

## Mariana, November, 2015:

### the political genealogy of a disaster

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#### **Abstract**

The text analyses Samarco 2015 dam disaster as the expression of the political failure in public control of private interests. Three specific issues are presented as requiring better discussion: the operation of a sort of “organized class irresponsibility”, the systematic disconsideration of alerts brought forth by citizens or groups pledged to the public interest and the limits to the exercise of academic freedom in the field of environmental impact studies.

**Key word:** Environmental policies; environmental disasters; organized irresponsibility; environmental whistleblowers.

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#### **Resumo**

O texto analisa o desastre proveniente da ruptura de uma barragem de rejeitos da empresa Samarco, no município de Mariana – MG, em 2015, como expressão do fracasso político no controle público de interesses privados. Três questões específicas são apresentadas como requerendo melhor discussão: a operação de uma espécie de “irresponsabilidade organizada de classe”, a desconsideração sistemática dos alertas formulados por cidadãos ou grupos comprometidos com o interesse público e os limites ao exercício da liberdade acadêmica no campo dos estudos de impacto ambiental.

**Palavras-chave:** Políticas ambientais; desastres ambientais; irresponsabilidade organizada; lançadores de alerta.

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The critical moments which follow extreme events, such as the rupture of the tailings dam of the Samarco Company, in November, 2015, tend, in general, to encourage the broadening of the public debate about environmental risks, especially immediately after the disaster. That is what occurred when the magnitude of the Mariana disaster, also known as Rio Doce or Samarco Disaster, initially stimulated a more substantive analysis than the more usual superficial coverage by establishment media. Some voices made themselves heard, arguing that the disaster was not an accident, but rather the result of decisions taken under the aegis of short term economic logic, with little consideration for its social and economic implications; that such decisions have led to the implanting of less expensive and less secure models of tailings dams – the type responsible for 40% of all disastrous incidences with dams worldwide<sup>1</sup>; that the licensing process was precarious and open to questioning; that there was a reduction in the intensity of maintenance activities, parallel to the decline in mineral prices (empirical research confirms that the rate of disasters in periods of declining commodity prices is, worldwide, significantly greater than the average)<sup>2</sup>; that levels of public information provided by the company in pre and post-disaster were insufficient and lacked transparency (see processes of disinformation triggered around the contamination levels of water following the leakage of mud in the Rio Doce river basin)<sup>3</sup>.

The powerful impact of the disaster on establishment media was not sufficient, however, to sensitize the dominant forces in the formal political system, who revealed signs of their strong commitment to political and economic coalitions which sustain extractivist development: even shortly following the disaster, the Minas Gerais State Legislative Assembly approved proposed legislation which altered the environmental policy of the state, alleging the need to unblock licensing process and have them move more swiftly, seeking to limit participation of those affected by the companies in the decision-making process and increasing the margin of risk for tragedies such as the one which occurred.<sup>4</sup> All this reveals the large detachment between the debate – supposedly technical – and the political sphere, powerfully appropriated by large private interests.

1 Analysis of David Chambers, geologist who studies the industry of mining worldwide in an interview published by *Folha de São Paulo*, December 8, 2015. <http://www1.folha.uol.com.br/cotidiano/2015/12/1716184-samarco-utilizou-modelo-mais-barato-e-inseguro-de-barragem.shtml>, access in July, 15, 2017). Information about dam failures are found in the work of Lindsay Bowker. <http://www.csp2.org/tsf-failures-1915-2016>, access in July 15, 2017). For information about costs and dam safety upstream, see the dissertation of Cecilia Araújo, pages 13 and 14. [http://wwwp.coc.ufrj.br/teses/mestrado/geotecnia/2006/Teses/ARAUJO\\_CB\\_o6\\_t\\_M\\_geo.pdf](http://wwwp.coc.ufrj.br/teses/mestrado/geotecnia/2006/Teses/ARAUJO_CB_o6_t_M_geo.pdf), access in July 15, 2017). I thank Bruno Milanez for the references presented in this note.

