Original Article

Legitimation strategies and moral impasses in GMO arena of struggle: The co-evolution of GMO hegemony and counterhegemony in Brazil

Abstract

Civil Society Organisations (CSO) may support the growth of Genetic Modified Organisms (GMO) worldwide under food security claims of feeding world's population, or may, alternatively, claim that GMO represent a risk to biodiversity preservation and cause negative effects to the environment, and life. This research explores how CSOs justify their positions within pro-GMO hegemony and anti-GMO counterhegemony and, furthermore, how does the unfolding of their legitimation strategies influence the co-evolution of GMO as an arena of struggle. We integrate a neo-Gramscian approach to GMO as an arena of hegemonic and counterhegemonic discourses with the rhetorical argumentative analysis that elucidates legitimation strategies CSOs rely on to justify their positions and their potential shifts toward new counterhegemonic discourses within GMO arena. The field research based on interviews, observations, documents and secondary sources, was conducted from 2011 to 2015 in Brazil, a privileged site of food organizing, considering its simultaneous position as the second largest GMO producer in the world, and as a country presenting enormous biodiversity. The unveiling of legitimation strategies is key in understanding how counterhegemonic GMO construct their "common enemy", and face moral impasses. Legitimation strategies elucidate shifts in hegemonic unstable social orders grounded on non-coercive power, as the emergence of agroecology.

Keywords

Genetic Modified Organisms (GMO), Civil Society Organisations (CSO), neo-Gramscian approach, rhetorical argumentative analysis, food organizing

Introduction

Genetic engineering and Genetically Modified Organisms (GMO) emerge as central elements in a context where food security is one of the grand challenges' that face humanity; a well discussed and contested issue in contemporary debates (Godfray et al., 2010). GMO are defined as organisms whose genetic material (DNA) was altered in a way that does not occur naturally, rather, through genetic recombination (FAO, 2009). As the world population is predicted to reach 9.1 billion by the year 2050, and food demand should increase by as much as 50% by 2030, and up to 70% by 2050 (FAO, 2013), GMO are seen as crucial to increase the world's food productivity (Drimie & Pereira, 2016; Godfray et al., 2010).

Worldwide, between 1996 and 2003, areas planted with GMO increased from 3 million to 67.5 million hectares (James, 2003), and in 2013 these areas increased to 174 million hectares (GMO Compass, 2015). However, there is no consensus about the adverse effects of GMO on the environment and animal health through direct consumption (Gupta & Falkner, 2006; Hall, Matos, & Lang Ford, 2008; McMichael, 2009; Pretty & Bharucha, 2014).

Among other actors, Civil Society Organisations (CSOs) show diverse, and sometimes conflicting positions regarding GMO, which is not fully discussed in organisation studies (Banerjee, 2003; De Bakker, 2013; Patel, 2009). Some CSOs, as Nongovernmental Organizations (NGOs), social movements and community groups have opposed GMO, alleging environmental, health and social risks associated with the exponential increase of its use in food production worldwide (Caporal & Petersen, 2012; Gupta & Falkner, 2006; McMichael, 2009; Pretty & Bharucha, 2014). Other CSOs have claimed that the exponential growth of the GMO-based industry around the world is a very important part of the solution for the world's secure and sustainable food system (Lang & Heasman, 2015).

CSOs distinctive positions help to understand GMO as an 'arena of struggle", where CSO actors build collective goals and/or articulate not only around pro-GMO hegemonic discourses, but also around anti-GMO counterhegemonic ones. Thus, the research questions posed in this study are: *How do CSOs justify their positions within pro-GMO hegemony and anti-GMO counterhegemony? How does the unfolding of CSOs rhetorical argumentative strategies help to understand the co-evolution of GMO as an arena of struggle?*

This research relies on the neo-Gramscian discourse approach (Laclau, 2005, 2006; Laclau & Mouffe, 1985) as a background theoretical perspective to understand GMO as an arena of struggle, with CSOs taking distinct positions (Brunsson, Rasche, & Seidl, 2012; Levy, Reinecke, & Manning, 2016; Levy & Spicer, 2013; Van Bommel & Spicer,

2011). In neo-Gramscian discourse analysis, hegemony is a socio-political situation that has "staked out" a particular dominant idea of what reality is, but is not enforced in a coercive way (Laclau & Mouffe, 1985; Levy & Scully, 2007). Current research recognizes that CSOs play a crucial role as key actors of resistance towards hegemony (Böhm, Spicer, & Fleming, 2008; Levy & Spicer, 2013; Van Bommel & Spicer, 2011) contributing to a better understanding of hegemony formation.

Hegemony is itself incomplete, non-monolithic, transitory and historically specific, and CSOs may sustain or pose resistance to it (Levy & Scully, 2007; Spicer & Böhm, 2007; Van Bommel & Spicer, 2011). We defend CSOs are central to hegemony (Ford, 2005; Levy, Reinecke, & Manning, 2016) as they offer "the vital ideological 'ground work' that establishes those structures of social and cultural consent that support, and enable the reproduction of the state and the economy" (Spicer & Böhm, 2007, p.13). However, there is little understanding on how exactly CSOs politically organize in order to resist or to sustain hegemonic formation (Spicer & Böhm, 2007; Levy et al. 2016; Van Bommel & Spicer, 2011), and this is particularly relevant due to the non-coercive nature of hegemony formation. So, the "how" continues to be not fully explored in neo-Gramscian studies and this study seeks to understand CSOs hegemonic and counterhegemonic positioning by relying on rhetorical argumentative analysis (Harmon, Green, & Goodnight, 2015; Toulmin, 2001).

In a contested arena as GMO, actors rely on justifications to legitimise their positions and to persuade others through their arguments (Boltanski & Thévenot, 2006; Suddaby & Greenwood, 2005). In this research, after demonstrating how GMO arena evolved in two opposing discourses: food security as the hegemonic discourse versus biodiversity preservation as the counterhegemonic discourse, we identify CSOs engaged in each discourse and their respective legitimation strategies. CSOs' legitimation strategies are rhetorical arguments these actors rely on to justify their actions and positions in GMO arena.

The field research was conducted from 2011 to 2015 in Brazil, considering that by 2010 the country was already the second largest GMO producer in the world (ISAAA, 2014), being a privileged site of contested positions in the GMO arena of struggle.

We demonstrate that the co-evolution of hegemonic food security pro-GMO movements and counterhegemonic biodiversity preservation anti-GMO countermovements, reflects similar and distinctive legitimation strategies adopted by CSO actors in the arena of struggle. Despite distinctive emotional arguments, both actors are similar in terms of rational arguments (both are based on scientific evidence), and, more importantly, both sides defend life as a moral argument, which leads to the emergence of a moral impasse. Thus, the contemporary shift towards agroecology is presented as a solution to accommodate this 'pro-life' moral impasse and to re-articulate anti-GMO actors that are in disadvantage when it comes to articulating their biodiversity

preservation discourse. Theoretically, our study demonstrates the important role of legitimation strategies CSO actors rely on in the co-evolution of hegemonic and counterhegemonic movements.

Neo-Gramscian Discourse Approach on Hegemony

The neo-Gramscian discourse theory on CSOs will hereby be the main theoretical background of this study (Laclau, 2005, 2006; Laclau & Mouffe, 1985). In this theory, discourse can now cover all social phenomena since it is a relational system of signifying practices depending upon a decentred system of contingently constructed differences and rules (Laclau & Mouffe, 1985).

Drawing on the view that discourses construct and encompass a broad array of social phenomena (organisations, individuals, social reality) (Alvesson & Karreman, 2011; Grant, Hardy, Oswick, & Putnam, 2004), the neo-Gramscian discourse approach focuses on the concept of hegemony to investigate the processes of consent, resistance, and coercion that shape and are shaped by discourse articulations (Laclau & Mouffe, 1985). As a global challenge to hegemonic stability in food organizing systems, discourses are embedded in GMO arena of struggle, and represent hegemonic and counterhegemonic articulations.

