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Introduction: Underscoring Agribusiness Failures, Environmental Controversies, and Growing Food Uncertainties

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Contemporary Agribusiness as the Rural Expression of Neoliberalism

The different chapters of this book discuss key aspects of agricultural modernization and raise some important questions about politico-economic and socio-ecological transformations taking place in countries of both the Global North (Europe in particular) and the Global South (with specific examples from Brazil and India). Our starting point is that, because of complex socio-economic interactions, environmental pressures, and fierce disputes, agriculture and rural development are today among the most controversial areas of policymaking, planning, and lobbying. With the encroachment of contemporary capitalism upon food production and biological systems, agriculture has become increasingly associated with, and subordinate to, a globalized agroindustrial complex

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A.A.R. Ioris (ed.), *Agriculture, Environment and Development*,

DOI 10.1007/978-3-319-32255-1_1

that exerts decisive influence over technology, financing, logistics, and commercialization. In general terms, a—partial and problematic—transition from agriculture to agribusiness has taken place over the last century, with the last two decades or so seeing a further transition to neoliberalized agribusiness. Consequently, the concept of agribusiness, which was originally introduced in the 1950s at the time of Fordist agriculture in the USA, has had to mutate in order to encapsulate agricultural production based on business-friendly state interventions, policy liberalization, and the dominance of transnational corporations.

It is not difficult to empirically verify that most agricultural activities today are shaped by the impact of neoliberal capitalism on production areas and on the processing and distribution of agri-food goods and the management of related services (Heasman and Lang 2004). Examples include a number of techno-economic innovations introduced by neoliberalized agribusiness sectors, for example, genetically modified organisms (GMOs), digital farming technologies, and satellite-guided machinery, as well as new production dynamics such as land and gene grabs, the privatization of common land, pervasive financialization, the decisive role of global corporations, and the creation of the World Trade Organization in 1995. These combine old and new strategies to renovate capitalism and minimize socio-ecological obstacles to economic growth. The results are intriguing, and suggest that further studies are necessary to understand the interplay between agriculture, food insecurity, and socionatural changes. On the one hand, agriculture as neoliberal agribusiness has achieved considerable results during the last three decades, in terms of additional areas under cultivation, intensification of production, and complex market integration. The aim of neoliberalized agriculture is to maximize production and profitability and suppress income gains for the labouring classes in a way that has reconstructed agriculture as a ‘world farm’ (McMichael 2010). On the other hand, however, these are also activities characterized by contradictions, failures, and limitations at local, national, and global scales. Never before has so much food been produced and so much space been used by farmers, but at the same time, record amounts of food are wasted every day, and a significant proportion of the global population struggles to maintain minimum levels of nutrition, while a comparable percentage suffers from the consequences of obesity (Patel 2008).

Taking into account these challenging circumstances, the main rationale for this book is that the staggering complexity of food and agriculture in the early decades of the new century can sometimes go unnoticed in a world dominated by many other urgent concerns and, more importantly, due to the false sense of security offered by intensive technologies and extensive global trade. Particularly in the North, and among high-income groups in the Global South, food is easily affordable and even taken for granted, despite the fact that food supply depends on a highly vulnerable distribution network controlled by a small number of transnational companies and supermarket chains. The following chapters will explore and discuss how the many asymmetries and uncertainties in the agri-food sector are directly and indirectly related to the instabilities of the contemporary economy, characterized by global speculation, structural inequalities, renewed forms of exploitation, and wasteful patterns of production and consumption. Ultimately, the consolidation of a global society centred on market principles has increasingly undermined individual and collective rights, and, even more importantly, subdued other socio-ecological demands. First of all, we will examine in more detail the significance and repercussions of neoliberalized agribusiness.

Studying the Transition to Neoliberal Agribusiness

Agrarian and food studies have certainly travelled a long way in the last hundred years, from a focus on rural communities around the turn of the twentieth century, via the dominance of functionalist theory and the exaltation of technological innovation in the post-war years and, eventually, to the neo-Marxism and other critical approaches introduced in the 1970s (Buttel et al. 1990). Since then, critical authors have started to question traditional scholarship—typically anchored in the supposed stability, desirability, and constant progress of capitalist society in America and beyond—with new interpretations of the rural economy, reasons for the unexpected survival of the peasantry, and the growing commodification of labour and nature. With the collapse of the Berlin Wall and consequent sociopolitical adjustments associated with a less

polarized world order, the focus of agrarian and rural studies shifted from location, context, and diversity to a range of approaches informed by behavioural research, actor–network theories, food regimes, and regulation theory (Robinson 2004). More than just a technical-economic issue, this reconfiguration of agriculture in recent decades has been described as a sociopolitical project that has come about through the struggle between social classes and different fractions of capital. An especially important part of the discussion has focused on the transition from a Fordist agriculture (focused on mass production, standardization, and higher levels of efficiency) into an alleged post-productivist and multifunctional arrangement that followed the introduction of post-Keynesian policies and the search for additional goals beyond food production (Ilbey and Bowler 1998). See more on this debate in Chap. 3.

However, post-productivist and multifunctional tendencies represent only part of the neoliberalizing pressures that have reshaped contemporary agribusiness and subjected it to the imperatives of flexible accumulation, market globalization, and the systematic concealment of class-based tensions. The intricacies of global agri-food activities today are at once product and co-producer of the dominant modernization of capitalism in accordance with the discourse and the strategies of neoliberalism. Neoliberalism is not only an economic and social phenomenon, it also constitutes an assertive programme aimed at dislodging the politico-economic approaches adopted before the 1980s (Connell and Dados 2014). It has meant an evolution from the post-war regime, which was defined by the flows of (surplus) food from the USA to its informal empire of post-colonial states (according to the strategic perimeters of the Cold War), towards agri-food liberalization via structural adjustments, lower national trade barriers, the dismantling of farm sector protections, and new intellectual property relations (McMichael 2012). In practice, neoliberal strategies have tried both to win new markets and to placate political resistance through a discourse of multiple activities, environmental responsibility, and supposed food security (Dibden et al. 2009). Neoliberalized agribusiness has also evolved through an incoherent argument about the virtues of free market transactions, while there are simultaneous calls for sustained state interventions to regulate price oscillations and eliminate overproduction.