2 “An analysis of the past 45 years (1965 – 2009) reveals a strong correlation between the post-boom cycle (phase of devaluation of mineral prices following a cycle of valorization) and an increase in the number of dams which collapse” (Milanez et al. 2016:19).

3 Press releases of the company and of government agencies were careful to generate the impression of relative normality, of quick recovery and of problems associated with other causes. “On the basis of more recent data with reference to Samarco’s environmental monitoring, the quality of water of the Rio Doce presents concentrations of metals within limits established by the National Environmental Council (Conama 357/05, fresh water, class II) for the majority of points monitored. The exceptions are within historical limits of the Rio Doce, according to the data bank obtained from the Water Management Institute of Minas Gerais State (IGAM), from 1997 to 2015. Samarco-Esclarecimentos” ([http://samarco.com/wp-content/uploads/2016/06/Paper\\_Agua\\_23-06.pdf](http://samarco.com/wp-content/uploads/2016/06/Paper_Agua_23-06.pdf), accessed 15 July 2017). “Daily monitoring in the channel of the Rio Doce was begun on November 7, 2015. The pH results since the initiation of the emergency monitoring are within normal limits; that is, these results do not violate limits established in legislation (band from 6 to 9), which are appropriate levels for the maintenance of aquatic life. This indicates that the mud waste, as it advances in the bodies of water, apparently is not being subject to processes of chemical alteration, nor is altering the conditions of neutrality of the water”; IGAM, Monitoring of surface water quality of the Rio Doce in Minas Gerais State; Monitoring of Water Quality of the Rio Doce Following Collapse of the Samarco Tailings Dam in the district of Bento Rodrigues – Mariana/MG, November 17, 2015; ([http://www.igam.mg.gov.br/images/stories/2015\\_ARQUIVOS/QUALIDADE\\_RIO\\_DOCE/Relatorio\\_Qualidade\\_17novCompleto.pdf](http://www.igam.mg.gov.br/images/stories/2015_ARQUIVOS/QUALIDADE_RIO_DOCE/Relatorio_Qualidade_17novCompleto.pdf), accessed 15 July 2017).

4 Project of law number 2.946/2015, in [https://www.almg.gov.br/atividade\\_parlamentar/tramitacao\\_projetos/texto.html?a=2015&n=2946&t=PL](https://www.almg.gov.br/atividade_parlamentar/tramitacao_projetos/texto.html?a=2015&n=2946&t=PL), access in July 16, 2017. Actual 21.972/2016, approved by the Legislative Assembly of Minas Gerais in January, 2016

All of the other critiques currently aimed at large investment projects also apply to the Samarco case: failed environmental impact studies contracted by the companies; licenses casuistically fragmented and granted with an excessive number of special conditions, which are not always met; absence of effective participation of affected groups in debating the projects; public hearings which act as a bureaucratic device to neutralize conflicts, etc<sup>5</sup>. Nevertheless, with the passage of time, the density of debate over the disaster in the Rio Doce river basin has been growing weaker, with the spread of initiatives intended to reduce the impact of the disaster on public opinion. Such initiatives sought specially to remove corporate responsibility and strengthen preexisting dynamics of radical deconstruction of the instruments of licensing themselves (see proposed Constitutional amendments, conceived with strong participation of Congressional coalitions financed by large mining companies, with the objective of substituting the licensing process with a mere submission of an Environmental Impact Study).

During 2016, public debate about the disaster, especially its political content, was diminishing, as long as the national political crisis advanced with the political manoeuvres to remove President Dilma Rouseff. Furthermore, there was little discussion to examine the strong association of the role of the company in that disaster with contradictions of the extractivist capitalist model in effect in Brazil during the previous two decades. This model, characteristic of explicitly neoliberal governments of the 1990s, was carried out under subsequent governments headed by political parties which had a popular base. The continuation of the model led to the depletion of counterbalancing forces and contestation, contributing to naturalizing its primary-export character, reducing the scope of public discussion and favoring postures complacent with illegalities, disrespecting rights and having an aura of secrecy: in the name of commercial confidentiality, the logistics of these types of projects assumed a quasi-military character.

