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# Science and technology in the international politics of sustainable development: an analysis of the discursive representation in the Rio+20 outcomes

## Ciência e tecnologia na política internacional de desenvolvimento sustentável: uma análise da representação discursiva nos resultados da Rio + 20

## Abstract

The critical discourse analysis (CDA) applied to the text "The Future We Want," produced by the United Nations Conference on Sustainable Development (aka Rio+20), sought to identify the discourses used in depicting the subject of science and technology in the geopolitics of sustainable development. CDA's theoretical-methodological apparatus reveals a belief that technological innovations will be able to offer solutions for the development issues and guide political decisions toward sustainability.

## Resumo

A análise crítica de discurso (ADC) aplicada ao texto "O futuro que queremos", produzido pela Conferência das Nações Unidas sobre Desenvolvimento Sustentável (Rio+20), procurou identificar os discursos utilizados para descrever o tema da ciência e tecnologia na geopolítica do desenvolvimento sustentável. O aparato teórico-metodológico da ADC revela a crença de que as inovações tecnológicas serão capazes de oferecer soluções para os problemas de desenvolvimento e orientar as decisões políticas em direção à sustentabilidade.

## Introduction

The challenge of sustainable development calls for a close relationship between countries and various social actors, with collaboration, coordination, and solidarity at the international level. Such an endeavor requires the collective construction of a global

governance system that allows for the transition to a development model based on the concepts of shared prosperity, social capital, the common good, and cooperation (Ostrom 2011).

The United Nations Conference on Environment and Development, aka Rio+20, held in Rio de Janeiro in 2012, sought to bring together social and political forces in favor of sustainable development, with the goal of renewing member-states' political commitment to sustainable development. The Rio+20 final outcomes took the form of a document titled "The Future We Want." This document offers a synthesis of the decisions made at the conference, presenting a commitment to "ensuring the promotion of an economically, socially and environmentally sustainable future for our planet and for present and future generations."

This article seeks to analyze the document "The Future We Want" via critical discourse analysis (CDA), focusing on discourses that revolve around the geopolitics of development in relation to the theme of science and technology. Through CDA's theoretical-methodological apparatus, we sought to identify discursive elements and arguments that reveal the transformative and emancipatory potential in the ways that outcomes from Rio+20 represented the theme of science and technology. Corson, Campbell and Macdonald (2014) argue that negotiations — and so the outcomes — taken place in global environmental meetings can reflect and transform relations of power in environmental governance.

Acknowledging that we are currently experiencing a multidimensional crisis of the prevailing development model (Buarque, O erro do sucesso 2014, Bursztyn 1994, Morin 2011), this article seeks to assess whether the discourses on science and technology evident in Rio+20's final document point to changes in or the maintenance of the hegemonic order in the context of the geopolitics of development.

## Methodology

Critical discourse analysis (CDA) is a theory and an analytical method that focuses on processes of change both in discourse and in the power relations between social actors (Fairclough 2012). As it is "oriented toward comprehension of the ways through which the discursive element works in social practice, specifically with regard to its effects on hegemonic struggles" (Resende 2012, 441), CDA is an adequate theoretical-methodological apparatus for identifying discourses in the Rio+20 results and revealing the power dynamic between the participants.

CDA is different from interpretation of text or textual analysis, as it is founded on sociological theory and its main concern is to establish connections between discursive elements and social change–inducing mechanisms (Fairclough 2001, 102, Resende 2008, 99) "Discursive analysis is thus explanatory: it weaves theory and empirical material to investigate (the meaning of) texts with an eye to their social impact" (Ramalho and Resende 2011, 109).

Through the use of linguistic categories applied to discursive analysis, we intend to map the workings of linguistic-discursive elements that reinforce or contest social practices. To identify

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discourses that depict the theme of science and technology as well as the potential for transformation and emancipation in this depiction in the Rio+20 document in relation to hegemonic forces in the geopolitics of development, the main linguistic categories applied in the analysis of the text were interdiscursivity, intertextuality, cohesion, functions of speech, presuppositions, and the lexical choice associated with a semantic field.