According to this approach, CSOs continuously attempt to articulate dominant discourses, or 'social orders' (Laclau, 2005) that are understood as "any complex of elements in which relations play the constitutive role. This means that elements do not pre-exist the relational complex but are constituted through it" (Laclau, 2005, p. 68). In this way, any dominant discourse will necessarily remain incomplete in a collective process of hegemonic struggle (Laclau & Mouffe, 1985). Additionally, civil society is then the site where hegemony is consented, reproduced, sustained, channelled; but also where counterhegemonic and emancipatory forces can emerge (Gramsci, 1971; Levy & Egan, 2003; Spicer & Böhm, 2007) and that's why CSOs are key actors in hegemony and counterhegemony formation (Levy et al., 2016; Van Bommel & Spicer, 2011).

Those formation processes happen in a very dynamic system of continuous flow of contradictions, ideologies, and agents, whereby equilibrium is never reached. Meanwhile, actors are themselves instituted in these arena-level processes and structures, in a "dialectical movement" of hegemony expansion (a moment where the dominant discourse is expanding and conflicting positions emerge in disruptive and polarizing trends as alternative discourses) and reassertion of political responses (a moment of accommodation and supposed stability of a dominant social order) (Levy, 2008; Levy & Egan, 2003; Levy & Spicer, 2013; Mittelman, 2000; Van Bommel & Spicer, 2011). This means that in an arena of struggle, hegemony is incomplete and non-monolithic, but

transitory and historically specific, and resistance and oppositions can always arise as alternative discourses (Gramsci, 1971).

Such double movements of hegemonic and counterhegemonic discourses mark moments of instability that generate an open fissure in a cascading effect that leads to a reconfiguration of the whole system. In this sense, neo-Gramscian studies have stated that when discontinuity happens or a crisis of hegemony arises (or "organic crisis" according to Gramsci), it means that the legitimacy of the ruling class collapsed in the face of a political failure that allowed the inchoate demands of subordinate actors to be voiced. These moments of a hegemonic crisis provide opportunities for restructuring new hegemonic (or counterhegemonic) relations between society, economy, and state (Levy & Egan, 2003; Levy & Scully, 2007; Van Bommel & Spicer, 2011). We also draw in this perspective to conceive GMO as an "arena of struggle" where "Different historical contexts will produce different forms of hegemony with different sets of actors" (Mittelman, 2000, p. 184). In GMO arena we focus on CSO actors and the way they distinctively articulate around key hegemonic and counterhegemonic discourses.

In recent years, neo-Gramscian scholars have also examined CSOs and social movements (Levy & Spicer, 2013; Levy et al., 2016; Spicer & Böhm, 2007; Van Bommel & Spicer, 2011). These studies are less about establishing a definitive description of when specific groups are or are not hegemonic, and more about explaining and describing the complexity of the processes of consent, resistance, and coercion involved in a broad-scale

social change. However, it still not clear how exactly CSOs articulate in key hegemonic and counterhegemonic discourses on the ground. Each discourse, hegemonic or counterhegemonic, is a social order that demands justification, in other words, must feel legitimate for its network of articulated actors, and simultaneously, can be "defended" when disputes arise, as in the case of particular political moments in GMO arena of struggle. Even hegemony represents a consented form of power that allows the identification of people with their political and social institutions, contrasting with "coercive" forms of domination. This happens when power is held through an intellectual, moral, and political kind of leadership or authority (Gramsci, 1971; Levy & Egan, 2003; Levy & Spicer, 2013; Spicer & Böhm, 2007; Van Bommel & Spicer, 2011).

Nevertheless, the legitimation mechanisms actors rely on in articulating around hegemonic and counterhegemonic discourses have been overlooked in current research. The non-coercive hegemonic forms of domination demand a deeper understanding of how CSOs, articulated around hegemony or counterhegemony, justify their positions. We rely on rhetorical argumentative analysis to advance in this direction.

Legitimation Strategy of CSO Actors: The Contribution of the Rhetorical Argumentative Analysis

Legitimacy is an important explanatory category for social life. Due to Weber's work (1964, p. 124), it is well known that faith in a particular social order (in other words, legitimacy of a social order) produces social regularities that are more stable than those that result from the pursuit of self-interest or from tradition. In other words, actors need to have faith, need to believe in a specific social order (i.e. to legitimate a social order) – or, in a neo-Gramscian perspective, in hegemonic or counterhegemonic discourses. Considering the non-coercive forms of dominations that permeate hegemonic and counterhegemonic discourses, in this study we need to advance in understanding legitimacy strategies of CSOs in GMO arena.

In fact, legitimacy emerges as an important concept to understand GMO arena of struggle. Legitimacy is "a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). Not all situations are subject to an imperative of justification to the same degree (Friedland & Alford, 1991; Thornton, 2002). However, the nature of GMO as an arena of struggle among hegemonic and counterhegemonic discourses is adequately in situ to understand legitimacy claims, because the demand of justification is indissolubly linked to the possibility of criticism (Boltanski & Thévenot, 2006 [1991]).

Legitimacy maintenance grounds in an array of 'orders of worth' that represent "harmonious arrangement of things and persons in a state of general agreement and to

which people most often resort when disputes arise regarding the coherence and justness of a social order" (Patriotta, Gond, & Schultz, 2011, p. 1805). Therefore, when 'legitimacy tests' arise, they often resort to a number of 'orders of worth', in this moment that requires coherent and fair justifications about the worth of particular arrangements. These 'tests' happens when particular arrangements need to be justified by actors under scrutiny (Patriotta et al., 2011). To be able to converge towards an agreement, actors really have to refer to something which is not of persons and which transcends them (Boltanski & Thévenot, 2006 [1991]; Suchman, 1995; Suddaby & Greenwood, 2005; Thévenot, 2007).

In order to discover CSOs' legitimation strategies within hegemonic and counterhegemonic discourses, we rely on rhetorical argumentative analysis (Toulmin, 2001). In fact, rhetorical analysis reveals the legitimation strategies actors apply to justify their actions in social orders (Harmon et al., 2015; Suddaby & Greenwood, 2005).

In rhetorical analysis the concepts of 'ethos', 'pathos' and 'logos' refer to rhetoric strategies or the 'rules of speaking' where the language privileges one type of argument (Harmon et al., 2015; Toulmin, 2001). 'Ethos' privileges the moral principle. It lies on how the speakers show themselves to be "trustworthy, knowledgeable and speaking for the interests of the audience" (Smullen, 2010, p. 945). In 'Pathos' the arguments appeal to emotion as a form of persuasion. As pointed out by Smullen (2010, p. 945), it is "the mood music adopted to make the audience receptive to the arguments". The final concept,

'Logos', refers to logical arguments to convince of the validity of the argument, generally referring to evidence-based arguments (Toulmin, 2001).

Research has already explored how rhetorical arguments can be used to persuade dominant and subordinate institutional logics (Suddaby & Greenwood, 2005), to sustain administrative reforms (Smullen, 2010), among other topics. Here we will rely on rhetorical argumentation analysis (Toulmin, 2001) to unfold the rhetorical arguments pro and anti-GMO CSOs relied on to legitimate their position within GMO arena.

Methodology

The study combines multiple data sources to investigate how CSOs operating in Brazil justify their support/opposition in the GMO struggle, based on the assumption that their positioning affects GMO co-evolution of hegemony and counterhegemony. Considering that the logic of hegemony is based on privileging political moments and articulations, and these two factors will together determine the identity of the hegemonic subjects (Laclau, 2005, 2006; Laclau & Mouffe, 1985), we investigate CSOs legitimation strategies in two specific political opportunities (before and after the launch of the Roundtable on Responsible Soy Association – RTRS).

