Introduction – Framing the discussion on GM Soy

Few technological innovations have given rise to such passionate feelings as the biorevolution. This is particularly true in the context of debates around the relationship between biotechnological change and agrarian productivity. Proponents of agrarian biotechnologies maintain that the steady diffusion of transgenic crops will serve as a panacea for social ills like hunger and food security (e.g., Johnson 2002; Collier 2008). From this perspective, biotechnology presents a technological answer to the problem of global hunger by promising higher agricultural productivity:

Higher productivity holds the key in the fight against rural poverty. Biotechnology promises to boost productivity and thus raise rural incomes, much in the same way that the green revolution did in large parts of Asia during the 1960s to 1980s. Productivity gains encompass essentially all factors of agricultural production. This may mean higher crop and livestock yields, lower pesticide and fertilizer applications, less demanding production techniques, higher product quality, better storage and easier processing, or enhanced methods to monitor the health of plants and animals. (FAO 2012: 312)

As in the Green Revolution, the problem is framed as purely a matter of supply; the solution to which is the technological innovation offered by biotechnology to intensify production (Brooks 2005: 363). Yet as Amartya Sen (1981) famously observed, ‘the volume and availability of food is not a sufficient explanation for the persistence of hunger’ (Nally 2006: 49). Moreover, this technology-as-magic-bullet idea invariably ignores ‘the fact that most transgenic crops are not even geared for direct human consumption’ (Otero 2012: 282). Indeed, while neoliberal restructuring of agriculture is often predicated on the promise of a more efficient food system, what we are increasingly witnessing is a food system hinged on a cash nexus, illustrated by the emergence of ‘flex crops’ – that is, crops that have multiple and flexible uses, which provide global capital with a ‘spatio-temporal fix’ for profitable investment (Harvey 2003; Borras et al. 2012, 404–5). Thus, the view that the underlying goal of further production gains facilitated by agricultural biotechnology is to produce more calories for the poor is questionable.

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1 In the case of soybeans, for instance, only 6 per cent of world production is consumed in the form of whole beans, tofu or other whole-soy and fermented foods. The other 94 per cent is processed into soybean meal and oil for yet further processing (Oliveira and Schneider 2016, 168).
The purpose of this paper is to offer an alternative and more accurate interpretation of the developing world’s experience with biotechnology taking as my starting point of reference South America’s Southern Cone where the biotechnological imperative was adopted with greater fervour (see Richards 2010). I argue that a more nuanced analysis of the current shifts in global food regime requires attention not only to the way that ‘Latin America has been reincorporated into the global economy but how global capital has reinserted itself into Latin America’ (Higginbottom 2013: 185; emphasis added). In particular, close attention will be paid to the legacies of dispossession and exclusion spawned by the incursions of agribusiness capital, and the different patterns of resistance and social struggles that emerge against it.

Against this backdrop, this paper offers a critique and contribution from the Paraguayan experience, where the national model of development is increasingly becoming characteristic of a type of ‘agro-extractivism’ (Rojas 2014; Petras and Veltmeyer 2014; also see Taddei 2013; Baletti 2014; Giarracca and Teubal 2014; McKay and Colque 2016), related to the production and export of genetically modified (GM) soy.

The paper proceeds as follows. First, the transformation of Paraguay’s agrarian development model toward agro-extractivism is presented. The next section provides a brief review of exclusionary and socially problematic nature of what we might call the ‘transgenic soyization’ of Paraguay’s agriculture. The third section analyses the main responses from below, namely, social movements of protests and demand, autonomous development, organic farming and fair trade, labour migration, conventional farming, abandoning and renting of land, and the cultivation of illicit crops. Some concluding remarks are presented in the final section.