The analysis took as its corpus the final document from the United Nations Conference on Environment and Development, titled "The Future We Want." The paragraphs in the document containing references to the theme of science and technology were highlighted in the text with the aid of a program, Nvivo 10 (QRS International 2013), for panoramic analysis. Using the program in the highlighted sections, we were able to map the discursive functions in the text as well as the depiction of discourses (interdiscursivity) and the connections with other texts (intertextuality) in the representation of the science and technology theme. The tool "frequency of words" in Nvivo was useful to the statistical analysis and facilitated visual representation by generating word clouds composed of the main lexical choices in the text, with the potential to indicate which semantic fields were activated.

## Science and Technology in "The Future We Want"

In the body of the text "The Future We Want," we identified 55 paragraphs[1] that make a reference to science and technology. The document devotes significant space to this theme, including a seven-paragraph section of (§269 to §276) titled "Technology" and a four-paragraph section (§277 to §280) titled "Capacity-Building."

The word cloud presented in Figure 1: Cloud of most frequent words in the excerpts from the document "The Future We Want" that include references to science and technology contains the 150 words (with three letters or more) that appear most frequently in these paragraphs. The terms "development" (appearing 67 times), "sustainable" (appearing 54 times), and "including" (appearing 43 times) were excluded from the word cloud to prioritize the comparative analysis of the occurrence of the other relevant terms, which recur in the text with frequencies varying from 45 times ("countries") to 5 times (31 words). This word cloud and the related statistical analysis were generated using the qualitative analysis software NVivo 10 (QRS International 2013).

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1   All 55 paragraphs of "The Future We Want" that include references to the theme of science and technology were considered in this analysis and contributed to the discursive analysis presented in this article. Nevertheless, only those paragraphs that proved most relevant for illustrating the text-oriented analysis have been transcribed. The paragraphs that are mentioned without indicating an excerpt number have not been transcribed, since their content is merely mentioned. Given the limitations of the scientific article, it is not possible to show the complete analysis here.

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**Figure 1: Cloud of most frequent words in the excerpts from the document "The Future We Want" that include references to science and technology**



Source: Created by author.

The words that make up the illustrated cloud in Figure 1 were associated with the semantic fields linked to the triple bottom-line (three pillars) of sustainable development, the semantic field of international geopolitics and the semantic field of science and technology. In this mapping, we see that words associated with the economic pillar (96 times) have the most frequent recurrence in the text compared to the social pillar (88 times) and the environmental pillar (89 times). Although the difference in the number of references is not significant, the qualitative analysis reveals that the economic pillar is the most strongly represented in addressing the subject of science and technology in the Rio+20 document, as we will see further on.

The paragraphs that address the subject of science and technology in the Rio+20 text use many words from the standard vocabulary in the field of international geopolitics. When considering references to the science and technology theme, the lexical density of this semantic field in the document can be observed in the high frequency of appearances of the word "countries" (43 times); adding related references to "nations" (7 times) means that there are 50 occurrences of the concept, an incidence greater than that for any other term or expression in the excerpts analyzed. We also see the incidence of the expression "developing countries," with 25 occurrences, and the terms "international" and "national," which have 23 and 17 occurrences, respectively, while the term "cooperation" appears 19 times in the excerpts analyzed. Thus, the representation of science and technology discourse in the Rio+20 document rests heavily on the discussion of development geopolitics, which is consistent with the style of the document (the declaration from a United Nations conference) and the context in which the document was produced (a discussion among Heads of State and Government and high-level representatives).

Therefore, we can observe that the four most frequently recurring questions regarding this discourse have to do with subjects that are common to the field of international relations. These themes are (1) international cooperation; (2) knowledge transfer and sharing of technology and innovation between countries; (3) the gaps between "developed countries" and "developing countries"; and (4) the need for a robust interface between science and politics and the scientific grounding of political decision-making related to sustainable development.

In the next section, we will analyze the recurring themes in scientific and technological development as the solution to sustainable development in "The Future We Want."

