

The socioenvironmental dynamics of the Brazilian sugarcane agribusiness^ϕ

Abstract

This article discusses the socioenvironmental dynamics of the modern sugarcane agribusiness. The paper analyzes the effects of the economic activity of sugar cane production in the state of São Paulo,¹ based on the region of Ribeirão Preto, in the northwestern part of the state of São Paulo,¹ Brazil considered the world capital of ethanol. For this, the dimensions of exploitation of social work and natural resources, particularly water resources, will be addressed. The methodology is based on qualitative data, documents and reports of Public Court Hearing participants that occurred due to the deaths of workers supposedly due to exhaustion during the working day. The conclusions of this study indicate:

1. the authoritarian relations that make up the phenomenon, similar to those described by M Weber² in his interpretation of Junker capitalism in Germany, and
2. the need to bring together the social and environmental spheres in the analysis of accumulation processes in rural areas, revealing the material and symbolic dimensions that underpin the conservative modernization represented by agribusiness in Brazil;
3. the forms of resistance, especially those that come not only from the workers, but also from representatives of government organizations and non-governmental organizations.

Keywords: Rural work; Agriculture and environment; Work and environment

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Introduction

In an Arts and Sciences conference held in St. Louis, United States, in³ offered a remarkable interpretation of the expansion of modern capitalism in Germany's countryside.¹ Establishing the historical characteristics of the different types of capitalism consolidated in the rural areas of East and West Germany, as well as their distinctions in relation to the North American experience, the author highlighted the variety of rationalities, the specificities of the German cases and, above all, the authoritarian nature of the capitalism established west of the Elbe in terms of the meaning of the actions of the elites of agrarian and social structures. In this Weberian interpretation, the best representation of this authoritarian capitalism in eastern Germany is the figure of the Prussian Junker. Unlike the enterprising North American farmer, the Junker was less interested in the technical rationality of land use, the organization of production, and the management of farming as a capitalist-type business than in maintaining his social position, his prestige through land ownership and control of the State's actions, even interfering directly in the recruitment of the latter's bureaucratic rank and file. Thus, the transformations in agriculture east of the Elbe – or, in,² the metamorphoses of the Junker economy – did not have a capitalist-ideal sense, although they transformed the Junker, whose dream was to be a feudal lord, into a capitalist businessman. His farming and landowning interests resulted in the depopulation of eastern Germany, an area theretofore densely populated by peasants. In this movement, the Junker, a contradictory figure midway between the pure capitalist and the traditional landowner, attracted temporary workers from Poland, who, due to their low living standards and their acceptance of the high levels of labor exploitation characteristic of

the Junker agrarian structure, migrated and ended up contributing to the dispersal of the peasantry in eastern Germany. This brief introductory summary of the conflicts of rural German society in the 19th century seems appropriate for the introduction of a study about the recent development of the sugarcane agribusiness in Brazil. Underpinned by distinct social bases, at least three characteristics of the Junker economy can be identified in the development of this modern agribusiness in certain regions of this country: its brand of conservative modernism, which supports major landowning contradictions based on the strength of the large rural landowner class; its relations with the State, based on the patrimonialism and naturalization of social inequalities; and its authoritarian nature, expressed for instance, in the relationships of sugar mills with their workers and even with the institutions of social and environmental regulation of the sector's activities. Since the mid-1990s, the way in which the numbers of the growth in production and productivity of grains, such as soybeans, coffee, cotton, sugarcane, and by-products like alcohol and orange juice, have been presented has been decisive in consolidating how Brazilian society sees agribusiness. In this beginning of the century, the promises of socioenvironmental sustainability in the abstract discussion about biofuels continue to reiterate the brands of economic development fostered by the agents of agribusiness. However, supported by the conservative, patrimonial and authoritarian logic inherent to the Junker economy, the so-called indices of modernization are also accompanied by unemployment and serious environmental impacts. This paper aims to contribute toward a reflection about the forms of reproduction of this model of agriculture, whose symbolic values and production characteristics indicate social tensions that are simultaneously and contradictorily new and conservative. To this end, we will attempt to develop a concrete analysis of the social and environmental repercussions of the aforementioned model. This analysis purports to overcome precisely

¹This conference, entitled The relations of the Rural Community to other Branches of Social Science, is translated into Portuguese under the title Capitalismo e Sociedade Rural na Alemanha. See Weber, 1982.

the possibility of an abstract interpretation of the agribusiness phenomenon, restating the significant relationships that give concrete meaning (like unity of the diverse) to the dimensions of exploitation of social work and of natural resources within the ambit of the process of value production. Therefore, to build concrete reasoning in the terms proposed by Marx et al.⁴ we will initially interpret the more general forms of environmental degradation and of precarization of labor relations in this model of agriculture. To this end, we will utilize data from the national and Paulista (pertaining to the state of São Paulo) contexts, with emphasis on the visible and invisible elements that characterize the complexity of social labor in the region's agriculture. In the analysis of the environmental impacts of modern agroindustrial production, we start from the assumption proposed by,⁵ that the society–nature relationship is regulated less by institutional actions than by disputes between groups and social classes in search of hegemony in the forms of usage and appropriation of resources. In this context, from an analytical standpoint, the ecological processes circumscribed to value production environments take on a historical content that goes beyond the simple condition of biophysical basis of accumulation processes. In the analysis of labor relations, the notion of labor proposed by Arendt Hannah⁶ will be particularly interesting to assess the implications of the modes of workforce exploitation in the region's sugarcane plantations. Starting from a critical review of the relational dimension of the labor category in⁵⁻⁶ establishes a distinction of three moments in the course of this formation movement, namely, labor, work, and action. From the author's perspective, labor refers to the fundamental actions of human beings on nature to provide the conditions for their organic existence. Work is the exercise of dominion of the individual over nature, where teleological activity guides the creation and use of socially conditioned techniques of transformation of the natural environment. Action, in turn, defines referential frameworks within which the individual transcends his condition of worker towards politics in the broad sense. This is the moment of construction of environments for experimenting with other spheres of sociability, so that nature's barriers to labor are socially circumvented and the universe of work techniques is politically directed to the promotion of the domain of freedom. In this effort, our intention is to demonstrate how these dimensions – social and environmental – are indissociable from the point of view of the analyses of accumulation processes.