**Agro-Extractivism in Paraguay: the ‘Transgenic Soyization’ of Agriculture**

Agriculture remains the largest sector in the Paraguayan economy, accounting for a fifth of economic activity, a feature which distinguishes it from the rest of South America (see Table 1). In fact, as noted by Kregg Hetherington (2009a: 656n8), Paraguay is the only Latin American country featured in the World Bank’s 2008 *World Development Report: Agriculture for Development* to fit within the Bank’s ‘agriculture-based economy’ category (World Bank 2009: 31). Moreover, while the relative contribution of agriculture declined steadily and significantly during the 1970s and 1980s, somewhat unexpectedly, Paraguay is a more agricultural economy today than it was in 1990, as measured by its share of GDP (Birch 2014: 277).²

| Table 1. Socio-economic indictors in Latin America, 2014 |
|---------------|-----------------|---------------|-----------------|-----------------|
| **Country**   | **GDP**         | **Employment**| **GDP**         | **Employment**  |
|               | Agriculture    | Manufacturing | Agriculture    | Manufacturing  |
| Argentina     | 8.3            | 14.5          | 1.5            | 13.0           |
| Bolivia       | 12.4           | 12.4          | 29.5d          | 10.4d          |
| Brazil        | 5.6            | 10.9          | 14.2           | 12.3           |
| Chile         | 3.3            | 12.4          | 9.2d           | 11.3d          |
| Colombia      | 6.3            | 12.2          | 15.9           | 12.0           |
| Costa Rica    | 5.2            | 15.2          | 10.4           | 11.4           |
| Ecuador       | 9.1            | 14.5          | 24.4           | 11.3           |
| El Salvador   | 11.0           | 19.8          | 19.1           | 14.9           |
| Guatemala     | 11.2           | 19.3          | 30.6a          | 16.4a          |
| Honduras      | 13.0           | 17.4          | 36.2c          | 12.9c          |

² ‘Agriculture as a share of GDP for the period 1968 to 1988 averaged 14.2 per cent, while it stood at 18.4 per cent for the period 2003-2010’ (Borda 2012, cited in Birch 2014: 288n2).
Indeed, since the late-1990s, the pace, direction and consequences of Paraguay’s agrarian development model has been radically transformed and is increasingly becoming characteristic of a type of ‘agro-extractivism’ (Rojas 2014; also see Petras and Veltmeyer 2014), manifested in the conversion of arable land for domestic food production into land for the corporate production of agro-commodities (or ‘flex crops’ in the lexicon of critical agrarian studies; see Borras et al. 2012: 404-405; Turzi 2012). In the words of Birch (2014), Paraguay has experienced ‘a marked shift away from small-scale production of a variety of agricultural crops for both domestic consumption and export and toward large-scale, mechanized monocultivation of soybeans for global commodity markets’.

As a result of these developments, alongside high commodity prices during the 2000s, Paraguay has experienced sustained economic growth, averaging 4.9 per cent between 2003 and 2013, punctuated by particularly large economic swings – with an apex of 13.6 per cent in 2013, and a low of -4.0 per cent in 2009 – often connected to climatic conditions. Notably, in only two years, the economy went from a half-a-century record-low GDP contraction of 4 percent in 2009 (after the severe and widespread drought of that year and the fall in international prices for agricultural products) to a record-high GDP growth of 13.1 percent in the subsequent year, thanks to a bumper crop from the 2009-2010 harvest. The economy then plummeted to 4.3 percent in 2011 and contracting by 1.2 percent in 2012 (in the wake of the severe drought that hit the country in late 2011 and early 2012) and then surged again to 13.6 percent in 2013, making it the fastest-growing country in the region (ECLAC 2010: 123-128, 2011: 137-142, 2014).

The driving force behind such volatile GDP growth is reducible (almost entirely) to the boom in GM soybean production (see Table 2), which accounts for roughly 55 per cent of the value of exports (Guereña 2013), making Paraguay the most soybean-reliant economy in the world. In this regard, the Paraguayan countryside has been affected by broader shifts in the global food regime towards neoliberal restructuring and the deployment of transgenic corps in Latin America since the mid-1990s (see Otero 2012; Otero and Lapegna 2016). In particular, Paraguay insertion into the so-called ‘Soy Republic’ (i.e. the Southern Cone’s neoliberal soy regime) has led to a marked transformation in the agricultural mode of production occasioned by the adoption of genetically modified crops, agrochemicals, and no-tilling techniques.