## Science and Technology in the World Geopolitcs of Development

The first reference to science and technology in the document "The Future We Want" was identified as appearing in §19, transcribed in excerpt 1. In this section, trade and technology transfer between countries are shown to be necessary for economic growth and diversification, social development, and environmental protection, which are, in turn, necessary for reducing the "development gaps" that separate countries and creating "opportunities to achieve sustainable development."

> *Excerpt 1: (§19) (…) We also recognize the need to accelerate progress in closing development gaps between developed and developing countries, and to seize and create opportunities to achieve sustainable development through economic growth and diversification, social development and environmental protection. To this end, we underscore the continued need for an enabling environment at the national and international levels, as well as continued and strengthened international cooperation, particularly in the areas of finance, debt, trade and technology transfer, as mutually agreed, and innovation, entrepreneurship, capacity-building, transparency and accountability (…) (excerpt).*

In the discussion laid out in excerpt 1, the association between science and technology and sustainable development is intermediated by many other elements, creating distance between the terms. Even so, the section includes mentions of three out of the four key subjects related to the geopolitics of development mentioned earlier: international cooperation, the gaps that separate developed countries and developing countries, and the need for technology transfer among nations. These three subjects reveals the link between science and politics depicted in the Rio+20 document. There is also a presupposition of the acceleration of "progress" as the path to overcoming challenges, as evidenced in the discourse at the very beginning of the excerpt, "the need to accelerate progress." In taking this "need" as a tenet, through the use of nominalization ("the need"), the discourse has the effect of obviating the recognition of other possibilities for understanding these relationships. Thus, the discourse of progress, reinforcing models already adopted by "developed" countries as adequate for the rest of the world, is reinforced in the text without even the need to be explicit.

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The excerpt 1 also expresses how this goal should be achieved: "through economic growth and diversification, social development and environmental protection" The cohesive element ("through") links the means to achieve sustainable development and the triple bottom line of sustainable development (economy, society, and environment) but focusing primarily on the economy.

We return to the subject of the "development gap" between countries in §48 with a discussion of academic and technological partnerships among developing countries. The text lists a number of benefits of such partnerships: the reduction of the technological gaps between countries, the strengthening of the interface between politics and science, and the promotion of international research cooperation on sustainable development initiatives.

Another possible solution for the development gaps between countries and the technological dependency of developing countries discussed in "The Future We Want" is the green economy, as laid out in §58 (excerpt 2), particularly item (i). According to this section, green economy policies must strengthen international cooperation, including the provision of financial resources, capacity-building, and technology transfer to developing countries.

> ***Excerpt 2:*** *(§58) We affirm that green economy policies in the context of sustainable development and poverty eradication should: (...)*
> *(f) Strengthen international cooperation, including the provision of financial resources, capacity-building and technology transfer to developing countries; (...)*
> *(i) Contribute to closing technology gaps between developed and developing countries and reduce the technological dependence of developing countries using all appropriate measures.*

If we analyze the relationship of continuity between items (f) and (i) of §58, it is clear that technology transfer to developing countries is indicated as an alternative that will eliminate the development gap between countries.

We see the same idea in §73 (excerpt 3), through the intertextual reference to the Plan of Implementation of Johannesburg (United Nations 2002), ratified by the UN member-states in February 2008.

> ***Excerpt 3:*** *(§73) We emphasize the importance of technology transfer to developing countries and recall the provisions on technology transfer, finance, access to information, and intellectual property rights as agreed in the Johannesburg Plan of Implementation, in particular its call to promote, facilitate and finance, as appropriate, access to and the development, transfer and diffusion of environmentally sound technologies and corresponding know-how, in particular to developing countries, on favourable terms, including on concessional and preferential terms, as mutually agreed. We also take note of the further evolution of discussions and agreements on these issues since the adoption of the Johannesburg Plan of Implementation.*

The text reinforces the importance of technology transfer to developing countries for the promotion of sustainable development and reminds us of the means to that end agreed upon by United Nations member states at the Johannesburg Summit and set out in the Plan of Implementation

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developed there. It must be noted that there is no mention of South–South cooperation policies for scientific-technological development in §73.