The complexity of the neoliberal agri-food regime is particularly evident in relation to the uneven geographical development of the capitalist economy, and therefore needs to be understood in the wider context of the world ecology of capitalism (Moore 2015). The geography of neoliberalized agribusiness is characterized by a plurality of production and consumption activities, extending and connecting locales, regions, and nations. It has involved, in particular, the enforcement of free trade and other supranational agreements and the prioritization of the biotechnological production package (Pechlaner and Otero 2008). In practical terms, it is undeniable that neoliberalized agribusiness is less concerned with rural development strategies (as promoted by state agencies during most of the twentieth century) and more focused on a range of processes (rather than one isolated phenomenon with clear-cut boundaries) required for the maximization of profit and rapid capital accumulation from agri-food operations. The neoliberalization of food and agriculture has been a deliberate attempt to fix the systemic crisis of the Fordist agri-food regime without preventing the re-emergence of instability, protest, socio-ecological degradation, and, ultimately, a deficit of legitimacy (Wolf and Bonanno 2014).

It is crucial to observe that contemporary rural development and the agri-food sector have revealed, and largely depended on, the hegemony of transnational corporations, the integration of domestic production into global trade, and a number of free trade agreements. In more general terms, rural development now happens through both vertical (from rural spaces to the agri-food sector) and horizontal (rural spaces linked to other non-agricultural sectors) networks (Murdoch 2000). Yet, because of its bioeconomic properties, agricultural production cannot be integrated in the same way as the industrial sector (Goodman and Watts 1997), which means that local sociocultural factors and socio-ecological conditions remain significant despite the globalization of agribusiness. Likewise, the internationalization and networking of agri-food under the hegemonic influence of transnational corporations has not happened without resistance and reactions. Protests grow through different scales and have resulted in a variety of political, symbolic, and material consequences (Stock et al. 2014), although these have often been unreflexive and superficial (Harris 2009). The socio-ecological contradictions of

neoliberalized agribusiness are particularly noticeable in the case of contemporary Brazil and its burgeoning agribusiness-based economy. Due to sustained promotion campaigns and the emphasis placed on it by public policymaking, the term ‘agribusiness’ has a particular meaning in Brazil and is more widely used in common public debates than in other regions of the world. The national experience is briefly analysed in the next section, making use of a simple analytical approach, which paves the way for the subsequent chapters.

A Proposed Analytical Framework and the Unpalatable Neoliberalization of Brazilian Agribusiness

Brazil is increasingly perceived as a world agricultural powerhouse which, in principle, could have a lot to offer in terms of preventing a looming, increasingly global, food crisis. Particularly with the slowdown of Brazil’s national economy since 2010 (and especially after the controversial presidential election of 2014), agribusiness is an island of prosperity and dynamism in a context of corporate losses and lack of investment. As a consequence, Brazil has been a strong advocate of free market globalization and has pushed for calculated liberalization of the global agri-food trade (Hopewell 2013). However, as in other parts of the world, neoliberalized agribusiness in Brazil has been severely criticized over its actual beneficiaries and ambiguous prospects. The sector seems to thrive on a peculiar combination of tradition and modernity, which is clearly present in the attitudes and ambivalent discourse of large landowners and allied politicians. Neoliberalized agribusiness has many new features when compared with the previous, nationalistic period of agricultural modernization in the 1960s and 1970s, but it also betrays the strong elements of social exclusion, authoritarianism, and deception that have long governed economic development in the country. The rapid advance of agribusiness towards the central and northern states of Brazil in particular has been associated with severe environmental, cultural, and socio-economic impacts, including deforestation, violence against rural workers and indigenous populations, and notable cases of state capture and corruption.

All this betrays an intrinsic opportunism and demonstrates the peculiar nature of market-friendly rationalities, shaped by the demands of transnational corporations, national politicians, and rural elites (Ioris 2015). Governments and national business associations try to depict the advance of agribusiness in Brazil as the embodiment of the most progressive elements of an emerging economy that is part of the select group of BRIC (Brazil, Russia, India, and China) countries. Nonetheless, neoliberal agribusiness essentially constitutes a late, already obsolete type of modernity that replicates many mistakes from elsewhere in the country and other parts of the world. If neoliberalized agribusiness has effectively become one of the pillars of the Brazilian economy, it has also had troubling consequences as the country has faced progressive deindustrialization and become increasingly reliant on foreign investments and imports of intermediate inputs and capital goods. All these discursive and material developments are still to be studied in depth by critical scholars, particularly in terms of connecting the specific situations of different localities and regions with broader macroeconomic trends. Challenging the rhetoric of progress and creativity, a more critical examination would question the actual contribution of agribusiness to local and regional economies and the national economy. A deeper interpretation should be able to examine the idiosyncratic, apparently paradoxical combination of small innovations and transgressions that characterizes these capitalist relations of production and reproduction. Although the sector makes use of the appealing symbolism of triumph and modernization, the evolution of agribusiness has actually served to unify the interests of rural conservative groups and reinforce processes of political hegemony and class domination.