Table 2. Soybean production and cultivation in Paraguay, 1997-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Area sowed (ha)</th>
<th>Production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>1,050,000</td>
<td>2,771,000</td>
</tr>
<tr>
<td>1998</td>
<td>1,150,000</td>
<td>2,988,201</td>
</tr>
<tr>
<td>1999</td>
<td>1,200,000</td>
<td>2,980,058</td>
</tr>
<tr>
<td>2000</td>
<td>1,200,000</td>
<td>2,911,423</td>
</tr>
<tr>
<td>2001</td>
<td>1,350,568</td>
<td>3,502,179</td>
</tr>
<tr>
<td>2002</td>
<td>1,445,365</td>
<td>3,546,674</td>
</tr>
<tr>
<td>2003</td>
<td>1,550,000</td>
<td>4,518,015</td>
</tr>
</tbody>
</table>

A Multidimensional Crisis: The Environmental and Social Costs of Agro-Extractivism

I argue that Paraguay has witnessed and experienced all of the contradictory developments and pitfalls of agro-extractivism. These include increased concentration of landholdings; dampened overall employment as rural labourers are rendered ‘surplus’ to the requirements of agribusiness capital; and a growing dependence on agrochemicals that compromise environmental quality and human health. At the same time, the ‘transgenic soyization’ of Paraguay’s agriculture has accelerated the forced expulsion of the peasantry. I argue here that the insertion of Paraguay into the Southern Cone’s neoliberal soy regime has engendered a new regime of dispossession driven by the new agroindustrial practices associated with this model. Here, the weak or absent or conniving nature of the Paraguayan state is central to an understanding of how the application of highly globalized capital and chemical intensive agroindustrial practices has recast the dynamics of the historical process of accumulation by dispossession. Specifically, I suggest the process might be termed ‘displacement by fumigation and dispossession’ (Ezquerro-Cañete 2016) – the forced displacement from land by the intensive use of agro-toxins, when crops are planted next to population centers (i.e., agrochemical drift as a new mechanism of accumulation by environmental dispossession).

In broad outline, these are the dimensions of Paraguay’s rural crisis.³ Let us now turn to ways in which peasant and indigenous groups⁴ have adapted and resisted.

³ For more on the exclusionary and socially problematic nature of the what we might call the ‘transgenic soyization’ of Paraguay’s agriculture, see Palau and Kretschmer (2004); Fogel and Riquelme (2005); Palau et al. 2007; Rulli (2007); Guereña (2013); Hetherington (2013); Riquelme and Vera (2013); Elgert (2016); Ezquerro-Cañete (2016).

⁴ Paraguay has a largely homogenous mestizo population. The 2012 census numbered the indigenous population at 117,150 (DGEEC 2013), equivalent to roughly 2 per cent of the national population. Yet, despite the absence of a large ethnic population that maintain distinct indigenous cultures and languages, the majority of the residents speak an indigenous language, Guaraní (in rural areas, Guaraní remains by far the predominant language, preferred by 82.5 per cent of the population compared with 8.9 per cent that preferred Spanish, according to the 2002 census). In this, Paraguay is unique: it is the sole example in Latin America where an indigenous language remains vibrant and genuine national language on par with Spanish in spite of two centuries of official subjugation and a continuing lack of recognition by the state, the judicial system and the public administration (see Nickson 2009).
**Adaption and Resistance**

Not surprisingly, the responses to the crisis have been diverse. I have identified seven major strategies pursued by Paraguayan peasant and indigenous groups in their effort to improve their living conditions under the current structural conditions. These are: conventional farming, organic farming and fair trade, abandoning and renting of land, labour migration, protest and demand, autonomous development of projects and the cultivation of illicit crops. Before analysing these strategies, it is important to point out that some of them are highly interrelated in the sense that they are often pursued simultaneously within the same family, rural community or region.

**Conventional Farming**

In spite of the adverse market conditions, small-scale farmers continue to produce mandioca and other traditional crops, often practicing swidden agriculture, and using animal traction to till the soil. 60 per cent of Paraguayan farmers are smallholders, cultivating 1-10 hectares of land; and even though they occupy only 4 percent of the total agricultural land, the almost 248,000 small farms found in the country generate over one-third of the total value of agricultural production (Vásquez-León 2010: 56). While some of these farmers may operate in cooperatives or other market-oriented agricultural practices, others primarily grow crops intended to feed themselves and their local communities. The continuing prevalence of conventional technology is partially explained by communication and transportation difficulties, which limit farmers’ access to modern agricultural technologies and inputs, including chemical fertilizers and pesticides.