There is a great emphasis on development gaps among different countries in the 55 paragraphs of the document, which make references to science and technology. Developing countries are explicitly mentioned in 22 out of the 55 paragraphs analyzed. Since decision making at the UN and by its member states will be based on the Rio+20 outcome text, whether or not it empowers developing countries to pursue a development model that is suitable to their realities and, therefore, sustainable is of utmost importance. So, it is necessary to analyze whether the discourse underpinning the argument in favor of technology transfer to developing countries takes a paternalistic or an emancipatory tone, or a combination of both.

## Technology Transfer: Emancipatory or Paternalistic?

In §273 (excerpt 4), the text presents a demand to the United Nations to promote "the development, transfer and dissemination of clean and environmentally sound technologies." In this section, the text highlights developing countries' "technology needs." In so doing, the text highlights the technological fragility of developing countries, also sow in excerpt 1, suggesting that foreign intervention is needed to promote their technological advancement, which is deemed indispensable for sustainable development.

> *Excerpt 4: (§273) We request relevant United Nations agencies to identify options for a facilitation mechanism that promotes the development, transfer and dissemination of clean and environmentally sound technologies by, inter alia, assessing the technology needs of developing countries, options to address those needs and capacity-building. We request the Secretary-General, on the basis of the options identified and taking into account existing models, to make recommendations regarding the facilitation mechanism to the sixty-seventh session of the General Assembly.*

The function of speech most apparent in excerpt 4 is the demand, characterized primarily by the use of the verbal command "to request." This function of speech reveals that the document alone is not enough to ensure decisions that fulfill the needs of "development, transfer and the dissemination of clean and environmentally sound technologies," frustrating the expectations that the Rio+20 text might have the potential to transform the current development model. We should note, however, that in mentioning the need for clean technologies, the §273 focuses emphatically on the needs of developing countries only, without any mention of the needs and importance of clean technologies for wealthy countries. That leads to the false assumption that developing countries will be the main polluters, due to their difficulty of accessing advanced clean technologies. Moreover, we see the articulation of an urgency discourse, as is evident in the final sentence of the §273 (excerpt 4), which asks that the Secretary-General make recommendations at the 67th UN General Assembly, the first to take place after Rio+20, regarding mechanisms for promoting development and transferring and

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disseminating clean technologies. Once again, the wording used to articulate this demand is "we request," which, even as it reflects the document's impotence in guiding decision-making, nevertheless invokes the sense of urgency attached to the proposals.

The text recognizes the need for a science-based, globally integrated information system on sustainable development. To that end, the document expresses a commitment to mobilizing financial resources and capacity-building efforts, especially for developing countries. The text then goes on to establish justifications for providing foreign aid to promote technological development in developing countries. In that light, §271 points to foreign direct investment, international trade, and international cooperation as necessary measures for the "development of environmentally sound technologies." It is interesting to observe the use of terms related to material processes, characterized by the use of the verb "to engage" in the last sentence in §271, with which the UN member-states, signatories of "The Future We Want," engage themselves "to promote investments in science and technology for sustainable development," whether in their own countries or through international cooperation.

International cooperation is repeatedly pointed to as being indispensable in grappling with the challenges of sustainable development in developing countries. Using the intertextual relationship with the Plan of Implementation of Johannesburg (United Nations 2002) and the Millennium Declaration (United Nations 2000), §120 argues that technology transfer is necessary to help developing countries achieve the goal of halving the number of people who lack access to clean water and basic sanitation by 2015. International cooperation and technology transfer are referred to elsewhere in the text to address other specific challenges of sustainable development, with special emphasis on the technology "needs" of developing countries (§273). Among these specific challenges are the development of sustainable agriculture (in §109 and §110); energy efficiency (in §128); the improvement of health systems (in §143); the sustainable use and conservation of marine resources (in §160); disaster risk reduction (in §187); the adaptation and mitigation of effects of climate change (in §191); and the sound management of chemical waste (in §215). In all these sections, the text emphasizes developing countries' struggle or failure to overcome the challenges of sustainable development on their own.