Thus, in addition to resorting to an argument of political realism, varied forms of patronage were evident, which sought to take advantage of the extractivist model to finance electoral campaigns or make feasible government coalitions. On the other hand, the erratic, unpredictable and/or speculative character of fluctuating commodity prices, by escaping from current economic calculation, tended to provide a type of buffer for the action of opposition political groups. This could happen either through the possibilities of coopting physiological sectors of the legislature, or by circumstantial neutralization of critiques by part of the social movements themselves, which often found themselves isolated from their social bases when the latter were benefitted by government social programs, financed, in part, by the surplus in the commercial balance of trade. The same tended to occur when large corporations themselves, by means of their private social policies, applied profits in efforts to deflate critiques coming from social actors situated in territorial proximity to their investment projects, promoting their social programs as if they were doing the public a favor, rather than providing that which the public has the right to receive from the State.

A sort of “limited democracy” came out from the exceptional power of the government to allocate the surplus obtained from extractive activities, as well as by the power – also exceptional – of the large corporations to manage their strategies of territorial control with the objective of neutralizing the emergence of any more substantive discussion regarding the nature and conception of their investment projects. When that allocation is largely arbitrary, based on criteria which do not pass through visible channels of the political sphere, this untransparency easily becomes “corruption”.

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<sup>5</sup> The notion of large investment project is currently used to designate large infrastructure projects which employ large volumes of capital, labor, natural resources, energy and territory. Laurelli (1987) emphasizes the analytical importance of considering relations established between systems of power and modes of production of space in regions where large highway construction, energy and/or industrial projects have been implanted. In addition to causing patrimonial and geomorphological changes, these projects result in new socioeconomic dynamics; new social groups emerge in the region of implantation; new interests and problems become evident (Vainer and Araújo 2008: 44-45).

With this as background, we offer three elements of analysis which have been called upon very little and which can help deepen the discussion aimed at constructing democratic forms of governmental and social control of practices with inherent risks, such as large mining projects.

### **First element of discussion: the “organized class irresponsibility”**

Empirical observation has demonstrated that choices of localization of dangerous equipment, which have inherent risks, are not unrelated to the socio-demographic profile of populations more likely to be immediately affected by undesirable events resulting from the operation of such equipment. An “organized irresponsibility” (which we will later deem as class-based) on the part of elites is linked together with conditions of political fragility of directly affected populations.

Sociologist Robert D. Bullard provided circumstantial evidence of the existence of discriminatory logics in the localization of risk-bearing installations in his map of environmental inequality (Bullard 1983). Drawing on official data relative to the territory of the United States, his map locating deposits of toxic waste demonstrates the prevalence of a logic that matches allocation of sources of risk with housing of ethnic and low-income groups. That is, that there is a combination of, on the one hand, technical decisions related to the production of goods and the localization of products of capitalist activity – wastes – which usually have no buyers, and, on the other hand, processes of differentiation of real estate values. In the concrete situation described by Bullard’s cartography, two circuits of distinct mobility are combined: a) mobility of sources of risk, guided by micro-decisions of the real estate market and by business and governmental policies of land use; and b) a circuit of mobility of low income and ethnic group inhabitants, guided by the logic of necessity – pecuniary as well as political – which makes it difficult for the poorest to have access to the housing market and residences in areas with higher land prices.

Thus we have a situation of the (bad) encounter among: a) source of risk resulting from decisions regarding technical-economic processes (in general, a risk tolerated by environmental regulatory agencies which define currently what is understood by legitimate levels of exposure to injuries), b) a social and racial condition of existence (in general made visible in the public space by the actors themselves), c) decisions of localization of objects and activities which occur under the relatively complacent regulation of government agencies, given the socio-racial characteristics of the groups most immediately exposed; and d) decisions leading to processes of real estate valuation and devaluation of land prices.