Data collection and analysis

Data collection strategies relied on a mix of primary and secondary sources. Initially, direct observations in an important event, the United Nations Conference on Environment and Development (UNCED), Rio+20, in Rio de Janeiro, in 2012, enabled us to understand GMO as an arena of struggle. In fact, twenty years after the "Earth Summit", in 1992, where discussions about biosafety and GMO gained strong attention, UNCED, Rio+20, represented the most significant global event on sustainable development over the last few decades, and a unique opportunity to observe the main actors that articulated in the GMO field (FAO, 2012; Lang & Heasman, 2015). Aside from the participation of heads of state and representatives (more than 190 countries sent representatives to Rio de Janeiro), representatives from civil society (mainly composed of NGOs, co-ops, religious groups, indigenous communities and others); scientists from different fields, think tanks, politicians and representatives from the private sector participated in parallel events (FAO, 2012; La Via Campesina, 2012).

Rio+20 offered key observational data that helped identify how CSOs differed not only in their positioning strategies (articulation with other players), but also with regard to their legitimation strategies: how they justified and defended their actions as desirable or appropriate (Harmon et al., 2015). Further bibliographic resources were key to conceptually build the GMO arena of struggle, where different actors, including CSOs, had opposing views.

In the second stage of the study, we focused on the development of an in-depth

qualitative research in Brazil, a country that presents a context full of contradictions, strongly impacted by the use of GMO and quite often neglected in studies on food organizing. Despite showing an important context of biodiversity, Brazil became, in 2003, the fourth largest producer of transgenics in the world (Sindag, 2011) and by 2010 the country was already the second largest GMO producer in the world (ISAAA, 2014).

The main strategies of data collection consisted of primary data combined over 19 in-depth interviews with a range of key civil society actors and scientists representing GMO arena of struggle in Brazil. Primary data consist of the transcripts of the interviews provided by CSOs, selected using the criteria of accessibility and importance within GMO arena of struggle in Brazil. During the field research, interviews were conducted online through Skype and in person, and interviewees were informed their anonymity would be preserved (see Table 1), but their organisations no. Each interview lasted, on average, one hour and followed a semi-structured script, updated according to the new categories that emerge from the field observations. In addition, secondary sources were collected, formed by a wide range of academic books and articles, media sources, "grey" literature and many of the institutional texts of CSOs regarding GMO, as well as websites, publications, speeches, and campaigning materials. Field notes and transcribed interviews totaled more than 790 pages of data.

- insert Table 1 here -

Data analysis

Data analysis was divided in two phases. Initially, we built a narrative analysis of the co-evolution of GMO arena of struggle in Brazil, highlighting hegemonic and counterhegemonic positions in key historical political moments and articulations (Laclau, 2005, 2006; Laclau & Mouffe, 1985). For each of these positions, an overarching discourse was identified: food security as a pro-GMO hegemony was opposed to biodiversity preservation and an anti-GMO counterhegemony.

From data collection (primary and secondary data) it was possible to observe that, before the launch of the RTRS in 2006, CSOs had largely positioned around "biodiversity preservation" or "food security" as two opposing discourses in GMO arena (Allain, Nascimento-Schulze, & Camargo, 2009; Melgarejo, Ferraz, & Fernandes, 2013; People's Summit, 2012). However, after the launch of the RTRS, CSOs started to shift their efforts in the articulation of "agroecology" as a way to solve the moral impasse that took place strongly after 2006 in GMO struggle (FAO, 2014; Melgarejo et al., 2013).

In the second phase, the study relied on rhetorical argumentative analysis (Toulmin, 2001) to uncover the legitimacy claims that actors positioned around these discourses relied on (Harmon et al., 2015; Toulmin, 2001). Interview's transcripts and secondary sources largely accounted for the justification arguments used by CSOs to legitimise the engagement or not in one of these discourses. The focus was on the latent content of data in order to capture the rhetorical arguments CSOs differentiated in terms of Logos

(rational arguments privileging scientific evidence as pro or anti-GMO positioning), Pathos (emotional arguments, positioning CSOs in pro or anti-GMO discourses) and Ethos (moral arguments, referring to higher order justifications, as life preservation).

We relied on rhetorical argumentative analysis to discover the underlying generating mechanisms that enable and constrain hegemony and counterhegemony positioning. In other words, our initial concepts based on neo-Gramscian theory (Laclau & Mouffe, 1985; Levy et al., 2016), were expanded relying on argumentative analysis (Toulmin, 2001).

The results of our rhetorical argumentative analysis, defined as legitimation strategies, are schematized in Table 2. Table 2 compares CSOs legitimation strategies in the period from the Earth Summit in Rio in 1992 to the launch of the RTRS in 2006 followed by the launch of a new discourse for accommodation after the RTRS, 2006: Agroecology. The first period (from 1992 to 2006) was considered a privileged political moment (Laclau, 2005, 2006; Laclau & Mouffe, 1985), where counterhegemonic CSO face an important "legitimacy test" (Boltansky & Thévenot, 2000/ [1991]; Patriotta et al., 2011), and were subsequently rearticulated around "agroecology discourse". The second period (after 2006) underscores the main legitimation strategies CSOs relied on within agroecology discourse, arguing that agroecology emerges as an accommodation of a moral impasse hegemonic and counterhegemonic CSOs confronted within the previous articulation around "food security" or "biodiversity preservation". Further examples are offered along

the paper.

- insert Table 2 here -

Stages of Co-Evolution of Genetically Modified Organisms (GMO) Hegemonic and Counterhegemonic Movements in Brazil: The Role of Legitimation Strategies

Setting the GMO arena of struggle

Until 1998, the GMO arena was apparently absent in Brazil. At that time, a country marked by the substantial share of agribusiness in total GDP (in 2013 it reached 1 trillion Brazilian R$ of the country's GDP, Veloso, 2014), it was prohibited to plant any transgenic variety on national territory. Transgenic soybeans, however, were "trafficked" illegally over the borders. The formal "entrance" of transgenic soybeans into the agricultural, environmental, and commercial agendas of Brazil, began after a large amount of transgenic soybeans smuggled from Argentina were seized by the Federal Police in February 1998 (Menasche, 2003; Oliveira, 2004). Faced with the reality of illegal trafficking of GMOs, different actors, including the state, multinationals, small farmers aiming to increase their profits and civil society actors (Greenpeace took the leadership among CSO along with Action Aid and IDEC - Brazilian Institute of Consumer Protection) were mobilised.

The repercussions of this episode were tremendous and materialised the GMO as an arena of struggle, with growing mobilisation around GMO contamination over natural seeds, the possible negative impacts of them on human health and on the environment.

Up to this "GMO incident", the official position of the Brazilian government relied on the discourse of "biodiversity preservation". This discourse was originally echoed at the United Nations Conference on Environment and Development (UNCED), also known as the "Earth Summit", held in Rio de Janeiro, Brazil, in 1992. "Biodiversity preservation" agglomerated the worries around GMO and their effects on the environment, and it was closely connected to a new pattern of development: the sustainable development, referring to fair and equitable benefits arising from the use of genetic resources, especially in developing countries.

The Brazilian government played a visible role in the Earth Summit, which was also an opportunity for civil society organisations to stand out in the sustainable development agenda (about 1,400 NGOs were accredited to the event). Most CSOs articulated around biodiversity preservation taking an anti-GMO position, locally and internationally (Dodds, Strauss, & Strong, 2012).

The "illegal" use of transgenic soybeans "forced" an official government position regarding GMO in Brazil. The first formal step towards GMO use in Brazil, was taken in mid-1998, when the big U.S. multinational Monsanto requested authorization from the National Biosafety Technical Committee (CTNBIO), at the Ministry of Science,

Technology and Innovation, to cultivate and commercialize the Roundup Ready (RR) transgenic soybean in Brazil, based on the company's own report. At that time, several CSOs, led by Greenpeace, claimed that Monsanto has completely neglected the environmental impact in its assessment study and more than 70 entities sent petitions to the government advocating against the authorization (Menasche, 2003). Some of the CSOs that attended the Summit were those that lead the GMO resistance. The most prominent voices were the World Wide Fund for Nature - WWF, Greenpeace and Friends of the Earth International. In the first years, all CSOs articulated that preserving biodiversity and ecosystems was critical to ensure the continuation of human life on the planet (Moreira, 2000).