The expansion of neoliberal agribusiness, viewed in the wider context of the politico-ecological economy of contemporary capitalism, is examined here with the assistance of an original analytical framework structured around three explanatory categories: displacement (sectoral and spatial transformations), financialization (the prioritization of financial gain over agricultural outcomes), and mystification (dissimulation of neoliberalizing trends and associated risks and disputes). This proposed analytical framework has significant implications for academic research and policymaking, especially within politico-economy and neoliberalism studies, to the extent that it encapsulates

interdependent processes that are together responsible for the revitalization of agribusiness and for the legitimization of global agri-food markets. The framework is then used to highlight the historico-geographical repercussions of neoliberalized agribusiness in Brazil, which has been a feature of conservative responses to the crisis of accumulation caused by the exhaustion of developmentalist policies and state-led entrepreneurialism.

Displacement

Displacement is the first main dimension of neoliberalized agribusiness to consider. The neoliberal model has seen the previous emphasis on rural development, job creation, and infrastructure replaced with a focus on market integration, cost reduction, efficiency gains, and technological intensification. The political strength of neoliberal agribusiness actually comes from the consolidation of new economic strategies that supplanted the developmentalist policies that were hegemonic before the 1980s. Displacement has sectoral and spatial manifestations. It occurs, for instance, due to technological developments (e.g. constant release of new agrochemicals, genetically modified seeds, and sophisticated machinery and digital equipment), inter-country trade (often at the expense of national and local food demand), and the facilitated interchangeability of different forms of capital in commodity and land markets. The affirmation of the neoliberal agri-food regime is also associated with the migration of farmers and companies to new areas and the incorporation of regions that were not previously involved in production or were beyond the reach of global markets. Although local food production still represents a significant segment of the market (particularly production involving family farmers and peasant communities), southern countries have been encouraged to expand the export of high-value foods (e.g. expensive soft fruits, out-of-season vegetables, luxury crops, etc.) to northern markets, as well as to cultivate biofuel crops under the influence, for example, of northern environmental agendas.

Displacement is particularly demonstrated by the fact that agriculture continues to be practised in the localized context of farms and regions, while management, technological developments, and trade relations

increasingly involve transnational interactions and priorities. The displacement associated with agribusiness is, thus, dialectically related to the transnationalization of the rural economy, in the sense that activities and processes are (partially) altered at local or horizontal level, only to be then (partially and problematically) integrated into globalized phenomena. Rural areas are therefore 'reproduced, and the social relations therein recomposed, by virtue of their contemporary magnetism for relocation due to the wider discontinuities of capital activity' (Cloke et al. 1990: 15). The search for efficiency and the emphasis on competitive advantages result in the dispossession of less successful smallholders by commercial smallholders and large estates that are vertically integrated into agribusiness marketing chains (Amanor 2012). At the same time, the removal of public subsidies and the dismantling of state-owned enterprises have significantly affected rural populations and increased their level of vulnerability, often prompting domestic and international migration as a negotiated response to the emerging problems (Torres and Carte 2014).

In the case of Brazil, large areas have been transformed by the advance of neoliberal agribusiness due to the intensification, and joint operation, of public and private capital investments. The country has been a supplier of foodstuffs since early colonial times, and this only increased with the conservative modernization of agriculture promoted during the dictatorship imposed by the military and conservative political elites (1964–1985). Agricultural modernization implemented by the generals happened through the aggressive expansion of credit, the integration of farming with industry, and dedicated rural development policies. Priority was then given to the Fordist expansion of production through the adoption of new technologies, fiscal incentives, and subsidized loans. The political motivation was the need to weaken the political debate about agrarian reforms and replace it with a technocratic emphasis on food production and regional development. This conservative modernization of Brazilian agriculture was based on the integration of different forms of capital into large agroindustrial chains. After achieving remarkable rates of growth in the 1960s and 1970s, the state-centralized model started to show its serious limitations when faced with the debt crisis, escalating rates of inflation and macroeconomic instability. Consequently, the Brazilian agricultural sector suffered a period of turbulence and

uncertainty from the mid-1980s onwards, aggravated by higher interest rates, a reduction in support schemes (e.g. guaranteed prices), decreased availability of bank loans, and falling land prices.

With the introduction of liberalizing reforms in 1990, conditions were again favourable for the recovery of agribusiness as a dynamic economic sector. The neoliberalization of agribusiness benefited from, and contributed to, a wider process of sectoral displacement due to an emphasis on imports of intermediate inputs and capital goods (to contain inflation and appease consumer demand) and ill-conceived deindustrialization policies. In addition, spatial displacement occurred through the migration of production to other regions and the concentration of activity in large estates with thousands, or in some cases tens of thousands, of hectares. The most emblematic experience was the conversion of millions of hectares of savannahs (*cerrado*) in the central region of the country (considered as 'spare farmland') into soybean plantations and cattle ranches in close coordination with ever-bigger agroindustries (Barretto et al. 2013). Such neoliberal 'land reform' (in effect, an anti-agrarian reform similar to the one adopted by the military governments) was based on the sacrosanct ownership of private land in the name of democratizing capitalism and, more importantly, reducing the excesses of the state. Sizeable commercial partnerships have been established between Brazil and other southern countries, China in particular, which have, to a degree, replaced the established North–South flow of agricultural goods (e.g. the export of soybean from Brazil to the European Union was particularly relevant during previous decades). Overall, neoliberalized agribusiness has not only reinforced previous developmentalist policies, but also worked through a combination of physical, social, and political shifts that has displaced, but in some cases also reaffirmed, old tendencies of agrarian capitalism and transformed Brazil into the first tropical food giant on the planet.