Production of surplus value and environmental degradation

The technical foundation upon which industrial capital built its relations with agriculture in the 20th century, called the Green Revolution in Brazil, was essentially characterized by the practice of a highly speculative agriculture, designed for the continuous cultivation of products with high levels of profitability. This characteristic was fundamental in consolidating monocultures – in detriment to rotation systems – as the major element in the agrarian structures not only of Brazil but also of all tropical countries influenced by the aforementioned model.⁷ Moreover, the adoption of agrochemicals as the technological response to the soil's depletion and the infestation of pests generated by monoculture itself resulted, above all in these countries, in even higher rates of losses in fertility and physical stability of the soil. In the Brazilian case, the ecological risks presented by the components of the modern technological package, allied to their unrestrained use on most farms, have caused

and continue causing irreversible damage to ecosystems in some regions of the country. The intensive use of fertilizers, for example, is one of the factors closely associated with the eutrophication of rivers and lakes, the acidification of soils and the contamination of aquifers. Data published by the Brazilian Institute of Geography and Statistics (IBGE) indicate that, in Brazil, 69.44 kilograms per hectare of these compounds were sold for agricultural use in 1992. By 2000, this volume had risen to 128.83 kilograms per hectare, which is equivalent to an average growth of 85.5 percent in the volume of fertilizers used per cultivated hectare. These numbers gain even greater significance when one observes that the growth in planted area in the country during the same period was about 23 percent.^{2,8} When it comes to agrototoxic chemicals – compounds that are highly damaging to both the natural environment and human health –, the quantity commercialized in the country rose from 2.27 kilograms per hectare in 1997 to 2.76 kilograms per hectare in 2000, corresponding to a 21.6 percent increase in the volume applied per hectare. By the late 1980s, in some traditional areas of crops in the state of São Paulo, such as beans, corn, and sugarcane, annual soil losses resulting from inadequate soil management had reached sixty thousand hectares.⁹ In 1995, Bastos Filho¹⁰ warned that about fifteen million hectares, or eighty percent of the cultivated area in the state of São Paulo, was undergoing erosive processes exceeding the technical limits of tolerance. According to this author, one of the determining factors for the extension of these processes was precisely anthropic action, through the removal of natural vegetation, movement over the ground with heavy machinery, and excessive application of fertilizers and soil amenders. It is estimated that soil erosion in the state carries about 130 million tons of soil to surface water bodies, silting up rivers, wetlands, and reservoirs, as well as triggering the eutrophication of these waters.¹¹ In addition to erosion, the incorrect use of irrigation techniques has also caused contamination of the state's water resources by carrying agrochemical wastes into them. The application of these agrochemicals on the soil has also led to damaging effects on the environment (e.g., land microfauna) and on the health of rural workers. According to the IEA (São Paulo Institute of Agricultural Economics), fifty–seven percent of Paulista farmers receive no type of guidance or instructions, and are therefore far removed from any safety standards or criteria.¹² Starting in the 1970s, the large–scale adoption of the technological practices of the Green Revolution did, in fact, raise the levels of productivity of most of the country's crops. In this period, the national agricultural policy, reinforcing its sectorial slant and reiterating class interests, was directed to the external market, stimulated by an aggressive exchange policy, leading major producers to transfer resources previously allocated to domestic production for investment in exportable products. Much of the government's incentive struck a chord with Paulista producers, who shifted their efforts to the cultivation of crops more “protected” by the government – as in the case of the sugarcane monoculture, strongly supported by the Pro–alcohol program. IEA data indicate that, in

²This disproportionate increase in the use of fertilizers in relation to the growth in planted area has been found to occur throughout Latin America and the Caribbean. Data published by CEPAL (Comisión Económica para América Latina y El Caribe) indicate that, in this region, from 1990 to 1998, the farmed area increased 6.3% while total consumption of fertilizers grew 42.2%.¹³ Moreover, CEPAL highlights that what could mean the dissemination of modern planting techniques contains perverse specificities in Latin America, since even the expansion of the agricultural boundaries in the region is historically linked to tendencies for agricultural specialization (with a view to export markets) and for monoculture.

2006, the regions of Araraquara, Franca, Jaboticabal, Jaú, Limeira, Piracicaba, Ribeirão Preto and São João da Boa Vista had 1,342,607 hectares planted with sugarcane. In the same year, these regions showed an increase of 451,128 hectares occupied by sugarcane. For the 2006/2007 period, the IEA reported a reduction of areas planted with thirty-two other agricultural crops, among them rice (–10 percent), beans (–13 percent), corn (–11 percent), potatoes (–14 percent), cassava (–3 percent), cotton (–40 percent), and tomatoes (–12 percent), without mentioning the reduction of over one million heads of cattle and the decline in milk production. Nevertheless, the regional landscape is marked strongly by the environmental impacts resulting from the expansion of these numbers, signs of the intensification of the development of the Euro–American model of agricultural modernization. The impacts associated with the sugarcane monoculture today make up the regional space,³ and are revealed, for example, by the intensity of the use of water resources in the drainage basin of which the municipality of Ribeirão Preto is a part, namely, the Rio Pardo Basin. According to the Drainage Basin Plan of the Rio Pardo Basin Committee (CBH–Pardo), insofar as it concerns the catchment of surface waters in the region, there is a wide predominance of catchment by industrial users (more than eighty percent of recorded surface catchments). These industrial users include the large sugar mills, which, according to the Drainage Basin Plan, “deserve attention from the plan’s managers not only due to the large amount of water to be made available (for their activities) but also because some of the non–contaminated discharges reach watercourses at nonenvironmental temperatures, since they are waters also used in industrial processes”.¹⁴ From the ecological standpoint, the difference in temperature between the waters coursing through the drainage basin and those discharged by agroindustrial units may imply substantial impacts for the aquatic ecosystem as a whole. As for underground waters, the Drainage Basin Plan highlights the lack of reliable data about the catchments effectively carried out in the entire region. According to the Plan, the data on both private domestic supply and on irrigation and rural use are strongly underestimated in the current catchment registration system of the DAEE (Department of Waters and Electric Energy). Nevertheless, even considering this underestimation, the basin’s water balance reveals alarming data, whose projections point to the intensification of the process of overexploitation of the regional waters – a process that has been in place since 2003.¹ Still with regard to underground waters, the CBH–Pardo Drainage Basin Plan calls attention to the level of vulnerability of the region’s available reserves, considering at least two factors. The first has to do with the high estimated exploitation of the water resources. The second refers to the geographical situation of these water reserves, which includes their distance from the surface. Fertilization, whether chemical or organic, of soils with shallow water tables is problematic precisely because of its pollution potential. In the case of sugarcane, fertilization with vinasse may be highly impacting on water bodies in general and on aquifers in particular, precisely because of its high biochemical