In 1999, the Brazilian government took the lead in the GMO arena by establishing the authority of CTNBIO with regulatory power over GMO sale and production. A Provisional Measure assigned to CTNBIO the role of formulation and implementation of the Brazilian Biosafety Law and the establishment of technical safety standards and technical advice regarding GMO risk assessments. This act up-scaled the decision impact of CTNBIO on the GMO arena: if CTNBIO approves a specific transgenic seed this can be legally commercialized in Brazil. GMO could be approved based on the so-called "scientific evidence" grounded on CTNBIO tests and analysis verifying GMO would not cause any harm to human health, living organisms and the environment.

Actors within the agribusiness were central to this legal turn of events as they were pro-GMO and largely represented in National Congress. This marked a shift in the Brazilian official strategy, aligning groups within the government and agribusiness actors toward pro-GMO strategies. Large agribusiness multinationals like Monsanto considered the approval of the Provisional Measure a "victory" because the pathway to GMO commercialization was now opened. Together with the government, agribusiness actors became very powerful when it comes to GMO hegemony, not only because of the relevance of agriculture to the country's GDP, but also because of the boom of agribusiness after the Green Revolution in the 1970s. Brazilian agribusiness is characterized by capitalised and intensive farms; high mechanization and strong use of biotech products in food crop production; export-oriented industrial agriculture; and focus on productivity and economic survival, whether to produce food or agrofuels (Bello, 2009; Otero, 2012).

Beside "scientific evidence", pro-GMO actors also relied on the need to tackle the Brazilian "food insecurity" situation. Thus, in a country that has a huge part of its own population below poverty levels (in 1998, 21 million Brazilians were classified as indigent and 50 million poor - see Barros, Henriques, & Mendonça, 2000) "food security" discourse was appealing, as it was utmost to solve hunger in the country and to preserve life through access and availability of food for all. "Biodiversity preservation" begin to

look as a “luxury” for a country where “food insecurity” was still a big issue, and the role of agribusinesses as a key player to reduce extreme poverty and hunger.

The growing governmental endorsement of GMO created a disruptive condition for the emergence of the counterhegemonic movement, since its actors perceived that the country had reached a point of no return regarding GMO. Other actors articulated around the counterhegemonic position, beside international CSOs like Greenpeace and Action Aid, were local NGOs, including the Brazilian Institute of Consumer Protection (IDEC), *Terra de Direitos* (Land of Rights), and the NGO ‘Advisory and Services to Projects in Alternative Agriculture’ (AS-PTA). In mid-1999, the same year as the Provisional Measure, these CSOs created the “Campaign for Brazil Free of Transgenics” with the explicit purpose of resisting GMO growing hegemony.

In 2000, the Brazilian government issued another Provisional Measure, increasing the authority and the power of CTNBIO: “An outline of provisional measure gave power to the CTNBIO to set of inspection rules, to authorize the use of genetic engineering and to authorize imports of GMO” (AS-PTA, 2000). In order to approve its GMO seed for commercialisation, a multinational corporation must submit its own scientific tests demonstrating that it is safe for human and animal consumption and for the environment.

Counterhegemonic anti-GMO CSOs became key in articulating criticism to the growing pro-GMO hegemony. These CSOs denounced both: the increasing access of multinational corporations to CTNBIO’s deliberations; and the decreasing importance of

the “biodiversity preservation” discourse in the Brazilian government official agenda. Moreover, for them, as a “megabiodiverse” country (Conservation International, 2012), Brazil should strengthen its efforts in “biodiversity preservation” and not in the GMO trade.

By exposing the powerful network of actors supporting GMO, the counterhegemonic movement was able to aggregate important social movements. To fight anti-GMO diffusion in the country, in 2001, the Landless Rural Workers Movement (MST) and *La Via Campesina,* organized two striking episodes in the state of Rio Grande do Sul. Both organisations defend small farms and rural workers. They destroyed 2.2 hectares of Monsanto’s experimental area of transgenic corn and soybeans and MST announced that the movement would occupy properties with GMO cultivation (Castro, 2006; Menasche, 2003).

At this point, the GMO arena of struggle was already established, organized around two discourses: the “food security” discourse, endorsed by part of the Brazilian government and agribusiness sector as a hegemonic movement, and the “biodiversity preservation” discourse, articulated mostly by international CSOs, with eventual support of local NGOs and social movements.

Establishing hegemony in the GMO arena: the role of CSOs in hegemonic and counterhegemonic discourses

In 2005, the Brazilian Law on Biosafety came into action, endorsing legal support to GMO hegemony. The "Provisional Measure" became permanent regulation. The new Law supported GMO, restructured the CTNBIO (providing greater autonomy) and settled the need for establishing the Brazilian National Biosafety Policy.

For counterhegemonic CSOs, the new Law was a turning point, when many of them thought about giving in to the GMO agenda, as if they had lost the "battle". However, as pointed out by a researcher of the AS-PTA:

> "Now [at that time] it was different, now it was for real, everything would be official and legalised. Now the impact [of GMO] that we had been announcing and alerting against, this impact would start to reach farmers, consumers."

In 2006, one year after the Law was passed, the Roundtable on Responsible Soy Association (RTRS) was launched, marking an important shift of a group of CSOs around hegemonic pro-GMO positions. The RTRS is an international multistakeholder forum with a big impact on Brazilian GMO hegemony, self-defined as a CSO that promotes the sustainability standard for the production, processing and trade of transgenic soybeans (RTRS, 2017a). The members of RTRS are CSOs, producers, and industry, finance and trade, with strong participation of Brazilian actors, including GMO producers such as Group A. Maggi (Brazil) who strongly supported the rise of RTRS and became the first

GMO producer that got its production certified according to RTRS standards (RTRS, 2017b). CSOs are key in the RTRS forum, and key international NGOs, like WWF, supported its launch.

RTRS indicated the growth of "food security" discourse, embedded around the diffusion of the green economy for a better world, the need to increase agriculture productivity to feed the world population by 2050, the need to attend global markets and global retailing, biotechnology as the future of agriculture, the widespread notions of the benefits of commodification, monetising and corporatisation of food technologies and markets, among others (Mcmichael, 2009; Patel, 2009).

The positioning of a network of CSOs around RTRS was a strong indicator of pro-GMO hegemony. CSOs previously engaged on biodiversity preservation discourse were now part of the RTRS and defending food security. WWF's shifting position demonstrated the effectiveness of "food security" discourse in attracting more CSOs into their hegemonic chain compared to the effectiveness of "biodiversity preservation" convincing CSOs to shift positions from "food security" to engage with anti-GMO actors. WWF is not an isolated case, other CSOs also supported RTRS beyond their defence in protecting the environment in the "biodiversity preservation" discourse. Most of these CSOs represent countries that rely on dominant agribusiness and face challenges echoing "food security" discourse, as poverty or hunger (i.e., Fundación para la Conservación y el Uso Sustentable de los Humedales from Argentina and Guyra Paraguay from

Paraguay). Also, it is important to point out that some of those NGOs that shift their positions in Brazilian GMO arena are international NGOs with international headquarters and operations in different countries, such as Conservation International, Earth Innovation Institute, Fauna & Flora International, Solidaridad, The Nature Conservancy and World Resources Institute.

After the release of the RTRS, the remaining counterhegemonic CSOs denounced the association of WWF with RTRS as unacceptable. For them, since then, WWF was cooperating with corporations to promote transgenics through the label of the GMO sustainable soybean production in a global standard. On the other hand, WWF's Position Statement in 2012 on GMO highlights that it does not aim to promote GMO. On the contrary, its main concern is the adoption of the precautionary principle in each location where the NGO works. Moreover, WWF:

> "WWF develops its strategy in each location based on this risk analysis. In its work on sustainability standard setting for commodities that include GMO, (such as the Roundtable on Responsible Soy, and the Better Cotton Initiative), WWF supports and promotes the development of tracts for non-GM varieties within credible standards." (WWF, 2012)

By agglomerating CSOs on the same "table", RTRS and similar initiatives exposed a 'legitimacy test' for pro and anti-GMO actors, requiring coherent and fair justifications about the worth of their positioning within hegemonic and counterhegemonic discourses

(Boltansky & Thévenot, 2006/[1991]; Patriotta et al., 2011). How can all CSOs claim to be "sustainable" despite belonging to pro or anti-GMO discourses?