Financialization

The second main feature of neoliberalized agribusiness is the prominence of financialization as a decisive force behind politico-ecological changes. Financialization is a process whereby transnational corporations,

commercial elites, and financial institutions acquire ever-greater influence over rural policymaking and agricultural outcomes at the expense of the more traditional players of the previous developmentalist phase. Since the crisis of Keynesian policies (typically based on direct state entrepreneurship), agribusiness has operated through a gradual shift from the production side to the retail side and towards new mechanisms of capital circulation and accumulation. As a result, the entrenched financialization of food and farming ends up penetrating everyday life and pervading the local, regional, and global scales of interaction. This leads to adjustments not only in the productive and commercial sectors (including the role of asset management companies, private equity consortia, and other financial institutions in acquiring and managing farmland), but also along the whole agri-food supply chain, at both macro and micro levels (Burch and Lawrence 2013). In historico-geographical terms, the financialization of the agri-food sector has provided a solution to the combination of the production and plunder spheres of capitalism. Financialization is also organically associated with spatial displacement, especially considering that neoliberalized agriculture is, above all, about the redistribution of value from the under-reproduced global periphery to the overconsuming Western core (Araghi 2009).

Sharing the turbulent experience of most other Latin American countries, the Brazilian national state initiated a programme of neoliberal reforms in 1990 centred on monetary stabilization, privatization, and budget controls (Ioris and Ioris 2013). A well-crafted macroeconomic programme of inflation targeting, introduced in 1994, strengthened the national currency but had the negative effect of facilitating the importation of foreign goods and reducing the competitiveness of Brazilian agriculture. Trade imbalances, together with high interest rates, produced a circumstantial reduction in agricultural profitability, but were then considered necessary to reorganize the national economy. With significant currency devaluation in 1999 (increased in subsequent years), favourable commodity prices, and a surge in demand, Brazil was ready to return to international markets and transform its agribusiness into a highly transnationalized sector gradually becoming more dominated by large (foreign and national) capital-intensive firms. The 'end' of cheap food (demonstrated by the 2008 'food crisis' and a commodity boom between 2003

and 2011) further discouraged productive investment in industry and infrastructure in favour of speculative activities that produced a massive flow of capital into agriculture (Moore 2015).

The financialization of agribusiness and the related dependence of the Brazilian economy on the agri-food sector have continued to steadily augment over the last few years. Interestingly, in recent years, the agribusiness sector has grown less than the national economy as a whole, and its participation in the national economy actually decreased between 2007 and 2013, but its contribution to the national surplus (in dollar terms) has proved vital (Barros et al. 2014). In 2013, the trade balance result was the worst since 2000 (a reduction of 86 % in the surplus due to weakening exports of minerals and industrialized goods) with agribusiness consolidating its role as the main money-making sector of the economy. In addition, a range of novel financial instruments, such as self-financing, private banks, input supplier companies, and trading companies filled the gap created by the reduction in the federal government's conventional schemes. This is exemplified, for example, by the 2004 legislation that created the Certificates of Agribusiness Receivables (CRAs), a registered credit instrument in which a promise of future payment is linked to a debt claim.

Mystification

As discussed above, the crucial role of neoliberalized agribusiness in global trade and market speculation today has meant a decline in the relative importance of agri-food's material properties in favour of more explicit financial goals. Despite the rhetoric of food security and the major agribusiness corporations publicly claiming to 'feed the world', agribusiness is increasingly about business in and for itself, while rural development, nourishment, and food production become less important. Nevertheless, these money-making objectives are shrouded in the mist of consumer satisfaction and the discourse of lower prices, which mystify the real impacts of the neoliberalization of agribusiness. Together with its significant technological and economic components (Ioris 2012), neoliberalized agribusiness has evolved through a constant political effort to disguise and

simultaneously justify changes in the contemporary agri-food sector. Even the alleged multifunctionality of today's agriculture (i.e. a range of economic and non-economic outputs beyond traditional farming production) often serves to conceal the neoliberal features of agribusiness and mask the fact that agribusiness has not produced a new technological 'revolution' or any significant improvement in productivity or technological improvement. Entrepreneurialism and innovation discourses have even appropriated the language of food sovereignty to justify preferential treatment by governments and priority investments (Eakin et al. 2014).

In the case of Brazil, the mystification of the neoliberalization of agribusiness has followed a dynamics of continuity and change, in which practices, interpersonal relations, and political strategies have been only partially transformed. Agribusiness farmers emphasize their contribution to regional development and economic growth, but only from the perspective of an intense financialization of agriculture and calling for the removal of environmental, social, and regulatory constraints. The sector has demonstrated a competent ability to lobby and promote its interests, particularly via the Brazilian Agribusiness Association (ABAG) created in 1993. Likewise, regular technical visits to production areas coordinated by the Round Table on Responsible Soy (www.responsiblesoy.org), established in 2006, have tried to improve the image of the Brazilian agri-food sector with a colourful rhetoric of sustainability, certification, and environmental commitment. However, the rhetoric of entrepreneurialism, competence, and environmental responsibility obscures the fact that the results of agribusiness actually have more to do with the flexibilization of domestic markets and the deeper insertion of Brazil into global trade. Neoliberalized agribusiness aims to further subordinate agricultural production to the extraction of surplus value (both from labour and from more-than-human nature) as a creative phenomenon that reconfigures old agricultural practices and relaunches them in the circles of transnational capitalism.