Under such conditions, the mode of spatial distribution of wastes tends to form a social division of the environment compatible with “theoretical precepts” postulated by the then chief economist of the World Bank, Lawrence Summers, in his famous internal Memorandum to the World Bank of 1991 (The Economist 1991). This memorandum stated that economic rationality justifies countries on the periphery – and, we can assume, also the poorest areas in the interior of each country – be the preferential destination for industrial wastes most dangerous to the environment: “a) because the poorest, in their majority, do not live long enough to suffer from the effects of environmental pollution; b) because, in economic “logic”, it can be considered that deaths in poor countries have a lower cost than in rich countries, since inhabitants of poorer countries receive lower wages.”

The complaint of the existence of such discriminatory logic provoked effects in the political sphere in the United States: in 1994, Executive Order 12898 of the Clinton government determined that development projects should examine if ethnic and low-income groups were being penalized, more than proportionally, by undesirable impacts. These factors led to: a) provide a response to the complaint of the existence of unjust and discriminatory spatial practices; and b) implicitly assume the importance of the strategy by

which protecting those most exposed mean opposing resistance to forces which are conducive to the production of environmental inequalities, as well as, subsidiarily, guarantee the adoption of safer technical and locational standards.

In the case of the rupture of the Samarco dam in Mariana, a preliminary observation of the socio-demographic profile of the most immediate victims of the disaster suggests evidence of the existence of a discriminatory logic: according to 2010 Census data, 84% of inhabitants of Bento Rodrigues and 80% of inhabitants of Paracatu de Baixo, the two communities most affected by the disaster, declared themselves as non-white, representing a proportion of non-whites greater than the average of the state of Minas Gerais (approximately 54%).<sup>6</sup>

Taking into account these indications of environmental inequality in our territory, we can argue that the project of construction of equal rights to environmental protection should be seen as a form of the practice of affirmative action, that is, a policy of adopting measures which provide a greater degree of environmental protection to vulnerable groups.

### **Second element of discussion: ignoring alerts brought forth by citizens or groups pledged to the public interest**

It is widely believed that the political environment in Brazil has provided little opening for the free exercise of critical debate about the social and environmental impacts of development projects. Limitations on in-depth debate about the development model and large investment projects which underpin this model, have extended from the period of the authoritarian regime of the 1970s, to the period which marks the beginning of neoliberal policies and their unfolding in the extractivist-based progressivist experience. This debate – that is, its problematization from the perspective of affected populations – was the major absentee during the period of the export commodities model based on large projects of investment in infrastructure installations and networks required for the acceleration of the circulation of goods oriented to the international market. In particular, spokespeople of groups of affected populations had little visibility in their own local spheres to voice their perspectives on the problematization of such projects, those we can call “alert launchers”.

The role of the alert launcher is increasingly perceived as fundamental in the democratization of contemporary decision-making processes. This term, which emerged in the field of pragmatic sociology of risks (Chateauraynaud and Torny 1999), designates individuals and groups who denounce practices that they deem to be dangerous and contrary to civic morality intended by the law. It refers to subjects who see themselves as witnesses of illegal or dangerous acts to third parties, and who, as civic duty, decide to alert the public sphere and, in particular, authorities who have the power to forbid these illegal and dangerous acts. While the notion of *whistleblower*, linked to the Anglo-Saxon juridical tradition, refers to the person who intends to interrupt an illegal or irregular action, the alert launcher seeks to signal a danger or risk, calling on the powers vested, and raising the awareness of his contemporaries. Also different from the figure of the informer, the alert launcher is not situated in a logic of accusation, but rather intends to make public a state of fact, a dangerous threat to what he deems to be the public good. Seeing himself at a

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<sup>6</sup> Geographer Luiz Jardim Wanderlei, whom we thank for the data, explains that in both cases, his calculation was made on the basis of a relation between rural sector and zone of the district. The census sector of Bento Rodrigues did not have data on color/race, but that information was available for the rural zone of the district of Santa Rita Durão. Bento (with 492 inhabitants) represented the quasi totality of the rural population of Santa Rita (500 inhabitants). Thus, we opted to use the data from the Rural Zone of Santa Rita Durão. For Paracatu de Baixo, we also considered the characteristic of the rural population of the district.

particular moment faced with facts which constitute a danger to the population and its environment, and, having decided to reveal that fact to civil society and to public authorities, alert launchers, in the absence of specific instruments designed for their protection, find themselves exposed to the risk of reprisals by hierarchical systems subordinated to economic, financial or political interests.