Struggling for legitimacy in GMO arena: rhetorical arguments of pro versus anti-GMO CSOs

The analysis of rhetorical arguments used by CSOs to legitimate their positions around these two opposing discourses: "food security" (hegemonic discourse) versus "biodiversity preservation" (counterhegemonic discourse) reveals CSOs' legitimacy struggle within GMO arena.

Once repositioned in terms of hegemonic and counterhegemonic, how do CSOs justify their positions pro and anti-GMO hegemony? More importantly, how the patterns of their rhetorical strategies (similarities and differences) influence the co-evolution of GMO arena? By co-evolution, we refer to both, hegemonic and counterhegemonic positions within GMO arena of struggle (Levy et al., 2016).

We rely on rhetorical argumentative analysis (Toulmin, 2001), to uncover the legitimacy strategies of CSO actors around both discourses, food security and biodiversity preservation, particularly as they are crystalized after the launch of the RTRS, in 2006 (see examples in Table 2). The analysis allowed us to access patterns of

similarities and differences in CSO argumentations. We assessed the 'ethos', 'pathos' and 'logos' of argumentative structures CSOs pro and anti-GMO articulate.

The most striking difference among anti-GMO and pro-GMO CSOs relies on their appeal to emotion as a rhetorical strategy (Pathos). In fact, anti-GMO actors relied on emotional arguments, but pro-GMO CSOs do not. For anti-GMO actors, food security is "all about money" and "all about corporations". So, they aimed to persuade mainly through the emotive argument **"if they defend food security and GMO, they stand on the side of money and corporations"**. The notion of those "for money and corporations *versus* us" is highlighted in CSOs' words such as "There is pressure from these companies there [in the government], you know?", "We never had anything to do with them... But Cargill also sits at this roundtable", "Those who are working with green economy as a positive thing are on the side of the corporations" and "For us this is market environmentalism, right? They are market-environmentalist organisations". (see other examples in Table 2).

The pathos strategy allowed anti-GMO CSOs articulated around biodiversity preservation to build a common idea of an "enemy" in GMO arena (Otto & Böhm, 2006), by demarcating the "other", "which they were not", as the neo-Gramscian approach points out. By emotionally comparing and demarcating the others – the hegemonic food security discourse – anti-GMO CSOs reinforced their collective identity. Therefore, appeal to emotions turned out to be an effective way of establishing the boundaries in GMO arena

anti transgenic seeds. CSOs on the hegemonic side of the struggle did not rely on pathos as a legitimation strategy, which corroborates their hegemonic positions.

Additionally, we found that CSOs adopting both discourses relied on very similar legitimation strategies oriented by Logos: both, anti and pro-GMO CSO rely on scientific evidence or data as the preferential rational argument. Both rely on scientific evidence as a privileged form of justification.

Pro-GMO CSOs argue in the direction of food security, advocating that GMO are safe and relying on the logic that **"if renowned scientists have created GMO, then it was tested and it is safe to increase food production in a sustainable way"**. Conservation International is one example:

> *"CI's scientists are working to find solutions to the global food crisis"* (Published on Conservation International website, 2017).

Anti-GMO CSOs also rely on "scientific evidence" in their rational arguments for biodiversity preservation in order to strengthen their position and convince a broader audience of their claims. For them: **"if scientific studies still cannot guarantee the possible negative effects of GMO to the environment and to animal and human health, then GMO should be prohibited"**. This assertion grounds on the claims that risk assessment tests are usually done in one single specific area and not over a considerable time, so that scientists cannot fully assure the risks of GMO.

This rhetoric is shared by a local NGO that has always positioned as anti-GMO:

> *"People now, for example, will participate in the launch of this dossier [anti pesticides] that has been our main scientific instrument of struggle because we have always been questioned: "Ah, but nobody can prove to me that the pesticide is bad, that pesticides cause cancer". So, this dossier brings a series of studies so we can rebut this argument of science"* (interview of a Researcher and Campaigner of the Permanent Campaign Against Pesticides and For Life, a small social movement in Brazil, 2015).

The similarity of rational arguments both CSOs in GMO hegemony and counterhegemony rely on proved to be inefficient in terms of their different positioning. However, the strength of "scientific evidence" rational arguments for both actors is a strong indicator of their centrality within GMO arena of struggle.

Both groups of CSOs also relied on ethos, by appealing to morality, as an important ground to legitimise their positions in the GMO arena. However, our analysis indicates a moral impasse between pro-GMO and anti-GMO CSOs, since both of them advocate "life preservation" in their rhetorical arguments. In biodiversity preservation, the moral argument from CSOs lies in "GMO impose risks to life, and should be banned". In food security, CSOs claim "GMO are necessary to fight hunger and poverty", in other words, to "preserve life".

The **"life preservation"** as a legitimation strategy anti-GMO CSOs rely on, is endorsed by the Researcher of AS-PTA, a Brazilian local NGO, in 2015:

> *"They say: '– productivity has increased'. Okay, but what do these data mean? Have they reduced the use of poison? They haven't said for sure that it is already proven that it does not damage your health".*

On the other hand, CSOs on the hegemony side draw their arguments on "life preservation" by guaranteeing that GMO are very important for feeding the world's population by 2050 and solving hunger and poverty. As advocated by the Director of Conservation for WWF-Brazil, in 2015:

> *"Let me explain this… WWF is not anti-GMO, and it is not anti-GMO because we understand that it is very difficult to be against something that could represent a solution or represent part of the solution to hunger issues in Africa, for example".*

This moral impasse resulting from the fact that both positions are based on the ethos of the argumentative structure and adopt similar rhetorical strategies became more visible after the "test" of the RTRS, which marked GMO hegemony and a non-turning point for anti-GMO CSOs. So, for those CSOs resisting GMO, RTRS and its agenda were considered "morally unacceptable" because of the growing uncertainty of GMO, as pointed out by the ex-Coordinator of *La Via Campesina* in Brazil and Coordinator of the Movement of Small Farmers in 2015:

> *"So everything we've seen in the United States, Canada, and more recently in Argentina, we advertised in Brazil but all the impacts that we have suffered, we continue to suffer. Genetic contamination increased the use of pesticides here [in Brazil], which was a*

promise of industries that would not happen; plant resistance to the pesticides ... The whole issue of environmental impact has already advanced, it has become true, right? [the use of GMO in Brazilian agriculture]. So it was in 2006 that social movements put a lot of pressure on monitoring agroindustrial food products, actions that mobilise and that are against the renewal of the CTNBIO".

As for pro-GMO CSOs, it was, on the other hand, "morally unacceptable" to neglect the need to solve hunger, poverty and the role of increasing food productivity through a large-scale agriculture based on GMO to address these problems. The environmental NGO The Nature Conservancy, address that moral reasoning in the following comments:

> *"In order to feed the nine billion people who will inhabit the Earth by 2050, global food production will have to increase by 60%... Latin America has an incredible potential to become the world's breadbasket if it can achieve more sustainable ways of production."* (Published on The Nature Conservancy website, in 2017).

- Insert Figure 1 here -

In face of the establishment of pro-GMO hegemony, after RTRS, the abovementioned moral impasse challenged CSOs engaged in GMO struggle (see Figure 1), pressuring for a new articulation of anti-GMO CSOs and influencing the emergence of agroecology.

Emergence of agroecology as a new discourse of a moral accomodation

The hegemonic pro-GMO movement yielded concrete results: in 2007 the first GMO corn seeds from Bayer and Monsanto were approved for commercial use in the country. Not only would Brazil produce transgenic soybeans but also transgenic corns. In 2014 it was estimated that 80% of crops grown across the country were GMO (Globo Rural, 2014).