At the same time, the mystification of the success achieved by the agribusiness sector helps to conceal internal disputes, particularly between the majority of agribusiness farmers and the stronger players (larger farmers and transnational companies). During her research in areas of agribusiness expansion, Bruno (2009) identified the construction of a

discourse around modernity, wealth creation, and the value of agribusiness (at the expense of other forms of agriculture), but behind closed doors, there are signs of disunity and often unease about the way farmers are treated by corporations, banks, and other urban sectors. Another important element of mystification is the confusion about the role of the Brazilian federal state, which has created additional space for national and international corporations, but also retained control of a myriad of mechanisms aimed at promoting agribusiness. The transformation of the state apparatus under pressures for flexible regulation and lower market constraints has led to a new pattern of socionatural interactions, increasingly characterized by associations between state agencies, financial capital, and the stronger economic sectors (Ioris 2014). Although there has been a massive increase in land prices and an intensification of market transactions, the neoliberalization of rural development since 1990 has left the national state firmly in charge of economic flexibilization. This all corroborates the claim that neoliberalized agribusiness is less focused on farm production than during the previous phases of the capitalist economy (Whatmore 1995), and more focused on the off-farm financial activities that increasingly dominate supply chains, logistics, and distribution systems coordinated and supported by the state.

To summarize this section, neoliberalized agribusiness in Brazil has unfolded in three main dimensions, namely displacement (sectoral and spatial transformations), financialization (prioritizing money-making over agricultural outcomes), and mystification (dissimulation of the neoliberalizing trends and associated risks and disputes). These three dimensions have complemented and interacted with each other across multiple geographical scales around the planet. It should be noted that this synthetic framework is not without conceptual and methodological limitations, but it should be considered a starting point for further academic investigations and a tool to foster critical thinking. The proposed analytical framework has significant implications for research in human geography, especially within politico-economy and neoliberalism studies, to the extent that it encapsulates interdependent processes that are together responsible for the revitalization of agribusiness and for the legitimization of global agri-food markets. The framework has been used to highlight the historico-geographical repercussions of neoliberalized agribusiness in Brazil, where

the neoliberalization of agribusiness has been an element of conservative responses to the crisis of accumulation caused by the exhaustion of developmental policies and state-led entrepreneurialism.

Instead of agrarian reform and local food, the hegemonic solution was to intensify and revise production procedures according to neoliberal priorities. The neoliberalization of agribusiness in Brazil followed the displacement of traditional areas and industrial sectors in favour of the export of agricultural commodities (soybeans in particular); the growing financialization of production, distribution, and consumption (articulated in particular by transnational companies and the need to generate dollars to stabilize national accounts); and numerous mystification strategies to disguise manifold socio-ecological problems. The apparent success of the neoliberalization of agribusiness betrays a clear attempt to temporarily placate the structural contradictions of capitalist agriculture while novel tensions and reactions become increasingly evident (e.g. cheap food is produced to sustain capital accumulation from agriculture and other economic sectors, but this leads to the actual blackmailing of the national economy by agri-food exports and mounting rates of environmental degradation and social conflict). Agribusiness production in Brazil has been a privileged arena for the consolidation of flexible capital accumulation approaches, while it has been significantly shaped by direct state interventions, widespread forms of violence, and the subordination of agriculture to wider, globalized politico-ecological demands.

As a final point of interest in this section, it is highly emblematic that the advancement of neoliberalized agribusiness in Brazil has had many parallels in the reform of environmental policies and regulation, which have also come under the sphere of influence of neoliberal ideologies and market globalization (Ioris 2009). New responses to environmental problems have been formulated according to the perverse agenda of 'ecological modernization', that is, the claim that existing political and administrative structures can be amended to cope with old and new problems (without considering the need for more significant and meaningful politico-economic changes). The debate on the weaknesses of environmental policies adopted in recent decades around the world is vast, but it can be briefly demonstrated by the evolution of ideas about the economic value and productive role of water, which are considered below.

Water, Environment, and Economic Development: The Missing Political Link

The allocation and use of water are among the most pressing issues in the contemporary search for better standards of living, social justice, and environmental conservation. To a large extent, this debate has evolved around the need to expand water infrastructure as a requirement for economic growth, the reversal of ecological degradation, and the enhancement of water services. During most of the twentieth century, large sums of public money were invested in water engineering, but over time, it became increasingly evident that traditional interventions were also responsible for water pollution and altered river flows, without necessarily satisfying basic public demands. Acknowledgement of the shortcomings of conventional approaches to water infrastructure has led, since the end of the 1970s, to a review of water policies and government priorities. Emerging environmental awareness and public mobilization, particularly in the political North, also added to the pressure on national governments and multilateral agencies to gradually shift from single engineering initiatives to more comprehensive responses. Informed by concepts such as ‘sustainable development’ and ‘systemic thinking’, new ways of dealing with water problems started to shape the global water agenda. Public policies have been particularly influenced by the goals of integrated water resources management (IWRM), which include the formulation of ‘holistic’ solutions to water management problems, the reconciliation of multiple demands, and, crucially, appreciation in the economic value of water (Mitchell 2005).

Because of this more explicit recognition of the economic value of water, calls for economic efficiency and market exposure have occupied centre stage in the agenda of water reform. This represents a move towards hybrid mechanisms of environmental governance and beyond the state/market/society divisions that allegedly caused most of the mistakes in previous decades. It is now claimed that adequate solutions to old and new management problems should include not just the direct costs related to project implementation, but also a calculation of the monetary value of water, in order to ‘eliminate inefficiencies and express its full economic potential’ (WAAP 2006). According to this position, ‘a major

weakness of past approaches to the water sector has been the excessive reliance on overextended government agencies to manage water resources', while the new agenda calls for 'greater reliance on pricing and incentives' (World Bank 1993: 47). Therefore, the current strategy of applying market-based solutions to environmental problems is expected to foster economic rationality and promote management efficiency. Interestingly, international pressures for the adoption of market-inspired reforms have led to a homogenization of water policies around the world, despite major social, cultural, and economic differences between countries. For that reason, it is worth asking whether the ongoing reforms have actually resulted in any meaningful solutions to highly contingent and localized water problems. Considering the environmental and social statistics available in various United Nations reports and national assessments, it is evident that recent policies have largely failed to achieve environmental restoration or implement a more equitable basis for water allocation and use. Notwithstanding a change in the discourse, in the countries where the 'new management paradigm' has been applied, the outcomes of the reforms have been restricted to some bureaucratic improvements and, at best, the removal of isolated, circumstantial problems.