**Organic Farming**

In recent years, Paraguay has become a major supplier of organic products to world markets. Organic sugar, organic and sustainable yerba mate, and stevia are all experiencing a significant increase in global demand, reflecting the growing interest in ‘lifestyle products’ that are part of healthy consumptions patterns in developed countries (Birch 2014, 287). In fact, Paraguay now ranks first and second in the world exporter of organic sugar and stevia, respectively. Critically, unlike soybeans and other commodities that Paraguay now exports, these organic products involve more labour and smaller-scale operations. As a result, they provide income and employment for more people (Birch 2014, 287; also see Setrini 2011). A case in point is the self-proclaimed “world’s organic sugar cradle”: the district of Arroyos y Esteros (Cordillera Department), where, since 2000, sugarcane has become the most important income-generating crop (Vásquez-León 2010). Although this movement has been extremely successful, it needs to be kept in perspective: in 2014-15, a mere 57,446 hectares were designated for organic production (see Table 3).

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5 This section analyzing the forces of resistance and social struggle in Paraguay is based upon the thematic framework put forth by Tetreault (2011) regarding the ways in which Mexican peasant and indigenous groups have adapted and resisted that country’s ongoing rural crisis. For a brief discussion on the similarities and differences between Paraguay and Mexico politics, see Lambert and Medina (2007: 353), Hetherington (2011: 227-228).

6 For a discussion of the everyday elements of food sovereignty in small-scale farmers households, centered on the economic, culinary and dietary meaning of mandioca in the Piribebuy district (Cordillera Department) of South-western Paraguay, see Finnis et al (2013).

7 For an important discussion of two Paraguayan cooperatives see Vásquez-León (2010).

8 Source: UGP (http://ugp.org.py/).

<table>
<thead>
<tr>
<th>Crop</th>
<th>Production (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane</td>
<td>40,336</td>
</tr>
<tr>
<td>Sesame seeds</td>
<td>6,625</td>
</tr>
<tr>
<td>Chia seeds</td>
<td>5,379</td>
</tr>
<tr>
<td>Heart of Palm</td>
<td>3,067</td>
</tr>
<tr>
<td>Cedron Paraguay (lemon verbena)</td>
<td>950</td>
</tr>
<tr>
<td>Yerba mate</td>
<td>750</td>
</tr>
<tr>
<td>Cedron Kap'i (lemongrass)</td>
<td>82</td>
</tr>
<tr>
<td>Bitter organe peel</td>
<td>15</td>
</tr>
<tr>
<td>Lemon peel</td>
<td>11.3</td>
</tr>
<tr>
<td>Ka’a be’e (Stevia)</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: Ultima Hora (22 October, 2015).9

Cultivation of Illicit Crops

In its last full survey of the region, in 2011, the United Nations Office on Drugs and Crime considered Paraguay the largest producer of marijuana in South America, accounting for 15 per cent of the world’s harvest (Muñoz Acebes, 2015, 76). Canindeyú, the province where Curuguaty is located, is one of the country’s main areas for marijuana cultivation. Anti-drug officials roughly estimate Paraguay’s annual production at between 30,000 and 45,000 tons, although they expect to have a more exact figure once they get results from a project that will use satellite images to detect plantations. Eighty per cent of Paraguayan marijuana ends up in Brazil, where its value increases almost fivefold (Muñoz Acebes 2015, 78). Paraguay is also turning from a transit country for cocaine trafficking to a producer country,10 according to its anti-drug agency, the Secretaría Nacional Antidrogas (SENAD), with the installation of laboratories in its territory financed by Brazilian gangs (Muñoz Acebes, 2015, 76).