oxygen demand and its high nutrient content.^{4,15} Still with regard to underground waters, the risks posed by the type of soil exploitation are particularly serious in the monoculture of sugarcane because of the intensive use of herbicides, among other factors. All these environmental risk factors inherent to sugarcane cultivation are exponentially augmented in the region of Ribeirão Preto precisely because of its physiographic location. As Figure 1 indicates, the region is located on the Guarani Aquifer, one of the world’s main underground freshwater reserves, precisely in the area where the distance from the aquifer to the surface of the ground is one of the smallest in its entire extent. In the municipality of Ribeirão Preto, the distance from the surface to the aquifer varies from 150 to 300 meters, with Sertãozinho located about 340 meters from the aquifer.^{5,16} Figure 2, in turn, highlights the current levels of vulnerability of these underground reserves throughout the drainage basin, indicating that the most endangered area lies in the surroundings of the municipality of Ribeirão Preto, known to be occupied by sugar mills and sugarcane plantations. Source: Basin Plan of the Pardo Water Resources Management Unit. Final Report. Pardo Drainage Basin Committee – CBH–Pardo. Carried out by CPTI – Cooperative of Technological and Industrial Services and Research; IPT – State of São Paulo Institute for Technological Research, 2003. The intensive use of farmland in the basin by the sugarcane monoculture also continues to imperil the quality of the soil in the region. In 2003, of the basin’s total area of 8,991 square kilometers, a little over 51% (4,643 square kilometers) showed erosive processes.¹² The burning of sugarcane prior to harvesting also causes periodic impacts on the region’s biodiversity, with deleterious consequences for the performance of its ecosystems and the stability of the landscape, besides generating intense air pollution that affects the health of rural workers, and the residents of surrounding rural areas and urban centers. In this context, after systematizing studies in the area of public health, Cruz¹⁷ states that the region of Ribeirão Preto has seen a 75 to 100 percent increase in hospitalizations due to respiratory problems, recorded in the SIH/SUS (Public Health Hospital Information System) during the sugarcane burning period. In terms of environmental impacts, it should also be noted that the gases emitted by burning sugarcane soot are carbonaceous, nitrous (above all nitrogen monoxide and dioxide) and sulfurous (such as sulfur monoxide and dioxide). Some of these gases rise into the atmosphere and can react with water, generating nitrous and sulfurous acids which, in large accumulations, can generate acid rain, which is harmful to the environment. In addition to these gases, there is the formation of various aromatic hydrocarbons containing benzene and similar compounds that are extremely harmful to health.^{18–20} Despite innumerable warnings, even from the authorities, the burning of sugarcane continues unchecked, supported by State Law No. 11241/2002, which stipulates 2031 as the year when sugarcane burning must end. In 2007, however, the São Paulo state government and the sugar mills signed an agreement to bring this period forward to the year of 2014 for mechanizable areas and 2017 for nonmechanizable ones. This movement of capitalization of

³The notion of space here is based on the definition of Santos¹⁵ (1996: 26–27), for whom “space is not a thing, or a system of things, but a relational reality: things and relations together. That is why its definition cannot be found except in relation to other realities: nature and society, mediated by labor. [...] Space should be seen as an indissociable set in which participate, on one hand, a certain arrangement of geographical objects, natural objects, and social objects, and on the other, the life that fills and animates them; in other words, society in movement. The content (of society) is not independent of the form (the geographical objects), and each form encompasses a fraction of the content. Forms therefore play a role in social realization.”

⁴A residue of alcohol distillation, vinasse is generated in the proportion of 10.3 to 11.9 liters for each liter of alcohol produced. Among its physicochemical characteristics are its high temperature (about 35 degrees Celsius), acid pH, corrosiveness, high potassium content, and increasing quantity of nitrogen, phosphorus, sulfates, and chlorides.²¹

⁵The other municipalities of the state of São Paulo with ground surfaces close to the Guarani Aquifer are Bauru (180–470 meters), Araraquara (250–400 meters), Jaú (530–550 meters), Monte Alto (660–708 meters), and São José do Rio Preto (10080–1380 meters).

agriculture in the Ribeirão Preto region led to profound transformations not only in the forms of the regional space. In the 1980s, the content of the relations of reproduction of this modernizing process also led to new forms of organization and absorption of the workforce. The mechanization of fractions of the productive process, for example, gave rise to a greater hiring of temporary labor in detriment to the maintenance of resident laborers previously hired. Upon being excluded from the productive process, these workers, together with the migrant laborers originating from the north and northeast of the country, formed a surplus workforce that has been functionally serving the process of accumulation not only in this region but also in other spaces affected by this agribusiness in the state. Thus, advancing in the construction of the concrete analysis of the status quo of the production of surplus values by the sugarcane agroindustry of the Ribeirão Preto region, we will go on to interpret the conflicts between capital and labor which, based on the aforementioned use of natural resources, maintains the levels of accumulation of the sector and ensures its modernity. We will, to this end, continue presenting the empirical contexts of the region in the terms of the Marxist construction of knowledge, in line with the methodological proviso of Leff²² to the effect that “The concrete Marx refers to is never the thing. Only the material process, which is the synthesis of multiple determinations, is concrete. And this real concrete can only be grasped through the theoretical production of the concepts that make up the synthesis of multiple determinations and, at the same time, constitute the principle of the real process. This materialistic epistemology is not to be confused with the epistemic pragmatism attributed to Marx, whereby learning is reduced to knowing about things as objects of labor, or with the conception of theoretical production as a simple reflex of the real in thought. It is in this sense that the concept of value is the synthesis of multiple determinations – of the productivity of land, the productivity of labor, technological productivity –, and as such, is transformed into the beginning of a value formation process within the framework of the social relations of capitalist production.” Thus, this context of intensive use of natural resources by modern Paulista agriculture can only be understood, in its concrete sense, when it is tied to the dynamics of rural labor relations, enveloped in the notion of productivity so essential in the ambit of the production of surplus values. Based on this supposition, we will proceed in our analysis of the territorialization of this model of agriculture starting from the dynamics of temporary labor in the region of Ribeirão Preto itself.

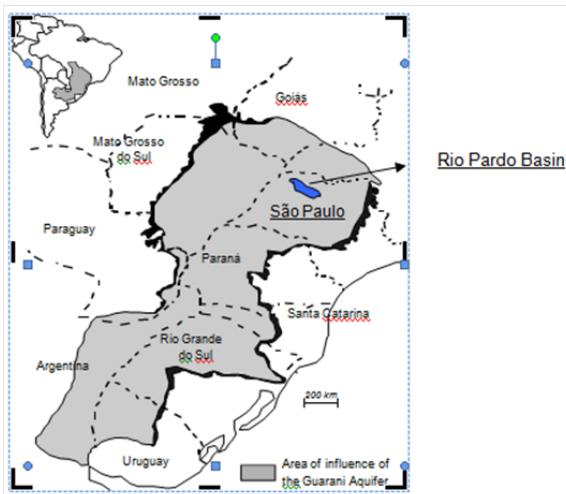


Figure 1 Geographical location of the Rio Pardo Basin in the Guarani Aquifer.