The Brazilian experience is a case in point of the inherent limitations of global water reforms, and this chapter intends to discuss the contradictory influences of neoclassical economics on the ongoing reorganization of water management in Brazil. With the approval of a new water law in 1997, an extensive regulatory apparatus was put in place, mostly influenced by the goals of integrated management, but so far, this has achieved only marginal results in terms of environmental restoration and conflict resolution. Although the legislation delegated to catchment committees the approval of plans and the reconciliation of spatial differences, the core element of new policies has been the expression of the monetary value of water. Despite the rhetoric of environmental sustainability, official initiatives continue to subject socionatural water systems to economic exploitation and unfair distribution of opportunities. The recent approval of hydropower projects by the national administration, for example in the Amazon region (such as in the Rivers Madeira, Tapajós, and Xingu), despite strong public opposition, illustrates the prioritizing of 'economic growth at any price'. In the same way, newly formed decision-making

forums have been dominated by the same rural oligarchies that traditionally controlled economic and social opportunities related to water use and conservation. As a result, instead of promoting a genuine change in public policies, the new approaches have largely preserved the hegemonic interests of landowners, industrialists, construction companies, and real estate investors to the detriment of ecological recovery and the majority of the population. This suggests that effective responses to water problems require a new basis for the use and conservation of water, which should be constructed according to social justice and environmental sustainability requirements, free from the pervasive influences of market rationality.

Water management has always been one of the dominant themes when economic theory is applied to the environment, including, for example, issues such as the scarcity of water stocks and the social cost of pollution. Because of its permanent circulation, water poses a unique challenge to economists, given that more than one person can appropriate the same unit of water from a common river or aquifer. Another methodological difficulty is the fact that water availability is normally concentrated in certain areas or during certain periods of time, while water usage varies according to socio-economic demands, personal preferences, and cultural values. Because of such particular properties, economic literature on the use and conservation of water is extensive and growing rapidly. As early as the eighteenth century, the founders of the discipline discussed the potential scarcity of natural resources in relation to a growing human population. For the resource economists of that period, nature contained a large reserve of raw materials freely available for human exploitation; water was seen as abundant and, consequently, there was minimal need to limit its use (Adam Smith, for example, considered water to be beyond economic value; he described it as a 'free good' and, for that reason, distinct from landed property). A few decades later, David Ricardo pointed out that if water existed in 'moderate abundance' and could be appropriated, it would then afford a rent similar to land (Ricardo 1962 [1817]).

Later, in the nineteenth century, Marxist thought provided an early critique of the worsening of environmental conditions under capitalist production (Burkett and Foster 2006), but it was the work of neo-classical economists that then achieved resonance with policymakers. For instance, J.S. Mill recommended that governments should define

property rights over natural resources—including water and forests—to secure their proper use as an ‘inheritance of the human race’ (Mill 1965 [1871]). The ideas of Marshall (1966 [1890]) about public amenities and his marginal theory of value inspired Pigou (1938 [1920]) to describe environmental problems as a divergence between ‘marginal social net product’ and ‘marginal private net product’. According to the marginalist theory, those who benefit from the use of the environment should internalize the social costs (externalities) of their activities via, for example, the payment of fees and taxes. A little later, Coase (1960) submitted that government intervention was less important in ensuring the adequate use of resources, since bargaining between players constituted a more effective solution. In that case, as long as a regime of explicit ownership can be established, water allocation and pollution problems are solved rationally, as much as water can be bought and sold through the market (Ditwilier 1975).

The debate between the ‘welfare theory’ (after Pigou) and the ‘free market theory’ (after Coase) resulted in the establishment of environmental economics, a subdivision of microeconomics applied to the use and conservation of natural resources. The underlying principle behind environmental economics was the maintenance, via economic instruments, of sufficient habitat features and the observation of a ‘safe minimum standard of conservation’ (Ciriacy-Wantrup 1952). For example, economists can develop mathematical approaches to determine potential economic benefits and relate these to the acceptable level of impacts caused by a new hydroelectric dam (Bishop 1978). The key tenet of environmental economics is the recognition of resource scarcity and, thus, the increasing marginal utility of water. Because water is seen as a scarce resource, monetary quantification of its value becomes a prerequisite for efficiency and sustainability (Rogers et al. 2002). Monetary valuation, which has been widely used in decisions about project priorities and mitigation measures, is normally estimated in relation to parameters such as household income, real state figures, and personal preferences (Van Houtven et al. 2007). Based on monetary valuation, environmental economics nowadays includes methodologies such as supply–demand management, marginal cost pricing, valuation of water in alternative uses, and optimization models (Ward 2007).

