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The Social Construction of Understanding & Neoliberal Multiculturalism: Analysis and Critique of the Peruvian Moratorium GMOs

T. W. Dondanville
tdonda1@ilstu.edu

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Recommended Citation

Dondanville, T. W., "The Social Construction of Understanding & Neoliberal Multiculturalism: Analysis and Critique of the Peruvian Moratorium GMOs" (2018). *Stevenson Center for Community and Economic Development to Stevenson Center for Community and Economic Development—Student Research*. 32. <https://ir.library.illinoisstate.edu/scced/32>

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The Social Construction of Understanding & Neoliberal Multiculturalism: Analysis and Critique
of the Peruvian Moratorium on GMOs

TEDDY DONDANVILLE

COMMITTEE MEMBERS:

Dr. Michael Dougherty, Capstone Director

Dr. Mathew Himley

Dr. Maura Toro-Morn

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Introduction

This paper examines the industrialization of agriculture and genetic-engineering in the context of the recent Peruvian moratorium on genetically-modified organisms (GMOs). In 2011, Peruvian president Ollanta Humala signed Law No. 29811 into action— a 10-year moratorium imposing restrictions on the trade and usage of genetically-modified products (i.e. seeds and plants) in Peruvian agriculture. The goals of the moratorium were to protect endemic Peruvian agrobiodiversity and small-scale farming from GMOs. Secondly, the moratorium created a buffer that would allow the Peruvian government to prepare biosafety governance bodies and strategies for the eventual adoption of GMOs on an industrial level.

In this paper I explore how varying stakeholder groups—smallholder farmers, activists and academics, and state functionaries—variously make sense of the GMO moratorium. I draw from ethnographic data to demonstrate the ambiguity of the GMO moratorium and how this lack of clarity helps create divergences in understanding amongst these three stakeholder groups, each of which are involved with the moratorium, in one way or the other, from its conception in Peruvian law to its application in Peruvian agriculture. In analyzing these groups, I then move to the question of “who is the moratorium really for?”, and form a critique of the GMO moratorium as a whole.

I place this question within broader conceptual aims of highlighting neoliberal economic hegemony in modern industrial agriculture and how this ideology (1) manipulates Peruvian agricultural governance; (2) informs scientific debate, controversy and knowledge production about GMOs; and (3) transforms a piece of legislation such as the GMO moratorium into a highly ambiguous law whose effectiveness is questioned. To these ends, I use discourse analysis

and a review of relevant sociological literature to highlight the relationship between neoliberal political discourse and modern science.

The production of GMOs, also known as transgenics, has made important accomplishments in agriculture. For many scientists and agriculturalists, transgenics are feats of modern science with the capabilities, for example, of resisting pests, mitigating weed control and preventing plant diseases. GMOs can increase the nutritional content of foods and increase drought resistance (Wu and Butz 2004). Critics, however, are skeptical about the adoption of transgenics. They argue that GMOs may introduce new allergens into food and are concerned about the medical consequences of using antibiotic resistant genes in agriculture, inadvertently increasing the toxin levels in plant material (Union of concerned Scientists 2002; Center for food Safety 2000). Genetically engineered (GE) foods could have negative health implications (Dona & Arvanitoyannis 2009; Ewen & Pustazi 1999; Pelletier 2005, 2006). Further, GMOs have been known to infiltrate non-GE crop fields and slowly take over the previously organic and endemic species, which risks biodiversity and the integrity of heirloom varieties of crops (Muller 2006).

The critiques of GMO activists, scientists and scholars in Peru mostly revolve around this last notion—the threat to agrobiodiversity. Tied closely to this concern for preserving biodiversity is the concern with preserving the traditional, often rural livelihoods of Peruvian farmers. The ten-year moratorium on transgenics was the culmination of debate and conflict over the usage of GMOs, which had been ongoing in Peru since the early 1990s. This moratorium raises questions, which this research engages, about ideologies of agricultural governmentality and regulatory philosophies (Quark 2012; Kinchy 2010), the politics of

knowledge (Goldman and Turner 2011), intersectionality of politics and science (Kinchy, Kleinman & Autry 2008; Habermas 1970; Beck 1992) and how political legislation and biotechnological governance actually show up (or not), epistemologically and materially, at the level of the Peruvian farmer.

