brito. **A trajetória da política científica e tecnológica brasileira**: um olhar a partir da análise de política. Tese (Doutorado em Política Científica e Tecnológica) – Universidade Estadual de Campinas, Campinas, 2009.

DIAS JÚNIOR, José Augusto. **Os contos e os vigários**: golpes, trapaças e mentalidades em São Paulo, 1930-1960. Campinas: UNICAMP, Instituto de Filosofia e Ciências Humanas, 2003.

DINIZ, Eli. O Pós-Consenso de Washington: globalização, Estado e desenvolvimento revisitados. Mesa-Redonda 16, O Desenvolvimento Revisitado apresentado em **30º Encontro Anual da ANPOCS**, 2006. Available at: http://neic.iesp.uerj.br/o_pos-consenso_de_washington.pdf. Access on: January 11, 2022.

FILIPPINI, Michele. Partido. In: LIGUORI, Guido; VOZA, Pasquale (eds.) **Dicionário Gramsciano (1926-1937)**. São Paulo: Boitempo, 2017.

FONSECA, Paulo de Freitas Castro. Imaginários sociotécnicos e política de Ciência, Tecnologia e Inovação no Brasil: uma leitura crítica do Novo Marco Legal. In: PEREIRA, Reginlado; WINCKLER, Silvana; TEIXEIRA, Marcelo Markus (eds.). **A governança dos riscos socioambientais da nanotecnologia e o marco legal de ciência, tecnologia e inovação do Brasil**. São Leopoldo: Karywa, 2017. p. 200.

FURTADO, Celso. **Dialética do desenvolvimento**. Rio de Janeiro: Fundo de Cultura, 1964.

GALA, Paulo. **Política cambial e macroeconomia do desenvolvimento**. Thesis (PhD in Economics) – Fundação Getúlio Vargas, São Paulo, 2006.

GALA, Paulo. **Complexidade econômica**: uma nova perspectiva para entender a antiga questão da riqueza das nações. Rio de Janeiro: Contraponto, 2017.

GARCIA, Loreley. Água em três movimentos: sobre mitos, imaginário e o papel da mulher no manejo das águas. **Gaia Scientia**, v. 1, n. 1, 20 mar. 2007.

GARGIONI, Sergio Luiz. **Fala Institucional do CONFAP na 4ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília: [s.n.]. Available at: <https://www.camara.leg.br/internet/sitaqweb/TextoHTML.asp?etapa=11&nuSessao=0559/13>. Access on: February 03, 2022.

GRAMSCI, Antonio. **Cadernos do cárcere**. Rio de Janeiro: Civilização Brasileira, 1999. v. 1.

GRAMSCI, Antonio. **Cadernos do cárcere**. 3. ed. Rio de Janeiro: Civilização Brasileira, 2007. v. 2.

HARVEY, David. Neoliberalismo como destruição criativa. **InterfacEHS – Revista de Gestão Integrada em Saúde do Trabalho e Meio Ambiente**, v. 2, n. 4, 2007.

HARVEY, David. **O enigma do capital**: e as crises do capitalismo. São Paulo: Boitempo, 2011.

HAUSMANN, Ricardo; HIDALGO, César A.; BUSTOS, Sebastián; COSCIA, Michele; SIMOES, Alexander; YILDIRIM, Muhammed A. **The atlas of economic complexity**: Mapping paths to prosperity. [S.l.]: MIT Press, 2014.

HAUSMANN, Ricardo; RODRIK, Dani. **Economic development as self-discovery**. Journal of development Economics, v. 72, n. 2, p. 603-633, 2003.

INTERNATIONAL MONETARY FUND (IMF). **Enhancing International Monetary Stability – A Role for the SDR?** Washington: IMF, 2011. Available at: <https://www.imf.org/external/np/pp/eng/2011/010711.pdf>. Access on: January 11, 2022.

KERR, Clark. **Os usos da universidade**. Fortaleza: EDUFC, 1982.

LOPES, Carlos. Crescimento econômico e desigualdade: As novidades pós-Consenso de Washington. **Revista Crítica de Ciências Sociais**, v. 94, p. 3-20, 2011. <https://doi.org/10.4000/rccs.1475>

MAASSEN, Peter; OLSEN, Johan P. **University Dynamics and European Integration**. Dordrecht: Springer, 2007.

MANCIBO, Deise; SILVA JUNIOR, João dos Reis; SCHUGURENSKY, Daniel. A educação superior no Brasil diante da mundialização do capital. **Educação em Revista**, v. 32, n. 4, p. 205-225, 2016. <https://doi.org/10.1590/0102-4698162033>

MAZZUCATO, Mariana. **O estado empreendedor: desmascarando o mito do setor público vs. setor privado**. São Paulo: Portfolio-Penguin, 2014.

MAZZUCATO, Mariana. Don't defund the BBC. **Social Europe**, n. 04, 2021.

MAZZUCATO, Mariana; PENNA, Caetano. **The Brazilian Innovation System: A Mission-Oriented Policy Proposal**. Brasília: Centro de Gestão e Estudos Estratégicos, 2016. Available at: https://www.cgee.org.br/documents/10195/1774546/The_Brazilian_Innovation_System-CGEE-MazzucatoandPenna-FullReport.pdf. Access on: August 08, 2025.

MOREL, Regina Lúcia de Moraes. **Ciência e Estado: a política científica no Brasil**. São Paulo: T.A. Queiroz, 1979.