However, the need to accommodate the moral impasse faced by CSOs articulated around food security versus biodiversity preservation, and also to attract actors that were not part of the hegemony lead to the emergence of the new agroecology discourse. Agroecology articulated actors around a common purpose that was strong enough to draw concrete solutions against the agribusiness and somehow provoke a new space for a more effective and stabilized counterhegemonic movement for GMO hegemony.

In Brazil, agroecology started as a social movement in the early 1980s in response to the agricultural modernisation introduced during the 'Green Revolution' that provoked environmental degradation and social exclusion of small farmers. The movement agglomerates local social movements, NGOs, small-scale farmers, peasants and other grassroots rural CSOs such as indigenous and *quilombo* communities, co-ops, religious groups and others.

However, it was in the early 2010s that anti-GMO CSOs increased their articulation around agroecology in Brazil adopting a more radical and grassroots perspective, as represented by the leading role of *La Via Campesina*, the world's largest social movement (The Guardian, 2013). Considering the size of Brazil (a continental country) and the

weight of agriculture in the economy, smaller movements and NGOs in rural areas engage in agroecology, the bigger the resistance would be and the stronger their voice would be (one example of CSOs in agroecology articulation is *La Via Campesina* – leader of this counterhegemonic movement; AS-PTA; IDEC; the Movement of Small Farmers; the Peasant Women's Movement; the Daisy March; the Permanent Campaign Against Pesticides and For Life; and, the Land's Rights). It is important to mention also segments of Brazilian government engaged in agroecology such as the Ministry of Agrarian Development, whose focus lies in family farming (MDA, 2017).

The major breakthrough in discourse articulation around agroecology happened in 2010 (after the RTRS in 2006), when a scientific research on gene monitoring by the state of Paraná proved that there had been contamination of common crops by transgenic corn. That was a very polemic situation because it evidenced that, even within the rules established by CTNBIO, the aim to guarantee the precautionary principle regarding risks, there was contamination.

The event reinforced rational "scientific evidence-based" arguments, allowing anti-GMO CSOs to rearticulate their contestation and resistance against transgenics in a more active way, endorsing the urgency to defend agroecology as their main alternative to industrial agriculture in the GMO arena. Agroecology is commonly referred to as a science, a movement, and an agricultural practice (Wezel et al., 2009). It relates to a

method of cultivation which focuses on agro-ecosystem management and non-use of external inputs (Holt-Giménez & Altieri, 2013).

Agroecology turned out to be an effective discourse to resist GMO hegemony organized around food security. As an example, two so-called "victories" by CSOs anti-GMO were the formulation of the National School Feeding Programme (PNAE) in 2009 and the National Plan for Agroecology and Organic Production (PLANAPO) in 2013. Both public policies were conceived with the broad participation of anti-GMO CSOs and *La Via Campesina* actively participated in negotiations and formulation of PNAE and PLANAPO.

The PNAE foresees the use of at least 30% of the funds for school feeding to purchase food items directly from family farming and rural family entrepreneurs or their organisations. The policy gives priority to agrarian reform settlements, indigenous communities, and *quilombolas*. For small-scale family farmers, the PNAE opens an alternative market to their products and encourages small farmers to produce organic food through agroecological practices (PNAE, 2015).

This case also indicates how agroecology also successfully articulated the claims of the food security discourse. Considered as another "victory" for civil society actors anti-GMO in Brazil, PLANAPO aims to promote agroecology as a model of production for successful *poverty alleviation* in Brazil, based on cooperative and family farming and economic organisation (PLANAPO, 2013).

Another remarkable alliance, the report of 08 April 2015 launched by The National Cancer Institute (INCA) against the use of pesticide and GMO in the country, emphasized agroecology as an alternative discourse in GMO counterhegemony in Brazil. As one of the main medical public institutes in cancer treatment, and a strong influencer of public opinion in Brazil, the INCA report obtained wide media coverage around the risks for people's life posed by human consumption of GMO and the defence for agroecology.

The growing support of agroecology lead to the re-engagement of international environmental NGOs that, for a while, had reduced their actions in the GMO agenda, such as Greenpeace and Friends of the Earth. Also the Brazilian Association of Collective Health (ABRASCO) became very active together with the strong grassroot voices of the Permanent Campaign Against Pesticides and For Life and the Movement of Workers without Land (MST).

Moreover, agroecology opens doors for possible solutions to accommodate the moral impasse posed by biodiversity preservation and food security articulations in Brazil. In a country such as Brazil, with the huge power of the agribusiness on one hand and several rural workers and property on the other, articulations around agroecology became the cornerstone. By incorporating signifiers from biodiversity preservation (i.e. protecting the environment and human and animal health) as well as from food security (i.e. solving hunger and increasing food production through an ethical and just food system) agroecology represented the best combination possible to justify GMO resistance.

Agroecology as a moral accommodation: legitimation strategies

We associate the emergence of agroecology as a counterhegemonic movement in this third stage of the narrative to the previous moral impasse anti-GMO faced when compared with pro-GMO hegemony.

The rhetorical argumentative analysis indicates agroecology as a "third way" solution in GMO, better accommodating anti-CSOs' and their allies' claims and demands agroecological justification relies, simultaneously, on "more ecological and safe food system to the environment and to animals and human health" and the one of "solving hunger and poverty and to increase food productivity". Agroecology was, therefore, very successful in finding ways to morally respond to the impasse. The moral argumentation for discourse was based on **"Agroecology respects nature and human beings at the same time working as a solution to tackle hunger in poor regions through a knowledge intensive perspective; therefore, agroecology has the solution for the pro-life moral impasse"**.

As highlighted by the Coordinator of the Peasant Women's Movement, in 2015, agroecology is pro-life regarding biodiversity preservation:

> *"And then we have our proposal that is agroecology, a project of peasant agriculture, feminist, and we work in it; in the issue of native seeds; knowledge transfer; the*

knowledge of women; the use of medicinal plants; all those themes that involve food sovereignty; permanence in the rural areas; struggle for land; biodiversity; common goods."

Moreover, agroecology also morally accommodates the main pro-life argument defended by CSOs in the dimension of food security: feeding the world's population. As pointed out by the international NGO, Third World Network (TWN):

"Agroecology is necessary for social and ecological transformation and is the best solution to ending hunger and ensuring climate change resilience and environmental sustainability. […] it advances the peasant struggle for productive resources and self-determination."

Agroecology allows CSOs to continue to rely on "scientific based" rational justifications ('logos'), but expands CSOs' argumentative base to alternative forms of evidence: **"There are many scientific studies that demonstrate the benefits of agroecology; therefore, we should rely on these studies as the solution for the future of food sustainability, but also articulate "alternative forms of knowing"**. As the Coordinator of the Permanent Campaign Against Pesticides and For Life and militant against transgenics in Brazil, in 2015, stressed:

"And those who were already studying this area [GMO and its relationship with pesticides in the country] were already realizing how this was becoming a case of Public Health. Several cases of acute, chronic intoxication and environmental poisoning. In this

group there are some organisations [CSOs] focused on the construction of agroecology and others looking at this [growing intoxication] as a counterpoint to Agribusiness."

Or, as local NGO AS-PTA highlights:

"Agroecologists do not think they know everything. They are not like conventional agronomists, who stand before the peasants with a posture of supremacy and arrogance. Agroecologists do not teach farmers how to make agriculture. They engage in an intercultural dialogue that accepts that science is not the only way to look, transform and emancipate the world ... From this perspective, it can be said that agroecology is, in itself, an epistemological revolution."

Finally, the grassroots voices that embrace agroecology also carry passionate justifications based on pathos, or emotions as a form of persuasion, as: **"if you defend agroecology, then you also fight against the threat of GMO and powerful actors as agribusiness that support it ".** This justification is posed in the quote where AS-PTA's researcher highlights that native seeds' defence:

"We incorporated this [defence on agroecology] on our work on seed with peasants and small-scale farmers. So, what was the idea? It was to show the struggle of resistance, that transgenics are a struggle, it comes from the struggle of the defence of the native seeds and that through the work on preservation, on native seeds, people would incorporate and give a more strategic aspect to agroecology due to the threat of GMO."