Boltanski emphasized the fact that public expression of an injustice should satisfy a criterion of commensurability between principles of justice deemed legitimate, both for the author of the denunciation and for the victim, as well as to the one responsible for the harm done and judges to whom the lawsuit is referred (Boltanski 1984). Alert launchers, as prophets of the advent of an undesirable fact direct their message to the future, contrary to the denouncer who does it in relation to past facts. The presumed victims are, in turn, more frequently collective and potential. The issuance of an alert is a tortuous process, situated between two boundaries: the cry for help and the prophecy of an evil, and can be taken seriously or be rejected, denounced, ignored or it could stimulate a controversy among experts (Chateauraynaud and Torny 1999: 14).

We observe that, in the Brazilian case, warnings emanating from alert launchers have a great deal of difficulty being heard publicly. Generally speaking, the possibilities that current debate takes into account the representation that it is in the public interest to moderate private appetites, notably when the spokesmen of the denunciations are from social groups which have little representation in decision-making spheres and are distant from circles of power, are frequently limited. Furthermore, there are other obstacles to possibilities that the perspective of those affected can be heard. For example, in the case under study, common, non-mercantile spaces of water, atmosphere and living systems, are compromised when strongly affected by large investment projects.

Immediately prior to the Mariana disaster, even though it was pointed out that a revision of the Mining Code, which would broaden margins of freedom of companies in an unforeseeable manner, was being conducted in a dubious manner by congressmen financed by large mining companies, this fact did not generate major repercussions in the public sphere. On December 7, some weeks following the disaster, BBC-Brazil reproduced a document on official stationery showing that the outline of a new mining code was being written on a computer belonging to a law firm which worked for mining companies. This example evokes the validity of the recently divulged notion of “parliamentary capitalism”, in which large business corporations are represented almost directly in legislative circles, thereby counting on considerable indifference on the part of the establishment media and the formal political sphere. Such indifference suggests, in that connection, that the question of conflict of interest itself has not yet constituted a real public issue in the country, despite the situations in recent conjunctures in which a defendant being prosecuted remained in the position of President of the House of Representatives, and a minister of State alleged that his interference in affairs of another minister, to defend his own personal interests, should not be understood as influence peddling.

Inversely proportional to the free circulation of business interests in the heart of parliamentary circles, populations threatened by lenient laws and by complacent processes of licensing do not have access to political system which could guarantee appropriate environmental protection in the face of the probable injuries resulting from such “organized irresponsibility”.

In the words of an inhabitant of Bento Rodrigues, interviewed on November 14, 2015: “for a long time we’ve been hearing that the dam was dangerous, that there was a risk; at a meeting where there were questions about the dam and about what would be the risk if it cracked, what would happen, they told people that the waste could flow out without affecting anybody. And today what we see is this, it practically swept our district away” (Justiça Global 2016). Another inhabitant confirmed: “in various meetings at

Samarco, they never touched on this issue of the wastes, which could rupture the dam at any moment. They never touched on this subject. They only explained to us how the mineral was extracted; they gave us cooking classes, how to make desserts. But they never spoke about this” (Justiça Global 2016).

### **Third element of discussion:**

#### **limits to the exercise of academic freedom in the field of environmental impact studies**

In addition to limitations on access of the voice of affected people to the public sphere, there are frequent constraints to academic freedom of researchers who seek to include the perspective of affected people in their impact analyses. There are various cases of restrictions on academic freedom and of persecution of researchers when they are dealing with the study of impacts of development projects on spatial practices and conditions of reproduction of subaltern social groups: judicial proceedings were initiated against researchers who demonstrated environmental damages caused by a company exploiting waters of an Indigenous Territory and by irregular occupation of shore-lands by tourist projects; public campaigns threatened a researcher who elaborated an critical expert opinion about an EIA (Environmental Impact Study) of a steel company in Mato Grosso; action was taken against professionals of Geography and Social Sciences who were coordinating studies of recognition of quilombola territories in the north of Espírito Santo, alleging that the latter did not possess technical/professional credibility and not being neutral in the issue of recognition of quilombola territories. Other practices which can be cited are: judicial interpellations, judicial bans, pressures for professional de-accreditation, pressures on college presidents, presence of executives of large corporations on examination boards of academic theses to constrain student advisees and faculty advisors. These are some of the practices which illustrate the inequality of forces between those who undertake autonomous academic initiatives and economic powers.