Abandoning and Renting of Land

As Derek Hall (2012) points out in his lucid survey (and critique) of the comeback and current ‘busyness’ surrounding Marx’s concept of ‘primitive accumulation’ –largely stimulated by, and repeatedly invoked via, Harvey’s notion of ‘accumulation by dispossession’– ‘the possibility that direct producers might [want] to enclose land, or to “self-dispossess” by selling it… has barely been considered’ (Hall 2012: 1198). In Paraguay, the renting or selling of land (i.e. self-dispossession) seems to be another major response to the crisis. Following Hetherington (2009b), ownership of land for smallholder peasants in Paraguay takes three main forms:

(i) **mejoras** (improvements), wherein what is being bought is not the land itself, but the human intervention on the land, including clearings, structures, wells, and gardens. The legislative precedent here is that, under the agrarian statute, the rights of possession of ‘unproductive’ land can retracted.

(ii) **derecheras** (rights), nontransferable occupancy permits given solicitants, which campesinos refer to colloquially as ‘derecheras’.

(iii) **títulos** (titles), once **derecheras** are completely paid off, campesinos receive a land title, but with certain limitations. For one thing, following the nontransferability of the **derecheras**, there is a ten-year moratorium on the sale of new titles, as part of an attempt to limit campesino “self-dispossession” through rapid sale.

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10 For an excellent analysis of Paraguay’s involvement in the drug trade since the late 1960s, see Simon (1992).
Although selling derecheras is technically illegal, until very recently it was, in practice, only slightly more complicated than selling mejoras and could be accomplished with a local representative from the Land and Rural Development Institute (INDERT) as witness. Such transfers are officially entered into the books as cases of one person forfeiting his or her rights and another soliciting them (Hethrington 2009b: 227). Of course, by either abandoning or renting their land, farmers are free to search for other for alternative employment, often leading to labour migration.

**Labour Migration**

Given that Paraguay is one of the least industrialized countries in Latin America, the decreased employment opportunities for unskilled labour in the agricultural sector has not been mitigated by economic expansion in other sectors. Instead, the dramatic increase in rural-urban migratory flows resulting from the limited job opportunities offered by the expanding soybean sector, has expressed itself in a rapid swelling up of the ‘tertiary’ sector, often outside the formal economy. This trend has exacerbated issues of marginalization and social exclusion (i.e. unemployment, underemployment or insecure employment, lack of assets and credit, vulnerability, and so on). Indeed, informal labour in Paraguay constitutes between 55 and 77 per cent of the total labour forces (IMF 2015). Thus the dynamics of agrarian transformation in Paraguay has accelerating what Mike Davis calls a ‘planet of slums’ as ever-expanding ‘informal sector’ and shanty-towns form on the peripheries of cities (Davis 2006, McMichael 2008: 219). Increasingly, this migration has become transnational. In addition to soybeans then, population has become an important export for Paraguay – a fact that was distastefully broadcasted by President Horacio Cartes in a recent speech in Madrid (June 2015) where, in reference to an estimated 150,000 Paraguayans living in Spain, he told an audience of elite investors that Paraguay ‘exports poverty to Spain’ (Ultima Hora, 8 June, 2015).11

**Social Movements of Protest and Demand (to be complete)**

The costs associated with the current agro-extractive model have given rise to powerful forces of resistance —social and environmental movements that form the social base of the contemporary search in the region for ‘another development’ (see discussion below). Nagel (2005) notes that the campesinos traditionally employ three major strategies: staging protests and land occupations to pressure the government, presenting independent candidates at elections, and elaborating programs of collective and individual agricultural production and commercialization with help from NGOs. This movement has been traditionally atomized into different social movement organizations that, at times, have proposed different projects and strategies, but at certain moments have come together to confront the government (Levy 2013, 37).12

**Autonomous Development (to be complete)**

This movement’s central claim is land reform in its fullest sense: to redefine and recreate the agricultural model based on cooperative, organic, and peasant oriented alternatives. It is opposed to land privatization, the traditional land-concentrated latifundio model, as well as the more recent industrial agricultural export model that leaves little room for small-scale food producers. It proposes a more egalitarian land tenure model and the transformation of the present industrial-export agriculture into an “agro-ecological” model that promotes food sovereignty and security (Levy 2013, 37).

**Conclusion (to be complete)**

[...]

12 For example, in June 2002 several peasant movements played a key role in halting the government’s plan to privatize three state-owned companies.
References (to be complete)