To sum up, the agroecology discourse incorporates a clear shift of anti-GMO CSOs towards more comprehensive and accommodating rhetorical arguments.

Conclusions

Brazil emerges as a privileged site for food organizing research: a context facing, simultaneously, the challenges imposed by food security – because of the urgent need to fight hunger and poverty as the world faces the challenge of feeding 9 billion people by 2050 – and the pressure to defend its enormous biodiversity (Conservation International, 2012; Mcmichael, 2009; Menasche, 2003). Within this context, GMO stands up as a powerful arena of struggle, where a plurality of actors - public, private or CSOs - coalesce in a very dynamic process of hegemonic formation with often contradictory and conflicted positions (Levy, 2008; Levy et al., 2016).

A comprehensive narrative of co-evolution of hegemony and counterhegemony discourses in GMO arena in Brazil needs to focus on a variety of actors, discourses and positions articulated over two decades. Many factors are key in understanding the growth of a pro-GMO hegemony and its anti-GMO counterhegemonic positions in a context as Brazil, marked not only by powerful agribusiness, co-existing along with small farmers and family businesses, but also facing poverty and hunger in spite of existing enormous biodiversity, and natural resources.

Among these many factors, our research highlights the role of CSOs, because they are key actors in hegemony formation (Laclau, 2005, 2006; Laclau & Mouffe, 1985; Levy et al., 2016; Spicer & Böhm, 2007; Van Bommel & Spicer, 2011). Our field research allowed us to elaborate a narrative of CSOs historical positioning within GMO arena of struggle, highlighting how they may position antagonistically within a pro-GMO food security discourse or anti-GMO biodiversity preservation discourse, but also how they may rearticulate as a counterhegemony under new more accommodating discourses, as agroecology.

However, the most important contribution of our research is related to the role of legitimation strategies CSOs rely on to justify their positions within hegemonic and counterhegemonic discourses. The unveiling of legitimation strategies is key in understanding hegemonic and counterhegemonic movements within GMO as an arena of struggle, considering that hegemony represents a consented form of power that allows the identification of actors with their political and social institutions, contrasting with coercive forms of domination,

We demonstrate that each of these discourses, hegemonic or counterhegemonic, stands up as an unstable social order that demands justification, in other words, must feel legitimate for CSOs, and "defended" when disputes arise. Our narrative highlights key political moments in the trajectory of GMO arena of struggle, as the RTRS stands up as "legitimacy test" (Boltanski & Thévenot, 2006/[1991]; Patriotta et al., 2011). This

moment requires to CSOs coherent and fair justifications, which we highlighted through rhetorical argumentative analysis (Toulmin, 2001).

The rhetorical argumentative analysis (Toulmin, 2001) unfolded how CSOs persuade and justify their positions pro and anti-GMO over time (Boltanski & Thévenot, 2006 [1991]), but also granted other important findings. We observed that counterhegemonic CSOs appeal to emotion (Pathos) to craft the idea of the common "enemy" (Otto & Böhm, 2006) in GMO arena of struggle, which in turn, sets the boundaries of hegemony to counterhegemony movements. We also observed that logos rational arguments privileged "scientific evidence" in both hegemonic and counterhegemonic movements, and the emergent agroecology discourse amplifies the sources of alternative knowledge, beside the notion of science for a larger network of counterhegemonic CSOs, including grassroots social movements and NGOs.

More importantly, the analysis highlighted the role of ethos as an important rhetorical strategy both hegemonic and counterhegemonic CSOs have to resort, due to the nature of hegemony as a non-coercive, although unstable, social orders (Laclau, 2005, 2006). We identified the existence of a moral impasse in the Brazilian GMO arena of struggle, since opposing CSOs under biodiversity preservation and food security ground their positions in "pro-life" rhetorical claims. This moral impasse is important to understand the rearticulation of opposing CSOs around agroecology as a new discourse that was able to accommodate the impasse. Agroecology aggregated the need to preserve life through the

guarantee of biodiversity preservation as well as the need to increase food production and combat hunger.

Hence, by unfolding CSOs legitimation strategies in GMO arena of struggle, in Brazil, this study brings important theoretical contributions to organisation studies. Primarily, it adds more comprehension to the emergence of new configurations when hegemony reaches a state of stability, which was not explored by organisation scholars on neo-Gramscian studies. Secondly, it enlightens the advances on the "how" CSOs resist or support hegemony through different legitimation strategies that can be revealed by argumentative and rhetorical investigation. Further studies might explore alternative articulations CSOs rely on around power resources and distribution.

These contributions endorse the importance of food organizing and the complexities around it to organisation studies – such as the growth of GMO worldwide-, which deserves greater attention from academia, since it helps to understand the possibilities and challenges of "food sustainability", nor only in Brazil, but worldwide.

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Appendices

Table 1. List of interviewees.

Organization	**Activity of the Interviewee**
Catholic University of São Paulo	Researcher and Campaigner
World Wide Fund for Nature (Brazil)	Director of Conservation, Brazil
World Wide Fund for Nature (Latin American and Caribbean)	Campaigner, Latin America and Caribbean
Greenpeace (Brazil)	Ex-Policy Director, Brazil
Friends of the Earth (Brazil)	President, Brazil
La Via Campesina	Brazil Leader
Land's Rights (in portuguese, Terra de Direitos)	Legal Advisor
Alternative Technologies Center (in portuguese, Centro de Tecnologias Alternativas - CTA)	Campaigner and tutor
Brazilian Institute of Consumer Protection (in portuguese, Instituto Brasileiro de Defesa do Consumidor - IDEC)	Researcher and Campaigner
AS-PTA - Advisory and Services to Projects in Alternative Agriculture (in portuguese, AS-PTA - Assessoria e Serviços a Projetos em Agricultura Alternativa)	Researcher, Campaigner and tutor
Organic Agriculture Association (in portuguese, Associação de Agricultura Orgânica - AAO)	Researcher and Campaigner
Brazilian Association of Agroecology (in portuguese, Associação Brasileira de Agroecologia - ABA)	Coordinator
The Permanent Campaign Against Pesticides and For Life (in portuguese, Campanha Permanente contra os Agrotóxicos e Pela Vida)	Researcher and Campaigner
The Permanent Campaign Against Pesticides and For Life (in portuguese, Campanha Permanente contra os Agrotóxicos e Pela Vida)	Researcher, Campaigner and Coordinator

The Movement of Small Farmers (in portuguese, Movimento dos Pequenos Agricultores - MPA)	Coordinator
The Landless Rural Workers Movement (in Portuguese, Movimento dos Trabalhadores Rurais Sem Terra - MST)	Researcher, Campaigner and Coordinator
The Peasant Women's Movement (in portugese, Movimento das Mulheres Camponesas)	Campaigner and Coordinator
The Daisy March (in portugese, Marcha Das Margaridas)	Campaigner and Coordinator
The Land Without Transgenics (in portugese, Terra Sem Transgênicos)	Director and Campaigner

Table 2. CSOs legitimation strategies.