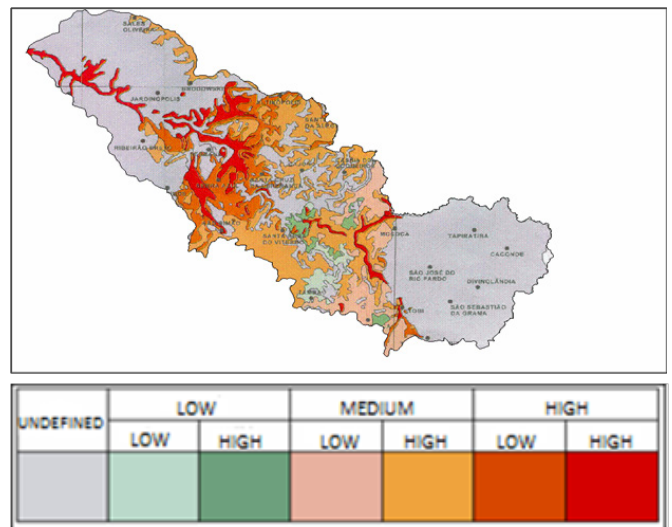
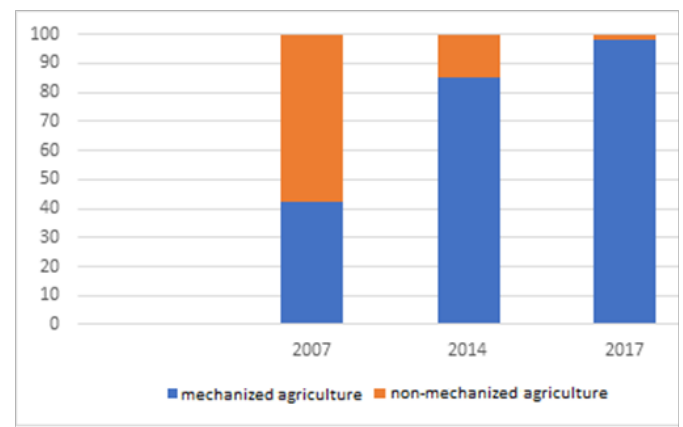


Figure 2 Vulnerability of the underground waters of the Rio Pardo Basin.

Production of surplus value and degradation of labor

According to estimates of the Pastoral of the Migrants, in the year of 2007, there were 200 thousand sugarcane cutters. Many migrant workers are employed in orange and coffee harvest. For the state of São Paulo, the estimates brought me around 500 thousand workers. As a mechanization, this number was gradually decreasing. One cane harvester machine replaced 120 workers Graph shows this tendency.



Graph Mechanization of the sugarcane harvest in the state of São Paulo.

The mechanization process also refers to planting, transportation and manufacturing of sugar and ethanol. As this has been an enormous increase in the productivity of human labor. In 2007, a worker worked 14.24 hectares of cane. In 2016, this number jumped to 79.31 hectares of cane cultivated by a worker, or, there is a growth, in the productivity of human labor in the setting, from 2007 to 2016, of 557%²² (p. 197). The workers are temporary and often not computed by official agency statistics. This fact denotes the invisibility of this workforce, aggravated by labor relations based on outsourcing. The activities required in the kennels require a young workforce (16 to 40 years old) and, mostly, male. According to various surveys, the life span of a cane cutter does not exceed 15 years.^{23,24} In recent years there have been many denunciations of slave-like labor conditions in the Ribeirão Preto region. Records of slave labor are usually found in

places far away from the country's southeast, in the so-called farming frontier areas. Therefore, the geographic variable is often seen as one of the determinants of the explanation of slave relations. If, on the one hand, these records and denunciations are important to punish and end these practices, on the other, silence or even denial of slave relations in the modern and dynamic center of agribusiness may lead to possible angles of analysis and, pour cause, reinforce the modernizing ideology processed therein. Besides these records, the Pastoral dos Migrantes has reported many other cases after routine visits to migrant dormitories scattered around sugarcane plantations and lodging houses in the region's so-called dormitory towns. In 2004, visits were made to 72 dormitories and more than four thousand lodging houses located in the dormitory towns, which house about 62 thousand migrants from the northeastern states and from the north of the states of Minas Gerais and Paraná. In the mid-1990s, there was a shift in migration cartography, whereby thousands of workers from the states of Maranhão and Piauí (located in the northeast of the country) were assigned to the state of São Paulo for the cut of cane. To a large extent, these workers are constituted in peasants that were expropriated. In Vale do Jequitinhonha (north of Minas Gerais) there was during the military dictatorship (1970s) the occupation of thousands of hectares of land by large reforestation companies. It is a region that has a large number of peasants who practice subsistence agriculture. In the case of Maranhão and Piauí, the expropriation process was verified from the end of the 1980s, when companies occupied land for livestock and soy plantation. Regarding the other states of the Northeast (Paraíba, Pernambuco, Bahia etc.), beyond the expropriation, there are the periods of drought, aggravating the situation of the peasants. Such a process can be characterized as collapse by spoliation, according to D. Harvey.²⁵ Increasingly, the expansion of the production of commodities by large companies and the expulsion of the poor peasants is present in the country. The denunciations and records of slave-like work conditions involve migrant laborers from various parts of the country, especially from the poorest ones. This fact suggests an analysis that takes into account the segmentation of the workforce, because, in truth, the separation between migrants and non migrants among the outside and local workers conceals an ethnic division of labor, given that the majority of migrants are black and brown. This is not to say that the locals are all white. Indeed, many of them are descendants of black laborers, half-castes of different hues who hailed from the same regions and settled here definitively in the 1960s and 1970s. The arrival of these migrants during that period substantially increased the population of the so-called dormitory towns set in the midst of the sugarcane fields.²⁶ Nevertheless, the criteria of regionality – Paulista and non-Paulista – are reappropriated by the ethnic/racial ideology that deepens the divide between workers, segmenting them according to their geographic origin and pilfering the ethnic/racial category. Another fact revealed by the records/denunciations is the overexploitation of this workforce to the point where physical limits are exceeded, leading to deaths in the sugarcane fields. In the period of 2004 to 2007, twenty-one deaths recorded by the Pastoral dos Migrantes were purportedly caused by an excessive workload, a real overdose of work, which the laborers call *birola*.⁶ In addition to the conditions of insufficient food intake – due to low