Literature Review: The Role of Science in Transgene Governance

This paper draws from the literatures on biotechnology governance and the intertwinement of science and politics in neoliberal contexts. The Peruvian GMO moratorium applies previously theorized transgene governance strategies and exemplifies the mixture of science and neoliberal politics in biotechnological decision making. In doing so, it becomes an example of and extends the concept of neoliberal multiculturalism (see Hale 2002) to the Peruvian context.

Two divergent regulatory philosophies dominate the controversy over governing transgenics: the ‘products approach’ and the ‘process approach’ (Winickoff et al. 2005). The fundamental question that divides these two approaches is “whether to assess genetically modified risk on the basis of the *products* themselves, or on the basis of the underlying *production processes*” (Winickoff et al. 2005: 87, emphasis in the original). The products approach for regulating GMOs assumes that no risks are involved in the process or application of transgenics (Winickoff et al. 2005). If the science and product itself is well designed and an appropriate regulatory apparatus is put into place, then usage of transgenics is considered safe.

In contrast, the “process approach rests on the idea that genetic engineering itself may entail novel and unique risks to human health or the environment” (Winickoff et al. 2005: p.

87). This regulatory philosophy is inevitably more precautionary. The process approach assumes that a certain level of unknown exists about the process of using transgenics and that this process may include hazards that modern science does not yet fully understand (see Beck 1992). Historically, the United States has embraced the products approach for regulating GMOs, as it parallels more closely the neoliberal ideology by placing less emphasis on the precautionary principle. This thinking places the utmost power upon modern science and trusts that regulation will keep the environment safe. The European Union on the other hand, and other countries in Central and South America such as Belize, Ecuador and Peru, have decided to approach the idea of transgenics with more caution.

The concepts of process and products help clarify the history of biotech regulation in Peru. In the 1990s, with the construction of agencies like CONAM, INIA, DIGESA, Peruvian policy welcomed and expanded opportunities for use and regulation of transgenics. At the time, these agencies placed emphasis on scientific knowledge in order to bolster a “products approach” and neoliberal agricultural policies. In contrast, the 2011 GMO Moratorium reflects the more cautious “process approach” towards biotech governance. This shift serves to remind that science is political and its meaning is social.

Amy Quark (2012), in discussing science’s role in global governance, distinguishes between ‘world polity’ and ‘world-system’ ideologies. Using the world polity framework, culture becomes the emphasis rather than the economy, politics or power (Pellow & Brehm 2013). Science becomes the most widely accepted, and global means for measurement and action. This idea is based on the *cultural* understanding that science is universal, and most importantly, value neutral. This ideology assumes an essentialist and scientific mindset

regarding governance strategies for transgenics, which was reflected in the social and economic maneuvers of the 1990s under President Fujimori and in the early 2000s with the support from Peruvian agencies like MINAG and INIA, the construction of the Cartagena Protocol and crystallization of free trade agreements with the U.S.

The world-system ideology understands science as a mechanism for the global elite to dominate the world system (Quark 2012). This Marxian understanding, informed by Wallerstein's (2004) world-system's approach to global political economy, sees global governance occurring through the creation and application of certain types of science. Quark (2012) explains, "this competition for legitimating knowledge", between the world polity and world system ideologies, "helps us to understand how new governance networks are constructed that draw diverse actors together to legitimate certain constellations of science, technology and power" (p. 913).

The world polity and world-system approaches both acknowledge the role of science in transgene governance. Quark's concepts overlap with Winickoff's et al. (2005) notions of product and process approaches. World-polity aligns with the product approach—both attribute a legitimized and essentialist power into modern science and support a scientific mentality for governing transgenics. Both approaches reflect neoliberal tendencies to generate markets for GMOs and to privatize GMO governance (Hatanaka, Bain & Busch 2005).