Many of these actions refer us to that which juridical literature has interpreted as procedural harassment. In the juridical field, moral harassment has been defined, in general terms, as the encirclement imposed upon someone through ostensive or veiled behaviors, by diverse means which expose the victim to embarrassment with the purpose of obtaining undue advantage. Procedural harassment is presented as a type of moral harassment, being the set of procedural acts used as an instrument to de-stimulate the exercise of the critical capacity of the scientific community and, by extension, society, resulting in strategic advantage acquired by the harassing agent, “generally under the disguised allegation of exercising their right of contradictory proposition and ample defense”<sup>7</sup>.

In this way, representatives of companies – and, in certain cases, governments – affirm that they consider themselves prejudiced by results of research projects; justify their actions alleging moral damages, ideological conduct of scientists,<sup>8</sup> crime against honor, and undue use of the image and name of the companies; as well as reject critiques deemed as inappropriate for environmental impact studies and their projects. They dismiss as unfounded research results which indicate, in particular cases, harm of substances to public health, polluting effects of an industrial enterprise on the atmosphere, irregularities in environmental licensing processes, or the presence of traditional, indigenous or quilombola communities in areas affected or planned by business projects. On the other hand, representatives of the scientific community manifest themselves “in favor of freedom of expression, autonomy and legitimacy of

<sup>7</sup> Jose Affonso Dallegrave Neto, “Responsabilidade Civil no Direito do Trabalho”, 3a. edição, SP: LTr, 2009. As Mauro Paroski teaches, what characterizes procedural harassment “is not the moderate exercise of procedural rights and legal powers, but rather the abuse and excessive use of means legally contemplated by juridical ordering, for the defense of rights threatened or violated” cf. (Revista LTr. 72-01/33 apud Daniela Valle da Rocha Muller, *Precisamos Falar Sobre Assédio Processual*, mimeo, Rio de Janeiro, 2012).

<sup>8</sup> Professor of the UFC was accused of manipulating “acolytes and numbed followers of ideology”, 19ª Vara Cível of the Judicial District of Fortaleza. Contestação. Ref. Processo nº. 2007.0026.9629-9/0. Fortaleza, 07 de abril de 2008, p. 2.

scientific and technological production of universities” and “against any type of intimidation, coercion or impediment of the affirmation and self-determination of ethnic groups”.<sup>9</sup> They reject what they interpret to be “inquisition processes conducted against them for their fulfilling the role of scientist in society – that of informing about what they study in their area of expertise”.<sup>10</sup> They also affirm that “studies conducted by public universities should broaden and deepen scientific knowledge and that efforts by business interests to inhibit the disclosure and dissemination of information and attempt to intimidate researchers” are “typical of obscurantist and oppressive behavior which attempt against fundamental freedom of information in a democratic society”.<sup>11</sup> They allege that “science does not evolve on the defendant’s stand, but rather through academic debate”<sup>12</sup> and that “scientific disclosure and dissemination is an instrument of building democracy and citizenship”.<sup>13</sup>