Establishing foreign intervention in developing countries as a necessity, §280 invites United Nations agencies and international organizations to support efforts in developing countries, and particularly in the least developed countries, to build resource-efficient, inclusive economies. There is an implicit paternalistic, perhaps colonialist discourse that reinforces the idea of developing countries' dependency on rich countries. Moreover, such a discourse exempts developed countries from responsibility for the world's primary sustainability problems, attributing those problems to the reality of developing countries. Also absent from the text is any allusion to wealthy countries' role in creating or aggravating the problems faced by developing countries.

This discourse feeds condescending attitudes characterized by concessional or preferential terms in international development agreements that offer "donations" of resources and technology transfer. That discourse reveals the asymmetrical nature of geopolitical power relations. Such practices are rarely emancipatory. They are part of a vicious cycle whereby developing countries give up on forging their own development paths.

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Contrasting with this paternalistic tone, however, we see a fissure in the discursive cohesion of the text in three paragraphs on science and technology that contain an emancipatory discourse. Item (g) of §76, for example, discusses the decision to stimulate developing countries' capacity to conduct their own processes of assessing and monitoring sustainable development in order to promote the interface between politics and science. §272 focuses on scientific collaboration, whether institutional or between scientists, to encourage technological capacity-building for sustainable development. The text highlights the contribution of partnerships that enable countries, especially developing countries, to produce their own innovative solutions, scientific research, and new environmentally sound technologies.

Notwithstanding, at the end of §272, the text mentions that it is possible for support from the international community in this scientific collaboration process to also bolster the developing countries' potential to mobilize partnerships to advance their own scientific development. In the same manner, §277 mentions the need to foster North–South, South–South, and triangular collaboration—that is, cooperation involving both developed and developing countries.

The North–South type of cooperation is the traditional model of aid and donations in which assets are transferred from developed countries to developing countries. But the South–South and triangular types of cooperation, mentioned in §277, suggest mutual collaboration among developing countries and legitimize the importance of these countries' contributions to one another's scientific and technological advancement. As such, the text recognizes the capacity of developing countries to generate technological advancement and innovation, portraying them as active agents of scientific and technological development, not merely recipients of technology transfer from developed countries. What the document does not recognize is the possibility that the technologies created in these contexts may benefit developed countries as well.

In §277, attention is also paid to the importance of human resource development. Training and education initiatives, experience exchange, and knowledge-sharing are posited to be indispensable because they stimulate the development of human capacity and the bolstering of institutional capabilities, all of which is necessary for sustainable development.

## Technological Development: Access to Education and Information Networks

According to §72 (excerpt 5) of the Rio+20 document, technology plays a crucial role in sustainable development, justifying efforts to promote innovation, research and development, and green economy in the context of sustainable development and poverty eradication.

> *Excerpt 5: (§72) We recognize the critical role of technology as well as the importance of promoting innovation, in particular in developing countries. We invite governments, as appropriate, to create enabling frameworks that foster environmentally sound technology, research and development, and innovation, including in support of green economy in the context of sustainable development and poverty eradication.*

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In §72, the choice of the process "recognize" ("We recognize") to express the centrality of technology in the debate is a striking one, since this mental process activates a presupposition of truth. Once again, it is also relevant to observe the act of speech that the document presents: an invitation ("We invite governments"), with the reinforcement "as appropriate."

A country's potential for scientific and technological development, as expressed in the document, is nevertheless determined by the population's access to high-quality education and information and communication technologies, as outlined in §44, §65, and §230 of the Rio+20 document. The §44 is reproduced below:

> *Excerpt 6: (§44) We acknowledge the role of civil society and the importance of enabling all members of civil society to be actively engaged in sustainable development. We recognize that improved participation of civil society depends upon, inter alia, strengthening access to information and building civil society capacity and an enabling environment. We recognize that information and communications technology is facilitating the flow of information between governments and the public. In this regard, it is essential to work towards improved access to information and communications technology, especially broadband networks and services, and bridge the digital divide, recognizing the contribution of international cooperation in this regard.*

Beyond technological and scientific development, §44 expresses the contribution of information and communication technologies to sustainable development by promoting, in theory, civil society's empowerment and improved participation. This excerpt also refers to the mental processes that activate the presuppositions: "*acknowledge*" and "*recognize*" are repeated—the latter, twice. The active engagement of civil society is considered vital to sustainable development. At the end of the paragraph, however, international cooperation is once again proposed as a measure to expand the population's access to broadband services and networks in order to reduce the digital gap that divides countries. But as they are portrayed in the §44, international cooperation initiatives reduce a country's capacity to conduct its own sustainable development processes, as shown previously.