World-system and process approaches are both informed by the precautionary principle and understand the complexity and risk involved with the use and regulation of GMOs. These two philosophies, agree that the process of creating a transgenic product such as a seed, planting the seed and regulating it are laden with unavoidable power dynamics and inequitable

constructions of legitimized and alienated knowledge systems. The world system and process approaches understand how scientism and scientization can directly impact how transgenics are governed. Quark (2012) sheds light on this influence when she writes, “first, scientization can formalize existing power inequalities given the uneven terrain of research legacies. Second, as scientization channels politics through science, powerful actors are better situated to legitimate their own interests in scientific terms and to define what makes science legitimate” (p. 895). This intersection between science and politics is the means through which a governance strategy comes to fruition, both in Peru and in the world system more generally.

The relationship between science and politics matters for thinking about the Peruvian moratorium on GMOs. Habermas (1970) wrote about the scientization of politics. This process, informed by Weber’s (1946) idea on bureaucratization, politicizes the process of specialization. Habermas (1970) highlights a shift towards technocratic models of governance in which politics is replaced by government administrations that place paramount power in ‘rational’ science. Leaning on scientific claims to support political goals is risky because scientific conclusions are rarely definitive (Beck 1992). Controversy around scientific findings may diminish the political power of science creating opportunities for alternative voices and lay perspectives to insert themselves into the debate (Lidskog & Sundqvist 2010). This can then shape legislation as with the Peruvian GMO moratorium.

In this paper, I refer to this weakening of the political power of science and the increasing participation of civil society as “porousness.” The process of porousness helps explain the adoption of the GMO moratorium in Peru. Porousness in this context, describes the quality of knowledge (or lack thereof) about the moratorium, and its ability to digress or change

as information travels and drops off over geographical and epistemological time-space. By the time the GMO moratorium became law and was implemented, it had lost a great deal of its nuance and critical integrity, which allows different stakeholder groups to make meaning around the moratorium differently, resulting in a general skepticism in public discourse and lack of efficiency of the moratorium.

Neoliberal governments like Peru operate within a scientized political context. This context stands on the grounds of scientism, and dominates the production, implementation and regulation of transgenics. According to Kinchy, Kleinman and Autry (2008), scientism “is the belief that policy is best dictated by scientific reasoning, since science is presumed to transcend human values and interests and to provide answers upon which all can agree” (p. 156). The authors further politicize their argument by writing, “scientism contributed to this project [of neoliberalism] by delegitimizing messy political debates in favor of “value free” assessments of risks and benefits” (Kinchy, Kleinman & Autry 2008; 156). The dual discourses of neoliberalism and scientism rationalize a position of minimal regulation of GMOs by squelching the voices outside the scientized political field, making any sort of decision about the regulation of GMOs seem scientifically sound and inevitable. This process is a major issue, especially for developing countries like Peru, because it bolsters policies that subordinate the cultural and economic interests of small farmers while favoring biotech corporations and the companies who are interested in those government’s investments (Kinchy, Kleinman & Autry 2008).

What Peru is experiencing is a rift between two different modalities of knowing and decision making— scientific, expert knowledge and laymen or traditional environmental

knowledge. This clash of two different “politics of knowledge” (Goldman & Turner 2011) can be examined by applying Anderson’s (2002) conceptualization of post-colonial technoscience, which argues that post-colonial technoscience can be viewed as the end, or result of an increasingly scientized and neoliberal hegemony— particularly when dealing with the relationship between two nations, such as Peru and the United States. Post-colonial technoscience argues that Western scientism expands beyond national boundaries, creating complex reconfigurations of knowledge, violence, culture and scientific characteristics, with the end goal of solidifying an “emerging global order” of neoliberal (and oppressive) scientism (Anderson (2002: 643).