wages, excessive heat, high consumption of energy due to the extremely debilitating nature of the work –, the imposition of a continually increasing average (a quota), i.e., a daily amount of cut sugarcane, has been the definer of the rise in labor productivity, especially since the 1990s, when growing numbers of harvesting machines began to be used. This imposition affects not only migrant but also local workers. Therefore, these capitals require young workers full of physical energy to carry out this activity. Thus, turnover is very high due to the constant replacement of the workforce, which is consumed during the productive process. In short, of the above described records and denunciations, this analysis covered three issues, namely, the segmentation of the workforce based on the ethnic division of work, without mentioning the issue of gender, for women were practically excluded from cane cutting;²⁷ the immobilization of the migrant workers, many of whom were debt-riddled and living in extremely precarious conditions; and the overexploitation which was responsible for the work-related deaths. It is also worth keeping in mind that, besides the reported cases, Rumin's²⁸ in the western region of the state of São Paulo uncovered the occurrence of *birola*, and other studies²⁹ also mentioned deaths reported by relatives, resulting, according to doctors, from heart attacks that occurred after severe muscle cramping during the work of cane cutting, usually in the afternoon. Other studies using ergonomics and other advancing methods in the medical field that excessive effort can lead to death by exaggeration.²³⁻²⁶ To deepen the reflections about the definition or conception of this work and answer the questions these data elicit, we have decided to add to the analysis some considerations about the invisible chains that bind the workers to these social relations. Temporary migration emerges as a strategy, a material solution with a double meaning: on the one hand, working for wages enables the worker to buy food, thereby ensuring a minimum level of survival; on the other, leaving the land corresponds to returning, since the work is temporary. A close link of complementarity is thus created between these realities which, albeit opposite, serve each other mutually. Expressed in other terms, the advanced capitalist economy needs this cheap labor in its space for a time, and the penurious economy needs the meager money earned by some of its members to ensure its continued existence. It should also be kept in mind that migrants set off in search of a better life, that is, on a project of social ascension. Their return or, better yet, the representation of their return is imbued with these values. Hence, the failures, the losses represent a break from the ideal of the parting, which may result in negative sanctions on the part of the group. This may be the explanation for the actions of those who do not return, who disappear. Family split-ups may lead to social and cultural uprooting, a process of alienation that is reinforced by alcohol and drug abuse,⁷ which hastens physical and social death. Another point arising from these reflections concerns the standards of masculinity, i.e., the roles that should be played by men. The figure of the head of the family, the provider, is associated with the patriarchal standards that permeate all social classes. These standards, albeit conferring power to men, legitimating their male domination over women, may on the other hand be considered real burdens. Thus, men are identified as virile, fearless, and capable of facing all dangers. This is yet another of the links in the invisible chains that bind many workers to the networks of slave labor.

⁶These deaths were the object of ten public hearings convened by the Office of the Attorney General, the Public Prosecution Service, the Ministry of Labor, NGOs, and the Human Rights Commission of the São Paulo State Legislature in late 2005 and early 2006. The core issue debated in these hearings was the human rights of labor, as well as the violation of labor laws, above all the NR31.

⁷The Rede Social de Justiça e Direitos Humanos (Social Network for Justice and Human Rights) was responsible for collecting the data about drug abuse by cane cutters in the Ribeirão Preto region, where there is even a clinic for treating drug addicts (Folha de S. Paulo, Ribeirão, October 14, 2007, p. C10). Andrade³⁰ encountered this situation in the region of Jaú.

It is not a question of ignorance of the reality to be experienced. Quite the opposite – it is a real confrontation, a hardship for the individual himself and for the group to which he belongs. It is a kind of rite of passage. Suffering and pain are silenced in virtue of the internalization of these sociocultural values and standards. With regard to the work contract, there are two aspects to consider. One is the legal relation established between buyers and sellers of the workforce. At this moment, the two agents have equal and legally recognized rights, since the operation involves an act of purchase and sale between free individuals. In other words, no visible chain exerts any form of physical force obliging them to sign the contract, which is, in fact, something also legitimated by the workers' representatives when collective agreements are signed. The second aspect, less visible but no less important, is the forced, involuntary, latent acceptance of this legal contract. This is an opportune moment to reflect upon a possible choice of non acceptance of the contract on the part of the workers. As for the migrants, most of who are already in debt upon their arrival, they would not have the wherewithal to return home, which is thousands of kilometers away. Moreover, returning home without money to support the family means, above all, to violate the standards of behavior of the group to which they belong. Therefore, it is difficult to state that there is freedom at the moment of acceptance of the work contract. It is hard not to think of the shame of the failed provider. There are innumerable cases of workers who have disappeared, apart from those murdered by henchmen in other regions, according to the reports of many scholars and agents of social movements, including the CPT (Pastoral Land Commission). Among the workers that disappear one must take into account the runaways who do not return to their place of origin. And further, these escapes include local workers, the ones that are fired, that lose their jobs as a result of the increasing use of machines. During researches in several dormitory towns in this region, it was found that about thirty percent of the families are headed by women. According to these women, the men simply leave. Actually, they do not leave, they flee. They flee for fear of negative social sanctions. The real coercion is self-imposed by the individual, according to the reflections of Elias.³¹ Hence, the imposition of high rates of productivity, which exceed the workers' physical limits and sometimes lead to death, is borne by virtue of this process of introjection of the self-discipline that accompanies them throughout life. The replacement of energy through the consumption of soy milk or even the application of injections – the so-called amarelinhas (yellow ones), according to the workers' definition – or even the acceptance of kits – whey, flour and vitamins, for ingestion during work – to mitigate the effects of muscle cramps caused by the excessive loss of potassium, can be similarly interpreted. As for the orange pickers, in order to avoid contamination of the orchards, these workers are literally sprayed with poisons before beginning to work. Many statements have been collected about this practice, which is usually denied by the orchard owners and even the pickers, for fear of being fired. Besides the deaths occurring in the cane fields there are others, not recorded, which occur over a given time. Diseases such as cancer, caused by the use of poison, cane soot, and respiratory and allergic diseases, spinal problems, allied to the almost complete impossibility of treatment due to the lack of money for medicines, lead to the physical or social death of many workers, and the destruction of their strength prevents them from remaining in the work market. On the other hand, considered in its essence, work constitutes an integral part of man as a social being, according to the Lukacsian theory. In other words, work is the definer of human essence. Historically, man has modified nature and himself through work. This modification refers to the self, internally and not just the

external conditions, objective and material. Not working means to negate this essence; hence, the negativity of the social being himself. Therefore, work satisfies not only physical and biological needs but also social and ontological ones. The absence of work corresponds to the breakdown of this ontological base of the social being. The continuing increase of the average (quota) leads to suffering, pain, disease and even death. The use of drugs – marijuana and crack – is aimed at augmenting the capacity to labor at cutting cane and also to tolerate the intolerable. The phrase “It is impossible to face the field with a clean face” reflects the brutality of these labor relations. According to the statement of a laborer, marijuana relieves the pains in the arms, since almost ten thousand strokes of the machete are required to cut ten tons of sugarcane. As for crack, this drug is a stimulant and, as such, its use allows for greater gains in productivity. Besides being invisible, this fact is forbidden, for, in a society permeated by violence such as the Brazilian one is, silence is often a strategy for survival. The rising exploitation rate puts at risk not only the workforce but also the worker himself. Thus, the imposition of the quota its acceptance by the workers is one of the links in the invisible chains that bind them to these relationships. As for the cases of reincidence of slave labor, the return to this situation is due to the absence of alternatives, and therefore, of freedom. The latent content of the two relations is the same. The masking element is precisely the manifested content, for which there is visibility in slavlike relations because of the immobilization of the workforce and physical or moral coercion. With regard to the salaried workers and members of the legal contract, these factors are camouflaged by the free relationships of buying and selling of the workforce. At this point, the reader may wonder about society's struggles and resistance in face of the pace of degradation of the environment and of labor in the region. With regard to the former, the lack of social visibility of environmental transformations, especially of underground waters (invisible to non expert eyes) and rural soils (covered by the mono cultural landscape) has led to unawareness, on the part of a large portion of organized society, of the environmental depredation taking place in the region. However, in the case of social labor, the clarity of the workers' physical limits, revealed by the deaths in the cane fields, has caught the attention of distinct sectors of civil society and of government authorities. In order to provide some background about the resistance in the unfolding of this paper, we have chosen to present some excerpts of the reports of the first public hearings held with the purpose of facing some of the dilemmas mentioned herein.