NADER, Helena. **Fala Institucional da SBPC na 7ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Faculdade de Direito da Universidade de São Paulo: São Paulo: [s.n.]. Available at: <https://www.camara.leg.br/internet/sitaqweb/TextoHTML.asp?etapa=11&nuSessao=0923/13>. Access on: February 03, 2022.

OLIVEIRA, Giuliano Contendo de; MAIA, Geraldo; MARIANO, Jefferson. O Sistema de Bretton Woods e a Dinâmica do Sistema Monetário Internacional Contemporâneo. **Pesquisa & Debate**, v. 19, n. 02, p. 195-219, 2008.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD). **Manual de Oslo**. Brasília: FINEP, 2004.

OSTRY, Jonathan D.; LOUNGANI, Prakash; FURCERI, Davide. Neoliberalism: Oversold? **Finance & Development**, v. 53, n. 2, p. 38-41, 2016.

PAULA, Erico Lopes Pinheiro de; ROTHEN, José Carlos. **Entre a sereia e o vigário: discursos sobre Ciência, Tecnologia & Inovação no campo científico brasileiro**. 2021. Tese (Doutorado em Educação) – Universidade Federal de São Carlos, São Carlos, 2021. Available at: <https://repositorio.ufscar.br/handle/ufscar/14703>. Access on: February 03, 2022.

RAUEN, Cristiane Vianna. Novo marco legal da inovação no Brasil: o que muda na relação ICT-empresa? **Radar - Tecnologia, Produção e Comércio Exterior**, n. 43, p. 21-35, 2016.

REINERT, Erik S. **Como os países ricos ficaram ricos e por que os países pobres continuam pobres**. Rio de Janeiro: Contraponto, 2016.

REINERT, Erik S.; REINERT, Sophus A. Mercantilismo e Desenvolvimento Econômico: Dinâmica Schumpeteriana, Construção Institucional e Benchmarking Internacional. **OIKOS**, v. 10, n. 1, p. 8-37, 2011.

ROMER, Paul M. Endogenous Technological Change. **The Journal Political Economy**, v. 98, n. 5, p. S71-S102, 1990.

SANTANA, Jaime. **Fala Institucional da SBPC na 1ª Audiência Pública da Comissão Especial** destinada a proferir parecer ao Projeto de Lei nº 2.177, de 2011, do Sr. Bruno Araújo, que “institui o Código Nacional de Ciência, Tecnologia e Inovação”. Câmara dos Deputados, Brasília. Anexo II, Plenário 12, 23 abr. 2013. Available at: <https://imagem.camara.leg.br/internet/audio/Resultado.asp?txtCodigo=43954>. Access on: February 03, 2022

SANTOS, Boaventura de Sousa. Da sociologia da Ciência à política científica. **Revista Crítica de Ciências Sociais**, n. 1, p. 11-56, 1978.

SCHUMPETER, Joseph A. **Capitalismo, Socialismo e Democracia**. Rio de Janeiro: Zahar, 1984.

SCHWARTZMAN, Simon. **Ciência, Universidade e Ideologia: a política do conhecimento**. Rio de Janeiro: Centro Edelstein de Pesquisas Sociais, 1980.

SCHWARTZMAN, Simon. **Um espaço para ciência: a formação da comunidade científica no Brasil**. Brasília: MCT, 2001.

SCHWARTZMAN, Simon. Pesquisa universitária e inovação no Brasil. In: CENTRO DE GESTÃO E ESTUDOS ESTRATÉGICOS (CGEE). **Avaliação de políticas de ciência, tecnologia e inovação: diálogo entre experiências internacionais e brasileiras**. Brasília: CGEE, 2008. p. 251.

SHINN, Terry; RAGOUET, Pascal. **Controvérsias sobre a ciência: por uma sociologia transversalista da atividade científica**. São Paulo: Editora 34, 2008.

SILVA JUNIOR, João dos Reis. **O professor pesquisador nas universidades públicas no contexto da internacionalização do capital: a produtividade do trabalho imaterial superqualificado**. Rev. Port. de Educação, v. 22, n. 1, p. 145-177, 2009. <https://doi.org/10.21814/rpe.13956>

SILVA JUNIOR, João dos Reis. **The New Brazilian University: a busca por resultados comercializáveis**. Bauru: Canal 6, 2017.

SILVA JUNIOR, João dos Reis; CATANI, Afrânio Mendes; DE AZEVEDO, Mário Luiz Neves de. Reformas de la educación superior en América Latina: Los casos de Argentina y Brasil. **Fundamentos en Humanidades**, n. 9, p. 9-28, 2004. ISSN: 1414-4077

SILVA JUNIOR, João dos Reis; SGUISSARDI, Valdemar. A nova lei de educação superior: fortalecimento do setor público e regulação do privado/mercantil ou continuidade da privatização e mercantilização do público? **Revista Brasileira de Educação**, n. 29, p. 5-27, 2005. <https://doi.org/10.1590/S1413-24782005000200002>

SILVA JUNIOR, João dos Reis; SGUISSARDI, Valdemar. **Trabalho intensificado nas federais. Pós-graduação e produtivismo acadêmico**. São Paulo: Xamã, 2009.

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ABOUT THE AUTHORS

ÉRICO LOPES PINHEIRO DE PAULA holds a PhD in education from the Universidade Federal de São Carlos (UFSCar). He is a technician in educational affairs from the same institution.

JOSÉ CARLOS ROTHEN holds a PhD in education from the Universidade Metodista de Piracicaba (UNIMEP). He is an associate professor at the Universidade Federal de São Carlos (UFSCar).

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