The importance of communication technologies for sustainable development is explicit in §65. According to the text, in making the exchange of knowledge, technical cooperation, and skills development possible, such technologies have the potential to contribute in different areas of sustainable development. At the end of the paragraph, by underscoring that such contributions could happen in a "transparent and open manner," the text goes back to the idea sustained in §44 that social participation is important for sustainable development.

In §230, the text points out that information and communication technologies will contribute to development only to the extent that they are used effectively. Therefore, the text argues, education is vital for the application of these technologies and knowledge in advancing sustainable development. Universal access to top-notch higher education is a prerequisite for a sustainable future (Buarque 2012). Similarly, §230 emphasizes the need for an education system that prepares people to create sustainable development, which requires "enhanced teacher training, the development of sustainability

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curricula, [and] the development of training programmes that prepare students for careers in fields related to sustainability."

This section has a powerful emotional appeal, as it depicts young people as "guardians of the future." This rhetorical mechanism stresses the immediate need to invest in basic education to foster sustainable living conditions for the future generations. Yet this rhetoric also mitigates the responsibility of the current generation to change things now.

Evident throughout the Rio+20 text is the belief that technological advances offer solutions for the development challenges faced by the world and can help guide decision-making regarding sustainability issues. The document therefore argues in favor of the interface between politics and science so as to encourage decisions based on scientific knowledge that contribute to sustainable development.

The promotion of a robust interface between politics and science, which would allow political decisions to be based on scientific information and assessments, is portrayed in the text as an important function of sustainable development governance institutions. This function is referred to in the proposal of an institutional framework for sustainable development (mentioned in §76), with the creation of a high-level forum (mentioned in §85, items (k) and (l)), and in terms of strengthening and modernizing United Nations Environment Programme (UNEP) (mentioned in §88, items (c), (d), (e) and (f)).

Policies based on scientific evidence is also defended in §63. According to the text, rigorous evaluations of scientific data and analysis must be integrated into the decision-making process, thus contributing to the establishment of social policy necessary for sustainable development. Nevertheless, despite the recognition that social policies are vital for sustainable development and the presentation of proposals for a vigorous institutional framework with voluntary scientific collaboration that promotes scientific and technological development in service to sustainable development, the main mechanisms for scientific progress represented in the text are strongly anchored in economic mechanisms.

## Hegemonic Economic Discourse

In the lists of ideas contained in the paragraphs that make reference to science and technology, we can observe a recurring emphasis on economic elements over the other listed items. This reveals that the economic aspects are represented in the text as being more important than other measures for promoting sustainable development.

In the very first section of the text selected for its reference to science and technology—that is, in §19 (excerpt 1)—we see two lists that give precedence to economic aspects. First, the excerpt presents "economic growth and diversification, social development and environmental protection" as means to achieving sustainable development. The order in which the items appear reveals the greater importance given to economic measures in relation to other measures. It is interesting to observe, however, that of the excerpts selected for their reference to science and technology, this is the only one that mentions economic growth. The distinction between the terms "economic growth"

and economic development" is important if we consider the evolution of the concept of sustainable development in the context of the United Nations Conferences. In 1972, the publication of the report "Limits to Growth" spread the idea that the prevailing economic model at the time was bound by a natural limit, so that lasting economic growth would not be possible without causing irreversible damage to the environment. The report had a big impact in the discussions at the United Nations Conference on the Environment in 1972, in Stockholm, when the debates turned to development politics (and not economic growth), considering economic and social planning and its impacts on the environment. The debate grew more heated until the publishing of the report "Our Common Future", which adopted the term "sustainable development," reinforcing the concept of high-quality economic growth and its impact instead of just recommending economic growth as a solution for poverty reduction (Burzstyn and Bursztyn 2006).