Crucially, the rationale for environmental economics has many points of convergence with the reasoning behind neoliberal policies and, in particular, the neoliberalization of agribusiness discussed above. Environmental economists claim that valuation techniques can inform choices between numerous potential methods of improving the quantity and the reliability of water supply (Castle 1999). However, in practice, assessments informed by environmental economics have fallen short of resolving mounting impacts associated with water supply, irrigation, and hydroelectricity projects. When things go astray, environmental economists normally blame administrative inefficiencies or insufficient data to support decision-making, instead of questioning the political and structural causes of project mistakes. Piecemeal solutions are emblematically exemplified by the use of mathematical models to calculate the market price of water; these ignore the causes of scarcity and the questions of who really benefits from water use (e.g. He et al. 2007). Environmental economists' reduction of socio-economic and environmental processes to independent utility functions became a main source of criticism. In the 1960s, neoinstitutional environmental economics started to pay particular attention to processes of institutional change and transaction costs (i.e. costs incurred in dealing with human interaction). For this group of scholars, economic choices are related to a complex array of social functions and structures (termed 'institutions') ranging from court decisions and informal rules to personal beliefs (Swaney 1987). It is the institutional structure of entitlements (property or liabilities) that influences the nature of the bargaining process between two or more parties, in contrast with the exogenous preferences and costless social contracting of neo-classical economics. For example, riparian institutions consolidated over time typically allow some people to use water from rivers while denying access to others, independently of the direct economic outcome of water use. Neoinstitutional economists maintain that the analysis of environmental problems should be based on interdependence rather than on externalities (cf. Paavola 2007). From an institutional perspective, instead of focusing on the efficient use of resources, solving environmental problems requires the determination of collective standards of performance that can reward individual initiative, experimentation, and efficiency (Bromley 1991).

At the end of the 1980s, a group of academics proposed a related line of investigation under the name of ecological economics. The main goal for ecological economists is to encompass production and consumption in a broader sense, moving away from the neoclassical focus on the optimal allocation of resources (Daly and Farley 2004). Ecological economics has attempted to replace the rigid mindset of environmental economics with a more plural and heuristic perspective (Gowdy and Erickson 2005). However, there remains a fundamental tension at the heart of ecological economics: on the one hand, it is committed to a conceptual pluralism; on the other hand, ecological economics is still heavily influenced by the narrow market model of thinking (Burkett 2003). The persistent reliance on market-based solutions to environmental degradation has been a systematic shortcoming of many ecological economists and betrays their frequent association with the mainstream ideas of environmental economics. By the same token, conventional neoinstitutionalists have also tended to succumb to the magnetism of environmental economics and direct their attention to the removal of institutional barriers to the 'proper' operation of market forces (e.g. Saleth and Dinar 2005).

The fundamental area in which mainstream economists fail—including not just environmental, but also many ecological and neoinstitutional authors—is in identifying the contradiction between the expansion of the market rationale and the quest for sustainable and equitable solutions to water problems. Despite their persuasive discourse on the aptness of financial incentives and economic instruments of water management, such approaches provide only a narrow and transitory answer to environmental degradation, while promoting capital accumulation at the expense of social inequalities. These economists fail to accept that market-based policies (which include both market transactions and governmental interventions that regulate the market) do not remove environmental pressures, but instead immediately transform nature conservation into an object of capital accumulation. If the exploitation of natural resources by market forces has historically been responsible for the commodification of nature, 'ecological modernization' has attempted to use the same market rationality to prevent or remedy environmental degradation. However, 'green capitalism' has ultimately produced new markets for ecological goods (e.g. pollution emissions trading and markets for ecological

services), which comprise commodities that are simultaneously excavated (in exchange-value terms) from pre-existing socionatural relations and, as part of their production, are reinserted or remain embedded in socialized nature. The 'greening' of capitalism has not changed the fact that environmental degradation continues to result from the inherent characteristics of the capitalist mode of production, such as private property, competition, the goal of producing exchange values instead of use values, the recurrent financial crisis, and the specific shaping of technology in the interests of extracting and appropriating a maximum surplus value (Liodakis 2000).

For mainstream economists, issues of power asymmetry and class, gender, and race discrimination have either been left out of the debate or contained in a secondary agenda of social compensation (epitomized by Sweden's annual World Water Week). Because of the focus on isolated elements of water systems, the prevailing school of water economics has largely ignored the power inequalities behind decision-making structures (e.g. Heinz et al. 2007) and remains silent on the fact that water management problems are profoundly influenced by cultural circumstances and political disputes. Thus, there is little consideration of social inequalities associated with the use and conservation of water, which directly depend on the incorporation of the biophysical materiality of nature into capital accumulation (Sneddon 2007), as well as on the cultural context where water is used for the production and exchange of commodities (Page 2005). The realization that the economy cannot be dissociated from natural and social survivability, nor from ethics and justice, opens a new arena for academics to engage with water management problems. The social and environmental challenges of the globalized economy require, according to Martinez-Alier (2002), a close cooperation between critical ecological economics and political ecology. Leff (1996: 146) argues that we need a 'political economy of the environment' that understands poverty, unemployment, and the destruction of natural resources as effects of given relations of production. Rather than the political neutrality advocated by mainstream economists, the starting point of the economic analysis is the fact that the use and appropriation of water describes a fundamental connection between flows of water, flows of commodities, and flows of power (Swyngedouw 2004). The task at hand is to creatively

combine a critique of the prevailing economic paradigm with the formulation of alternative models of social organization and economic production, something that Agyeman and Evans (2004) have called 'just sustainability'. In particular, critical economists cannot be unaware of the uneven balances of power that deprive certain social groups of adequate access to water and protection from environmental degradation. It is not too late to consider that 'unless analyses of development begin not with the symptoms, environmental or economic instability, but with the cause, social injustice, then no development can be sustainable' (Middleton and O'Keefe 2001: 16).