New actors and new forms of resistance: the case of the public hearings

The first public hearings, held in October 2005 in the city of Ribeirão Preto, aimed to look into the deaths of rural workers that had resulted from the overexertion required during cane cutting. The first hearing was held under the responsibility of the National Report Office for Human Rights to Adequate Food, Water and Rural Land. This National Report Office is part of the project “National Reports on Human Economic, Social and Cultural Rights (DHESC)”, coordinated by the Brazilian DHESC Platform with support from the United Nations Volunteers program (UNV/PNUD/UN) and the Federal Bureau of Citizens Rights, of the Public Prosecution Service, whose primary objective is to help Brazil to adopt a standard of respect of human rights based on the Federal Constitution and on the international treaties for protection of Human Rights ratified by the country, through the appointment of specialists in specific rights (education, health, food, adequate housing, work, and environment).

The second hearing was held under the responsibility of the National Report Office for Human Rights to Work, which is part of the same project of the DHESC platform. These hearings were attended by representatives from the institutional agencies of the Public Prosecutor's Office of the Ministry of Labor, through regional delegates, public prosecutors and district attorneys; representatives of NGOs, which included the Pastoral dos Migrantes, responsible for denouncing the deaths. Researchers and students of public universities (UNESP, USP, UNICAMP and UFSCar); representatives of the Rural Labor Unions, as well as of FERAESP (Federation of Rural Salaried Workers of the State of São Paulo); rural workers, and the widow of one of the deceased workers; and several representatives of the region's sugar mills. These public hearings⁸ were a novelty in the context of labor relations. Although the public prosecutor's office had already received reports of irregularities involving violations of labor laws on several occasions, the summons for the two public hearings issued by the São Paulo Attorney General's Office and the DEHSC Platform, both agencies situated outside of the domain of the major companies, deserves a more detailed analysis of this reality. The first hearing, which was presided over by Dr. Sérgio Gardenghi Suyama, Attorney General for Citizens Rights of São Paulo, was assisted by Dr. Flávio Luiz Schieck Valente, national relator for Human Rights to Food, Water and Rural Land, was attended by 200 people and lasted almost eight uninterrupted hours. Prior to the hearing, a meeting was held with representatives of the Pastoral dos Migrantes, headquartered in the town of Guariba, and of the Rural Labor Unions, and a visit was made to the sugar cane fields and to a lodging at the Usina Bonfim (a sugar mill), a description of which is given below:

The workers leave their houses and/or lodgings between 5 and 6 o'clock in the morning, arriving in the cane fields a little before seven. Lunchtime is at around 11 in the morning, although there is no set time for stopping. The local workers bring food from home when they leave the house early. The workers who live in lodgings (migrants) are provided with food by the company when they leave for work early. Some of them eat their food a little at a time while others eat it all in one go. The workers consider that the amount of food the company provides is sufficient, but that its quality is poor, lacking in seasoning and flavor. Also, it is often sour, especially when the weather is very hot. Several workers reported cutting from 15 to 20 tons of sugarcane per day. The migrants, on average, are younger than the local workers. Several of the migrant workers are about 20 years old. During the entire visit, the employees of the sugar mill strove to stay close to the Relator and the representatives of the DRT and the MP, trying to prevent the workers from feeling free to manifest their opinions. Only for fleeting moments was there an opportunity to talk more frankly with the workers. The conditions of the lodging resemble those of a prison. Each room contains 3 or 4 beds. The rooms have no windows and the doors all open into an internal corridor. The area where the work tools are washed is also where the lunch pails are washed and drinking water is obtained. The presence of the company employees

⁸The purpose of public hearings is to uncover evidence and information from civil society to draw up a specific plan of action in a given area. This plan establishes the primary goals in each of these areas of action that will, within a strategic plan, allow for the definition of institutional actions to achieve the outlined objectives. Public hearings are always open to the general public. In Brazil, they are regulated through Law No. 9784/1999 as a mechanism of instruction of the federal administrative process, aimed at the performance of the inistrative function by the agents of the Direct and Indirect Public Administration of the three Branches of Government, namely, the Executive, Legislative and Judiciary. In public hearings, the Public Prosecution Service represents an indispensable instrument to ensure the institutional mission is carried out.

during the entire time we were in the lodging house was intensive, as they tried to prevent the workers from having free access to the visitors. The report of the second public hearing, presided over by Dr. Cândida da Costa, described the situation as follows:

The workers interviewed in the Jibóia lodging house (a sugar mill belonging to the Cosan Group in Rio das Pedras) come from the state of Minas Gerais, specifically from the Jequitinhonha valley, mostly from the municipalities of Araçuaí, Novo Cruzeiro, and Salinas. Their ages vary from 20 to 50, so there is no given age profile. As for their racial profile, it is unmistakable: the rate of blacks and browns is absolutely greater than any other racial descent. Their schooling is incomplete or nonexistent, since illiterate workers and workers with deficient literacy were found, indicating an unequal level of schooling. The workday begins every day at 5:30 a.m., without a preestablished time for ending. During the workday, the workers are forced to cut cane continually, without the right to a break to rest, stopping only to eat their lunch and forced by the shift boss to start cutting immediately after they finish eating. This is forbidden by law, since labor legislation establishes a minimum period of one hour and a maximum of two hours for the lunchtime break, so forcing workers to return to work immediately after they finish eating is a violation of the current law. The workers cut up to 600 meters of sugarcane per day, which is equivalent to a daily wage of R\$ 30 reais. The company provides the tools, boots and gloves. The clothes used for cutting cane are purchased by the workers themselves, and the company does not provide either masks or safety glasses, obliging the workers to inhale burned sugarcane soot, and to forgo protecting their eyes from contact with sugarcane soot and dust particles. Although the time established for the end of the workday is 3:50 p.m., the workday is invariably extended and there is no predetermined time for stopping. Moreover, the workers are forced to do other jobs such as gathering sugarcane chips after their cane cutting activities end for the day, which prolongs their workday since they are kept at their place of work, although they do not get paid any additional wages for these jobs. The contract is per production, which does not represent a fixed wage based on a uniform base salary, leaving payment dependent on the workers' individual work pace. This leads to overexertion of the workers' physical capacity, forcing them to join in an atmosphere of competition to see who can achieve the highest productivity. This procedure is in direct violation of article 7 of the International Covenant on Economic, Social and Cultural Rights, which establishes the right to fair and favorable work conditions, as well as to equal pay for work of equal value. The food is provided by the sugar mill, which discounts R\$ 95 reais directly from the workers' wages. During the workday, the food is kept in a lunch pail inside the bag in which the workers carry their tools, and is exposed to heat of the sun, causing the food to deteriorate and forcing the workers to discard it and to spend the rest of the working day without eating, or, if the sugar mill provides them with a snack, it stands in as their main meal of the day. However, according to article 200, clauses V and VII of the CLT (Brazilian Labor Legislation), and to articles 31.23.4.2 and 31.23.4.3 of the NR 31,⁹ the existence of shelters to protect the workers from inclement weather and for storing food¹⁰ is obligatory. The sugar mill provides the workers with water.