Still in the §19, reproduced in excerpt 1, the second list emphasizes the need for continued and strengthened international cooperation, "particularly in the areas of finance, debt, trade and technology transfer." Again, we see the priority given to economic aspects here, revealing the mark of the hegemonic economic discourse in matters related to the sustainability tripod.

In other lists present in the text, we also observe the primacy of elements related to the economy and, in particular, the trade economy. This phenomenon can be observed in item (f) of §58 (excerpt 2), which refers to "provisioning of financial resources, capacity-building and technology transfer", and in §66 (excerpt 7 following), which argues for the "importance of linking financing, technology, capacity-building and national needs for sustainable development policies."

> ***Excerpt 7:*** *(§66) Recognizing the importance of linking financing, technology, capacity-building and national needs for sustainable development policies (…) (excerpt).*

The measures to meet specific challenges of sustainable development also give priority to economic aspects. In §109, "access to credit and other financial services" appears before proposed measures of agricultural revitalization. In §120, among efforts to increase access to clean water and basic sanitation, we have "the mobilization of resources from all sources, capacity-building and technology transfer"; here, too, measures of an economic nature take precedence.

Among the recommended measures to strengthen national health systems in §143, the "increased health financing" precedes "recruitment, development and training and retention of the health workforce." The next sentence offers proposals for improving the distribution of and access to medicines, vaccines, and medical technologies, describing them as "safe, accessible, effective and quality." The use of the term "affordable" as a qualifier, though it appears second in the list, emphasizes the economic aspect.

Later, §193 (excerpt 8, following) expresses a commitment to creating the necessary conditions for sustainable forest management with regard to the "areas of finance, trade, transfer of environmentally sound technologies, capacity-building and governance." Economic aspects are given priority in this list as well. Here, the prepositional phrase act as reinforcements as the discourse establishes and combines end relationships ("To this end") and instrumental/medium relationships ("by creating").

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> ***Excerpt 8:*** *(§193) (…) To this end, we commit to improving the livelihoods of people and communities by creating the conditions needed for them to sustainably manage arrangements in the areas of finance, trade, transfer of environmentally sound technologies, capacity-building and governance, as well as by promoting secure land tenure, particularly decision-making and benefit-sharing, in accordance with national legislation and priorities (…) (excerpt).*

Regarding the development of environmentally sound technologies in waste and chemical management, §217 highlights "public–private partnerships among industry, governments, academia and other nongovernmental agents," listing them in this order. Finally, §271 highlights the importance of "foreign direct investment, international trade and international cooperation" for the transfer of environmentally sound technologies, reinforcing the role of the economy for that purpose.

Other lists appear throughout the text[2], and even when they do not list elements related to the economic discourse, they do nothing to undermine that hegemonic discourse either. This is the case, for example, in section §191 (excerpt 9, following), underlined. In this section, the text lists initiatives to deal with the effects of climate change without mentioning measures of an economic nature; however, the economic aspect is present in the beginning of the sentence, which states (reinforcing the presupposition activated in the mental process in *"We recognize"*) the "importance of mobilizing funding" for initiatives dealing with climate change. Thus, §191 once more ratifies the discourse of economic primacy over other factors that are also relevant.

> ***Excerpt 9:*** *(§191) (…) We recognize the importance of mobilizing funding from a variety of sources, public and private, bilateral and multilateral, including innovative sources of finance, to support nationally appropriate <u>mitigation actions, adaptation measures, technology development and transfer and capacity-building in developing countries.</u> In this regard, we welcome the launching of the Green Climate Fund and call for its prompt operationalization so as to have an early and adequate replenishment process (…) (excerpt; our emphasis).*

Of the 55 paragraphs analyzed for their references to science and technology, the only §58 indicates a rupture in the cohesion of the hegemonic economic discourse, as seen in item (j) (excerpt 10):