Considering the two last sections, it is possible to conclude that there are similarities between the exacerbated influence of mainstream economics over the recent reform of the water sector and experiences of agricultural modernization along the lines of the neoliberalization of state and economy. Such reforms did not happen in a vacuum, but are intimately related to the patterns of economic production and consumption promoted under economic globalization. For those who can pay, the globalized economy can provide wasteful lifestyles, which increasingly depend on large volumes of water and electricity. For the poorer strata of society, however, globalization has brought new threats to livelihoods and additional pressures over shared natural resources (Newell 2009). By and large, contemporary water policies have been limited by technocratic insistence on the internalization of costs and the optimization of resources, while social justice and collective responsibilities for the degradation of shared resources have been left out of the agenda. Prioritizing economic rationality when seeking solutions to environmental and agricultural problems only tends to perpetuate environmental exploitation and social exclusion. However, it has been mentioned elsewhere that market solutions are inadequate when it comes to dealing with stochastic and complex ecological systems, because they create a 'policy lock-in' that precludes dynamic adjustments (Bromley 2007). In other words, the priority given to the economic dimension of environmental management and agricultural production is nothing other than the mainstream political paradigm reflecting its view of itself. As Bowles (2004: 256) observes, market forces have more than just an allocative role; they also exert a disciplinary function that operates, in reality, through the asymmetric use of power.

At the same time, while acknowledging the harmful impacts of market pressures, it is also important to avoid explaining such problems as solely the result of broader economic priorities. On the contrary, there are other fundamental factors that contribute at local level to policy and management failures. As observed by Prudham (2004: 334), only the juxtaposition of the hegemonic character of market society with specific politico-ecological contradictions can 'reveal the crisis tendencies of environmental neoliberalism'. For instance, the new water regulatory regime introduced in the 1990s in Brazil attempted, but failed, to provide straightforward answers to multilayered water and environmental questions. The fundamental shortcoming of new approaches is the ideological separation between environmental degradation and social inequalities. Because of this fundamental dichotomy, policies derived from the new water legislation have neglected the social and political context where decisions are made and projects implemented (Ioris 2011). They have overlooked the crucial fact that water problems in Brazil are closely related to rural land tenure, uneven urban development, and socio-economic opportunities, issues that have mostly been excluded from the scope of the water reforms. Policy instruments of the new regime, which include user charges and flexible water regulation, were superimposed on a political system based on discriminatory practices at national and local scales. Almost all the changes are restricted to the top level of policymaking, with very limited impacts on local problems of water use and conservation. Some improvements in terms of public participation and environmental restoration do not represent a commitment by politicians or public agencies, but are convenient mechanisms for minimizing public opposition to the implementation of the new regulatory regime.

Alternatives to mainstream water and agricultural management require, first and foremost, denouncing the rationality of neoclassical economics and its commanding influence over public policies. For instance, it must be recognized that water management problems can only be resolved by bringing together local (e.g. catchment) demands and national and international resistance to the expansion of a market-based society. Alternatives to the ecological and food crisis can only emerge if anti-systemic social movements unite against the endless accumulation of capital. In other words, improvements in the agricultural and environmental sector

make no sense unless these involve a wider impact on the totality of the globalized economy and, therefore, form part of the construction of a new basis for socionatural interactions. It is also clear that there is an urgent need for dedicated and critical research on the interconnections between agriculture, natural resources, and potential future development.

In Search of Critical Thinking on Agribusiness, Environment, and Development

Among many other comparable national experiences that should be explored, Brazil represents an emblematic case of neoliberalized agriculture in need of further investigation. This is for two main reasons: first, the steady expansion of soybean and other agricultural commodities towards central savannahs and southern sections of the Amazon forest; and second, the fact that agribusiness exports are a key strategic sector of the mainstream project to integrate the country into globalized markets. Furthermore, the contentious features of agribusiness are also relevant to help understand the challenging risks and responsibilities of agriculture in the contemporary, increasingly urbanized, and technical world. Corporate, industrial-scale agribusiness practices in Brazil bring back some forgotten (or spectral) elements of capitalism, which never actually disappeared, and in which the invisible becomes visible again. This is a phenomenon of multiple dialectics that needs further theoretical, methodological, and investigative elaboration. Contemporary agribusiness is a sectoral activity carried out by a highly specialized professional category, but it has had major macroeconomic repercussions, such as the mitigation of the failures of socio-economic policies promoted by populist governments in thrall to the prevailing neoliberal paradigm. It is not only based on the long history of territorial politics introduced in the middle of the twentieth century, but also borrows and uses the most advanced technologies developed in Brazil and beyond. Agribusiness leaders claim that because of intensification and the supposed rationality of production, their activity is rescuing or ameliorating the image of development in the country, but in practice, the results continue to be short-lived and are mostly appropriated by old and new elite groups.

All those dialectical processes mean that the neoliberalization of agribusiness has been developing as a very special case in relation to the globalized food regime. Due to the scale of production and magnitude of these processes, it could be said that Brazil is creating and resiliently embarking on its own model of agriculture, that is, an authentic Brazilian agri-food regime. This idiosyncratic regime, uniquely, mixes the unfashionable practices of development as production that characterized the Fordist phase of agriculture with the highly financialized agriculture of globalized markets. One main aspect that deserves to be properly investigated is its convoluted relationship between agribusiness and the state apparatus. Given that the state receives most of the blame for the day-to-day problems of agribusiness, such as the cost and quality of transport, the lack of friendly loans or subsidies, and its inability to resolve agrarian conflicts, it is important to note that the state is the ultimate safety net, which in bad years must compensate for too much or too little rain, diseases, low prices, and so on. The activity is not without contradictions. The national agribusiness sector is professionally organized and aggressively lobbies all the agencies and layers of the state, but awareness is growing that the sector is limited when it comes to dealing with socio-ecological issues such as growing threats from insects and diseases, climate change, and land-based struggles. As much as sophisticated technology and precision machinery, agribusiness is increasingly associated with clashes with non-unionized rural workers and labourers, indigenous groups, and descendents of slaves, and the prospects are grim and likely to aggravate the level of violence.

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