⁹Regulatory Code for Work Safety and Health in Agriculture, Cattle Ranching, Silviculture, Logging, and Aquiculture – NR 31, Administrative Rule no. 86, March 3, 2005 – published in the Diário Oficial da União on March 4, 2005.

¹⁰NR 31: 31.23.4.2 – Every rural establishment must have a place or container to store and preserve meals in hygienic conditions, regardless of the number of workers.

31.23.4.3 – At the work fronts, shelters must be made available, fixed or mobile, to protect the workers from the weather during their meals.

However, the water is not subjected to the conventional treatments of filtration and/or boiling, and is simply drawn from the taps located in the bathrooms located close to the dormitories, or from a sink beside the refectory in which the workers wash their dishes and cutlery, where dead insects were found during the interview with the workers. The workers have requested to leave on several occasions, but have been told that they will only leave when harvesting of the sugarcane crop is completed, since they depend on the company to provide the bus to take them back to their states of origin. The company threatens the workers that they will not hire them again for the next harvest if they talk to the labor union or to some public agency of defense of workers' rights. They also threaten to include the names of workers that cooperate with the investigations of the Public Prosecution Service of the Ministry of Labor and with the denunciations at the labor unions on a list that will be handed over to all the other sugar mills to prevent those workers who denounce rights violations by the company from being hired for the next harvest.¹¹

The content of the two reports contributes to underpin various lines of theoretical reflection. With respect to the preceding discussion, we can highlight at least five conceptual developments of great relevance for the debate about the exploitation of social labor in agriculture, namely:

1. The physical consequences of the intensity of the exploitation of the migrant workforce during the course of the Green Revolution in the country;
2. The suppression, in the words of Arendt,⁶ of the spheres of action (transcendence of their condition of workers toward politics in a broad sense) and of work (exercise of the domination of social learning over nature, based on teleologically oriented activities) in benefit of the prevalence of the labor dimension in the daily routine of the cane field, with the only guarantee of its organic survival;
3. The permanence, therefore, of temporary work not only as an economic but also as a political expression of the uprooting of social work;
4. The transistorization of work as a form of increasing suffering. The unbearable is borne because it is imagined to be transitory, because there is hope of not returning for the next harvest, if all goes well, if it rains in the region of origin, if a better job can be had, and so on;
5. The authoritarianism expressed in the various forms of violence directed at the migrant workers. As Weber stated with regard to the participation of free Polish workers in the Prussian Junker economy, "living under a strange roof is the beginning of economic dependence and of the condition of domination" (Weber:³ 236). The relationships established in the lodging houses of these migrants are symptomatic in this respect.¹²

Even so some points are still at odds with the abovementioned developments and so merit further attention. The presence of the representatives of the Public Prosecution Service, through the district

¹¹National Report Office for Human Rights to Work. Report of the Mission carried out from October 24 to 27, 2005 in the region of Ribeirão Preto, SP, to uncover violations of the human rights of sugarcane workers. 2005. p. 6–22.

¹²In this sense, it is pertinent to point out that, according to Weber, domination is not an isolated act of power. Besides involving legitimacy, domination also extends over time, implying continuity. By presuming the transitoriness of this form of labor, these migrants become decisively tied to the continuity that is characteristic of processes of domination.

attorneys,¹³ public prosecutors, and other institutional bodies (Ministry of Labor), as well as the NGOs (Pastoral dos Migrantes, DHESC Platform), and the representatives of universities and of the workers, suggests that there was a broadening of the field of contradictions between capital and labor. In this confrontation, these actors are not only present but also have powers, albeit differentiated, that can redirect the antagonisms through pressures concerning obedience to the law, thus imposing limitations on the voracity of these capitals and demanding of the State that it regulate labor relations, facing the deregulation and flexibilization imposed by globalized capitalism. The conclusions set forth in the report of the second public hearing reveal frictions among the state organisms around the issue of human labor rights and also possible actions, as the passage below suggests. We thus have a set of evidence that enables the death of the workers to be linked directly to exhaustion from work. It is worth keeping in mind that Japan took ten years to recognize the existence of sudden death at work, caused by an overload of work (*karoshi*), which is described in the socio medical literature as an extreme clinical symptom (connected to occupational stress) with sudden death by coronary ischemia or a cerebrovascular pathology. It is not easy to detect, since published studies show that conventional check-up methods are insufficient for the early detection of adverse effects on health due to excessive work hours, and conclude that the cardiovascular system of executives becomes "overloaded" with excessive hours of work. Its terminal symptomatology consists of heart attacks and cerebrovascular accidents (CVAs), which are more likely to affect those who work over 3000 hours per year. Therefore, sudden death is a fatal attack resulting from overexertion, and is considered a work-related disease frequently associated with extended periods of long working hours, which cannot be ruled out in the situation under analysis here. In the fulfillment of its social function, the nature of work is to provide every person with a worthy life based on the emancipation of the human being. Thus, it is one of the principal human rights. The way in which labor is used by the mono cultural companies in the interior of the state of São Paulo conditions the workers to alienation through work, dependence, and exploitation, converting what would be a human right obligatorily guaranteed by the State into a painful effort that imprisons them. It is therefore up to the Brazilian State, in its municipal, state and federal spheres, to ensure respect for the human right to work, seeking means for its effectiveness to guarantee that its implementation provides working citizens with the means to earn a living for themselves and their families in a worthy manner. On December 14, the third public hearing was held to deal with the question of the workers' deaths. This hearing was convened by the Agriculture and Cattle Breeding Commission of the State of São Paulo Legislative Assembly. In November 2007, another public hearing was held in Ribeirão Preto, also convened by the deputies of the Legislative Assembly. This fact demonstrates the expansion of the participation of the actors involved, including state deputies, some of who propose the establishment of a parliamentary commission of inquiry to investigate these deaths. With respect to the participation of the institutions, there are several dissensions that appear at various points in the above reports. This fact became even more evident in the last hearing, especially through the General Labor Office of the 15th Region, represented by Dr. Ricardo Garcia, whose statement corroborated the criticisms already made to the Ministry of Labor about the inoperativeness of the overseeing of labor relations in this region. In fact, these criticisms had also been directed at the workers'

¹³An important discussion about the role of the MP (Ministério Público, i.e., Public Prosecution Service) in Brazil, traditionally known as the agency of protection of the weak, the guardian of society, above all starting in the 1980s and 1990s, is given in.³²

representatives in the previous hearings. In addition to the Ministry of Labor, the Health Inspection Service in several municipalities, and the INSS (National Institute of Social Security), were also criticized by the public prosecutors and attorneys. From the actions of these state agencies, it is clear that there is omission, neglect and connivance with the interests of the companies. We therefore emphasize the importance of the representatives of the Public Prosecution Service in defending the workers' rights, establishing fronts to struggle against the interests of the companies and also of these state agencies. Another point worth mentioning is the ambiguous role of the universities. On the one hand, several academic studies, particularly in the areas of engineering, biochemistry and economics, mostly originating from public universities in the state of São Paulo, have demonstrated the sustainability of sugarcane production.¹⁴ As for the human sciences, particularly those involving rural research, the research problems do not refer to salaried rural workers. Such themes are silenced by a large part of researchers of these areas. Despite academia's recent interest in so-called "rural occupations", several social processes involved in the composition of temporary work have yet to be subjected to interpretive efforts, a fact made abundantly clear by the information laid out herein. With regard to the participation of the unions, there is much conflict of interests, not to mention agreements signed with sugar mill owners, involving practices that are often contrary to the workers' interests and that prevent the situation of rural worker exploitation from being prioritized by their actions.