The mode in which controversy is reconfigured through procedural harassment clearly presupposes perspectives of reduction of margins of autonomy of researchers, as well as, on the other hand, greatly increases the incidence of litigation since, beyond the manners of scientific process, styles of reasoning and habits of thought adopted, is the mode of social existence itself of individuals and groups which is at stake. We cannot even rule out the possibility that this loss of autonomy of a certain number of researchers, as a result of the unfolding of events and reactions – or, more specifically, the lack of reactions – coming from within or outside of the scientific field, may, over time, result in loss of autonomy of the scientific field itself and in alterations in the mode of internal operation of scientific activities, at least in the particular thematic area under discussion in this article. Or, in Bourdieu’s perspective, the force of pressures external to the field of science could, in the end, alter the hierarchy of relative positions of researchers and research groups in the interior of the scientific field, accentuating, in particular, the cleavage between critical research – generally, in the case under study, that investigation which includes in the research object the perspective of those who are protagonists of “other” temporalities and spatialities – and the so-called “propositionals” ones, in benefit of the latter, pointed out – not only outside the field of science – as realistic and socially useful, in a cleavage which puts at stake not only financial resources, but also the academic relevance of contents, methods and objects.

## Final considerations

In November, 2015, students, technicians and faculty of the Federal University of the South and Southeast of Para (UNIFESSPA) organized a public demonstration of solidarity with the inhabitants of Mariana (MG) who, in that month, had suffered the consequences of the rupture of the Samarco dam. One of the professors who participated in the demonstration was the object of a Criminal Complaint filed by the company Vale, alleging that he was subject to prosecution under article 345 of the Penal Code for arbitrary exercise of his own reasoning. The occurrence of this type of action is an indicator of the importance of

9 Esperança News Agency *Agência de Notícias Esperança (AnotE)*, – Residents’ Association of the São Cristóvão Apartments (*Associação de Moradores do Conjunto São Cristóvão – AMCOSC*, National University Teachers’ Union (*ANDES – Sindicato Nacional*), Brazilian Action for Nutrition and Human Rights (*Ação Brasileira pela Nutrição e Direitos Humanos – ABRANDH*)), Federal University of Ceará Teachers’ Union (*Associação dos Docentes da UFC – Adufc*), Pitaguary Association of Indigenous Farmers (*Associação dos Produtores Indígenas Pitaguary*, National Association for Indigenist Action (*Associação Nacional de Ação Indigenista – ANAI*), “Ypioca tries intimidation to silence social movements” (“*Ypioca tenta intimidar para calar os movimentos sociais*”), Fortaleza, 06 de junho de 2007.

10 Débora F. Calheiros, *Vergonhoso*, 4/5/2006, <http://www.riosvivos.org.br/Noticia/Vergonhoso+/9049>, accessed 8 November 2012.

11 ABRASCO – Letter of support for researchers Raquel Maria Rigotto and Islene Ferreira Rosa of the Federal University of Ceará (*Carta de apoio às pesquisadoras Raquel Maria Rigotto e Islene Ferreira Rosa da Universidade Federal do Ceará (UFC)*), <http://www.abrasco.org.br/publicacoes/arquivos/20100202002921.pdf>, accessed 8 November 2012.

12 <http://www.ihu.unisinos.br/entrevistas/507030-o-uso-do-amianto-no-brasil-a-ciencia-nao-evolui-no-banco-dos-reus-mas-no-debate-academico-entrevista-especial-com-hermano-albuquerque-de-castro>, accessed 8 November 2012.

13 Milanez, B. Motion of support for researcher Débora Fernandes Calheiros, São Paulo, RJBA (*Moção de apoio à pesquisadora Débora Fernandes Calheiros, São Paulo, RJBA*), 15 April 2011.



free production of knowledge and circulation of ideas for the construction of a social and democratic regulation of the environment. With regard to the notion of regulation, we return to the etymological meaning of the term. According to the historian and philosopher of science Georges Canguilhem (1977), the concept of biological regulation was coined in the 18<sup>th</sup> century, when physiologists of that era attempted to describe the function capable of imposing on the transformation of part of an organism a rule of conformity to the structure of a whole. In the sciences of society, differently, regulations are the result of a historical construction – they constitute mechanisms of social conservation configured politically through institutions and practices. We thus can ask the following question: in the name of which whole are the parts being regulated? In the name of the market – giving priority to foreign exchange currency, to the prevalence of business of the subsoil rather than above-soil common spaces shared and occupied in large part by traditional peoples and communities? Or, as we believe to be the case of a society that wishes to be democratic, the whole of a society of citizens with equal rights?

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