> ***Excerpt 10:*** *(§58) We affirm that green economy policies in the context of sustainable development and poverty eradication should: (…) (j) Enhance the welfare of indigenous peoples and their communities, other local and traditional communities and ethnic minorities, recognizing and supporting their identity, culture and interests, and avoid endangering their cultural heritage, practices and traditional knowledge, preserving and respecting non-market approaches that contribute to the eradication of poverty.*

In §58, the text recognizes that nonmarket approaches may contribute to poverty eradication, and thus to sustainable development. Given that the excerpt specifically mentions issues related to

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2   he remaining lists that do not contain items related to the economic element will not be presented in this article, since the analysis of such lists neither corroborates nor refutes the link between the economic discourse and the science and technology discourse.

traditional communities, however, we can assume that the nonmarket approaches are relevant solely in that context, diminishing this statement's importance, especially when we consider surrounding text in this section—and its recurring lists.

The discourse of valorization and respect for traditional knowledge and indigenous peoples' and local communities' practices reemerges at the end of §197 (excerpt 11, which follows), with its discussion of the need to preserve biodiversity and ecosystems, and in §109, which mentions the importance of traditional agricultural practices. Yet the discourses articulated in these sections of the text do not contradict or stand apart from the hegemonic economic discourse, especially seeing that they appear in only these two sections. There is, however, a rhetorical reinforcement obtained with "*highlights*" and with the presupposition activated in "*the importance.*" Here, too, the choice of mental process, in "*We recognize*"—which appears repeatedly throughout the text, and twice in this excerpt—acts as a reinforcement.

> *Excerpt 11: (§197) This highlights the importance of the conservation of biodiversity, enhancing habitat connectivity and building ecosystem resilience. We recognize that the traditional knowledge, innovations and practices of indigenous peoples and local communities make an important contribution to the conservation and sustainable use of biodiversity, and their wider application can support social well-being and sustainable livelihoods. We further recognize that indigenous peoples and local communities are often the most directly dependent on biodiversity and ecosystems and thus are often the most immediately affected by their loss and degradation (excerpt).*

Although it is confined to a short section of the text, it is important to note the rupture in cohesion expressed in §58 (excerpt 2), for it stands out from the rest of the text and might signal a subtle discursive opening. In the remaining sections, the document agrees with the hegemonic economic discourse, which points to market practices as the most common manner of generating and distributing benefits (be they products, technologies, services, or otherwise) for society.

## Final Considerations

In performing a critical discourse analysis of the document "The Future We Want," we focused on the discourses that depict the theme of science and technology as being indispensable for sustainable development.

The representation of the discourse on science and technology in the Rio+20 document is based most strongly on arguments common to the field of developmental geopolitics, and less on scientific discourse per se. Besides the elements of developmental geopolitics present in the text, there is also a paternalistic discourse that depicts the neediness and dependency of developing countries in relation to wealthy countries through international cooperation. In the text, trade practices and market competition are recommended in order to promote production and innovation, and international

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cooperation as a means of distributing/transferring the benefits from technological and scientific advances to developing countries.

Notwithstanding, it is important to observe that the text does present brief ruptures in the discursive cohesion, which deserve mention. Contradicting the hegemonic economic discourse, the text points to the contribution of nonmercantile practices to poverty reduction. Regarding international relations, some sections of the text reinforce the importance of relations between developing countries. South–South cooperation partnerships are suggested for promoting scientific and technological advances development in developing countries, revealing a discourse that encourages emancipatory trends in world geopolitics. However, the possibility that these countries may also bring technological advances to wealthier countries is not recognized, which closes off the potential for constructing alternative development paradigms.

The discursive ruptures observed in the document, though they are not deep enough to call into question the prevalence of recurring hegemonic discourses, do express dissonant perspectives and may signal an opening for change in social practices with the potential to transform the development model toward sustainability. That has been happening, however, only in a timid manner.

Thus, "The Future We Want" lacks indications of a transformative discourse. Its proposals for sustainable development do not break with the current development model; on the contrary, they reveal a paternalistic, perhaps colonialist, discourse toward developing countries.

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