From the earth summit in Rio, in 1992, to the launch of the RTRS, in 2006 (legitimacy test)		DISCOURSE FOR ACCOMMODATION	Shift in Anti-GMO CSOs' discourse articulation and response to the legitimacy test
ANTI-GMO CSOs: Biodiversity preservation discourse	**PRO-GMO CSOs:** Food security discourse		**NEW ANTI-GMO CSOs:** Agroecology discourse
ETHOS (appeal to moral argument): GMO imposes risks to life **MORAL IMPASSE = LIFE PRESERVATION**	**ETHOS (appeal to moral argument):** GMO are necessary to fight hunger and poverty **MORAL IMPASSE = LIFE PRESERVATION**		**ETHOS (appeal to moral argument):** Rhetorical argument of Moral Accommodation: "Agroecology respects nature and human beings at the same time working as a solution to tackle hunger in poor regions through a knowledge intensive perspective; therefore, agroecology has the solution for the pro-life moral impasse"
Example: "They [women] play a role as guardian of seeds. So when *we are going to sensitize the farmers, because of the risk of transgenic seeds, they [women] are the first to realize the importance and the risk that the family farming itself is subjected*" (Testimony of Campaigner and Tutor of Alternative Technologies Center (in portuguese, Centro de Tecnologias Alternativas - CTA), local NGO, in 2015).	**Example:** "*In order to feed the nine billion people who will inhabit the Earth by 2050, global food production will have to increase by 60%*… Latin America has an incredible potential to become the world's breadbasket if it can achieve more *sustainable ways of production*" (Published at The Nature Conservancy website, in 2017).		**Example:** "And then we have our proposal that is *agroecology, a project of peasant agriculture, feminist, and we work in it; in the issue of native seeds; knowledge transfer; the knowledge of women; the use of medicinal plants; all those themes that involve food sovereignty; permanence in the rural areas; struggle for land; biodiversity; common goods*" (Testimony of the Coordinator of the Peasant Women's Movement, in 2015).

LOGOS (appeal to rational argument): “if scientific studies still cannot guarantee the possible negative effects of GMO to the environment and to animal and human health, then GMO should be prohibited”	**LOGOS (appeal to rational argument)**: “if renowned scientists have created GMO, then it was tested and it is safe to increase food production in a sustainable way”		**LOGOS (appeal to rational argument).** : “Many scientific studies, but also alternative forms of knowledge demonstrate the benefits of Agroecology; therefore, we should rely on that as the solution for the future of food sustainability”
Example: "So *we have been developing strategies for local farmers to be able to monitor biodiversity preservation. Here we have developed a methodology, a test, that tests the ribbons, like a pregnancy test, that you put on the seed to know if it is contaminated or not*" (Testimony of Researcher, Campaigner and Tutor of Advisory and Services to Projects in Alternative Agriculture (AS-PTA), local NGO from Brazil, in 2015).	**Example:** "*WWF develops its strategy in each location based on this risk analysis.* In its work on sustainability standard setting for commodities that include GMO, (such as the Roundtable on Responsible Soy, and the Better Cotton Initiative), WWF supports and promotes the development of tracts for non-GM varieties within credible standards. Doing so guarantees that non-GMO varieties remain an option; provides a comparative baseline for measuring the performance of GMO products, and impacts such as the use of pesticides; and ensures actors, including both producers and consumers, access to non GM products. WWF applies the same principle in its bilateral relations with companies" (WWF International Position Statement on GMOs in 2012).		**Example:** "*The problem of standardising one thing for different types of biomes or differentiated ecosystems is that you have to artificialise that ecosystem [as in the case of transgenic soya monoculture]*. For example, when introducing such a variety of GMO, that variety will have a high productivity associated with agrochemical, right? And usually the seed has an expression that is an expression of the genotype and one that is of the phenotype because it is the expression of that specific environment. Water, sun, climate ... So, *how would they have varieties that would be more adapted to drier climates or soils that have an acidity? ... It [the plant] is not just a genotype expression. It is also an interaction and there we have a biological, agronomic, and logical explanation*" (Testimony of Researcher, Campaign Coordinator of The Landless Rural Workers Movement (in Portuguese, Movimento dos Trabalhadores Rurais Sem Terra - MST), in 2015).

PATHOS (appeal to emotion as a form of persuasion): “if they defend food security and GMO, they stand on the side of money and corporations”	**PATHOS (appeal to emotion) is absent**		**PATHOS (appeal to emotion as a form of persuasion)**: “if you defend agroecology, then you also fight against the threat of GMO”
Example: "No, we try not to use the discourse of the World Bank, we try not to use a UN discourse; we try to build our discourse, our identities. *Well, those who are working with green economy as a positive thing are on the side of the corporations* ... They seek funding with this discourse, *the discourse that for money* we will get people to look after the water, the environment, this thing of responsible soy, green cattle, green meat, *everything is green ... For us this is market environmentalism, right? They are market-environmentalism organizations*" (Testimony of the President of Friends of the Earth-Brazil in 2015).			**Example:** "Because we have a training program for women in Agroecology. So *we bring women in and argue "Why did we change from when we kept our grandmothers' seeds and did not use poison and planted differently?" And "Why did we evolve to this model we have today?" This is a model that excludes [GMO-based agribusiness], it is a model that poisons, it is a male model, so we debate it for a rescue and also bring new elements so that people can understand that situation and also try to change, right*?" (Testimony of Campaigner and Tutor of Alternative Technologies Center (in portuguese, Centro de Tecnologias Alternativas - CTA), local NGO, in 2015).

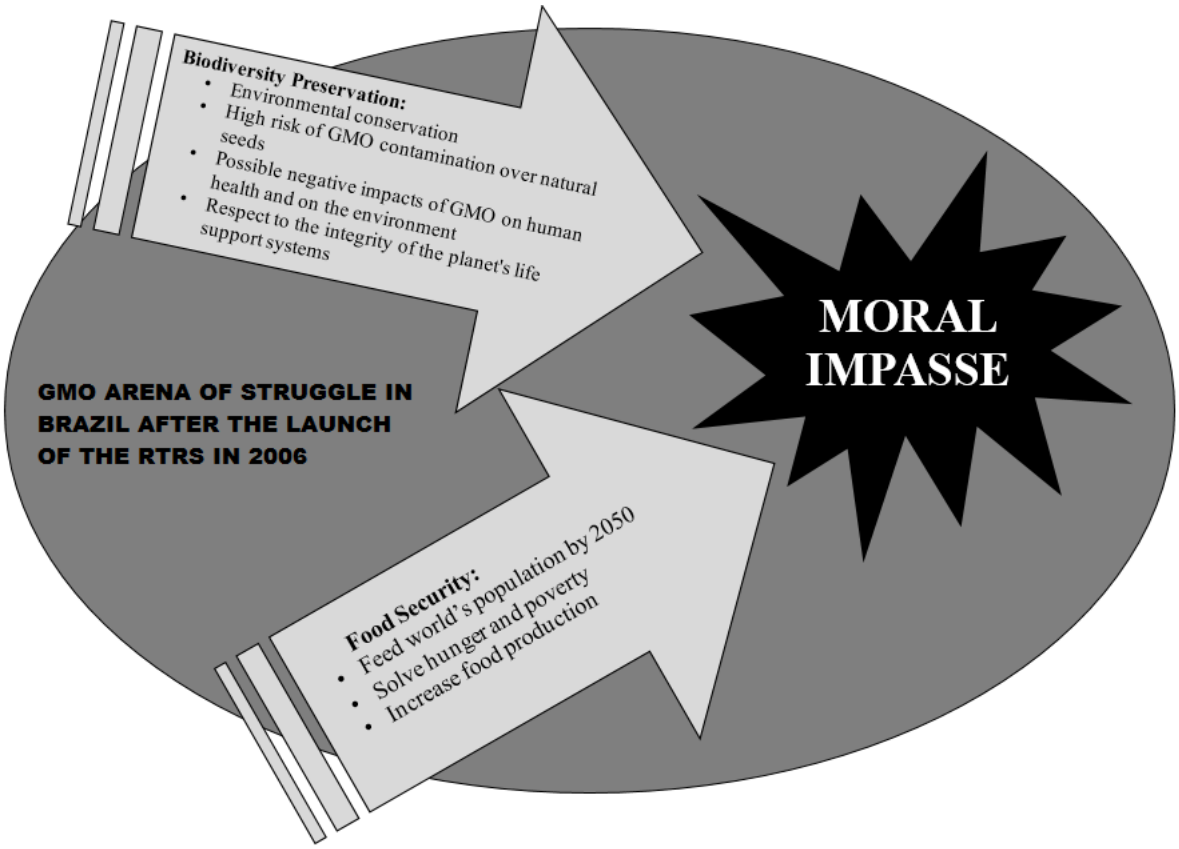

Figure 1. The moral impasse in GMO arena of struggle in Brazil.