Under the guise of a conclusion: the degradation of ways of life

After passing through Campinas in any direction, travelers traversing the Paulista roads get the impression they are in the midst of a gigantic cane field. The history of this region – characterized by the marks of old coffee plantations, colonial homes and farmhouses, multicolored plantations of corn, cotton, peanuts, and beans, pastures, secondary dirt roads, forest reserves, and small streams – all this is disappearing to give way to the monochromatic view of sugarcane fields, except for the areas occupied by orange groves. From April to November, even the sky seems blackened by the giant clouds of smoke billowing up from the burning cane fields, a predatory practice harmful to the environment and to the health of the rural and urban populations of the region. According to a recent report, cane burning points increase by more than 1000 percent during the harvest period in the region of Ribeirão Preto. The deaths in the cane fields, allied to immobilization and physical or moral coercion, reveal individual tragedies when one considers them separately. Similarly, the environmental destruction brought about by the sugarcane monoculture reveals environmental losses if one considers simply the transformation of the territory. However, what gives these phenomena concrete meaning is the model

of development of capitalist agriculture in the country, whose self-proclaimed agribusiness is its most finished form. As highlighted in the introduction of this paper, although this form of agribusiness reveals characteristics of the Junker economy, its singularities lie precisely in its devastating intensity – destroying, in its strictest sense, natural resources and the workforce – and in its historical moment, the 21st century, the era of modernity and reflectiveness, times of citizen guarantees, of human and social rights, of the right to work and of what some theoreticians have also been calling ecological citizenship.³⁵ It should also be noted that the association of this process of accumulation in the rural areas of São Paulo state with the authoritarian characteristics of the Prussian Junker economy does not reveal an event outside of its time or even outside of the capitalist order. Indeed, these processes of unraveling of social labor and of the natural environment are intrinsic to the capitalist order. They are therefore not leftovers of archaic relationships, residues of authoritarian practices that escape the current level of rationalization of capitalist practices. On the contrary, capital – being the complex social relation it is – continues to develop these modalities of use of social labor and of nature as an inseparable part of its modern process of valuation, which combines agronomic precision technologies with extreme levels of socioenvironmental degradation. It is precisely in this sense that, from the analytical standpoint, this context emerges concretely as part of the unity of the diverse that makes up the capitalist form of production. In a study of the Nazi concentration camps, Pollak³⁶ suggests that extreme experiences are revealing elements of social identity, of forms of belonging, and of conditions of existence even in face of physical and psychological limits. Nevertheless, the social experience of the migrant laborers' trajectory to the cane fields of São Paulo, the coercion attending their work, and the possibility of death in the cane fields – now imbued with meaning and not simply a possible occurrence – make up an undeniable scenario of degradation of social labor. This extreme situation, however, does not prevent even the silence of some of these workers, in face of the various levels of coercion, from betraying an intense process of management of their identity, now even more violated. In these circumstances, the modern reinvention of labor exploitation in agribusiness and the environmental pillaging the latter promotes paint a clearer picture of the degradation of lifestyles. In other words, extrapolating the social experiences involving labor to their critical limit and generating progressive levels of depletion of natural resources, this model of agriculture reveals the degradation of its own conditions of existence. It reveals its own limits through the destruction of workers and of nature.

The holding of the public hearings suggests a historical possibility for oppressed social groups to engage in politics, including other social actors, thus expanding the field of conflicts and contradictions. However, a new language must be created to break away from the structural paradigms of development ideology, which have been weighing down the political discourse since the 1950s, echoing in the official social imaginary. The hearings should not be seen solely as a means of "cleaning up" the image of the country's most developed state, as is made abundantly clear in many statements, above all by representatives of political parties. Rather, they should be understood as a form of bringing to light the history of this agricultural labor, whose puissance existed and still exists thanks to the intensive exploitation of the workforce, not to mention the process of expropriation which began historically with the extermination of indigenous populations, the slave labor in the coffee agriculture, the exploitation of national workers and immigrant peasants, and now of the migrants from other regions of this country. The specificities of the case studied refer to the degradation of work and nature. Thus, the contribution of

¹⁴See Macedo³³ This is a collection published by ÚNICA (Union of the Sugarcane Agroindustry of the State of São Paulo), with the participation of twelve investigators from public universities of São Paulo, as well as federal and private universities of other states. Although the title refers to sustainability, none of the articles discusses the problem of worker exploitation, except for the references to the work market, based on the statistics of the RAIS (Annual List of Social Information), whose methodology does not include temporary workers and workers hired without formal work contracts, such as those hired by contractors, called "cats". A recent publication of the FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo) journal reveals the situation of researches conducted in different areas of knowledge about sugarcane, such as sugarcane genetics, in order to determine the greatest possible number of varieties to help raise the levels of productivity, as well as improved conditions for the cultivation of sugarcane in various types of climate and soil (Journal Pesquisa FAPESP.³⁴

this article lies in the field of sociology of work and environmental sociology. On the other hand, the data are analyzed from a critical view of commodity production in Brazil. The conditions of work characterized by overexploitation that caused the death of dozens of workers are not visible, due to the ideology that underpins the power of the great national and international companies that dominate the production of ethanol and sugar. Currently in the state of Sao Paulo the area of sugarcane production is more than six million hectares. This state produces more than 60% of the country's sugarcane. So there is a concentration of production and land ownership by large companies. According to data from the Institute of Agricultural Economics (IEA), in the 2013/14 harvest, the demand for workers in the harvest was estimated at 51,700 cutters, about 18 thousand less than the 2012/13 harvest. This year, the mechanization index was around 84.8%,¹⁵ As a result of the decline in the number of workers, the question of their fate should be asked. In the case of temporary migrants, they were sent to their places of origin and many of them were employed in other economic activities, such as construction, street vending, or they sought work in other agricultural regions of the country. Others, due to health problems caused by excessive effort, are unemployed and unable to work. There was a real diaspora, due to mechanization.²²⁻⁴²

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Conflict of interest

The author declares no conflict of interest.

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