By applying the post-colonial technoscientific framework to Peru, critiques of the neoliberal hegemonic rhetoric can be elucidated. It can be argued that material violence is occurring to Peruvian farmers and environment through the implementation of biotechnology (funded and implemented by top-down pressure from the Peruvian State and Western multinational corporations) which then has the potential to degrade traditional, often indigenous environmental knowledge and lifestyles. Taken one step further, violence can also occur “epistemologically by denying the legitimacy of other ways of knowing and managing nature” (Goldman & Turner 2011: 17).

Goldman and Turner (2011) argue that environmental knowledge is “embodied in local contexts” and that it “is framed, funded and publicized in widely different social arenas” (p. 3). For anti-biotech supporters in Peru, these knowledges from various social arenas have coalesced into a unified social movement. By doing so, they “fight to ensure that expert discourse does not overshadow citizens’ perspectives on environmental, social, economic, and

moral issues in decisions about scientific and technological developments” (Kinchy 2012: 16).

The moratorium on transgenics in Peru reflects an important pushback to the industrialization of agriculture propelled by the entanglement of neoliberalism and scientism. Despite the moratorium being only a buffer for the potential introduction of transgenics on a massive scale (assuming the Peruvian government solidifies a proper governance apparatus), it represents the power of social movements as well as the weakness of a scientized and neoliberal hegemony. To this end, we can acknowledge that neoliberalism as a policy discourse is by no means inevitable (Kinchy, Kleinman & Autry (2008), and that neoliberalism, along with inequitable and scientized political debate, can be confronted by utilizing the appropriate mixture of social, cultural, economic and scientific arguments.

The Development of Law No. 29811

There is a complicated debate over GMOs in Peru. In South America, Peru is one of three countries (along with Venezuela and Ecuador) with national bans on the importation and cultivation of GMOs. What distinguishes the Peruvian case is how the GMO moratorium emerged ostensibly despite the neoliberal political and economic climate in Peru. Yet, a fine-grained analysis suggests that the moratorium is, in part, a neoliberal maneuver in support of the eventual full-scale adoption of biotechnology in Peru.

On December 9, 2011, under the Presidency of Ollanta Humala (2011-2016), the Peruvian government approved Law No. 298111 enacting a 10-year moratorium on GMOs. The moratorium was the product of a process that began in the early 1990s. The formation process involved a multitude of stakeholders, including anti-transgenic activists, scientists, non-

governmental organizations, farmers and Peruvian political leaders, each of whom played a specific role. Some stakeholders specialized in scientific and political debate, while others focused on the preservation of Peru's biodiversity and protection of rural, often Indigenous, farming lifestyles.

The conversation in Peru over the varied impacts of transgenic began to take form in 1992. Having agreed with parameters of the Convention of Biological Diversity (CBD) in Rio de Janeiro, Brazil, the Peruvian delegation signed the convention concerning the safe handling of, and potential impacts from the transfer of GMOs. The CBD was the first international instrument focusing on biotechnology. Continued progress towards the usage of transgenics in Peru was made in 1994, under the Presidency of Alberto Fujimori. President Fujimori, along with the National Environmental Council (CONAM), enacted Law No. 26410 which was designed to formulate, coordinate, and evaluate a new environmental policy towards Peruvian biodiversity. Shortly afterwards, in 1999, Law No. 27104, or the 'Biosafety Law' was also put into place. This law established the necessary provisions and Peruvian agencies—such as the National Agricultural Research Institute (INIA) and the Directorate General of Environmental Health (DIGESA)—that would be in charge of biotechnological governance in Peru (Martinez & Pinzás 2014).

In 1999 CONAM formed a committee to deliberate about biosafety. The committee included experts from the field of biotechnology as well as members of civil society organizations (CSO). The composition of the committee favored supporters of biotechnology who framed their support as advocating economic development via agriculture. Dr. Alexander Grobman, for example, a Ministry of Agriculture (MINAG) consultant, and president of

PeruBiotech (a private association for the development of biotechnology) argued that biosafety measures, and other regulations on GMOs, would hinder Peru's development and prevent the country from escaping poverty and improving food security (Martinez & Pinzás 2014).

In 2003, the Peruvian Association of Consumers and Users (ASPEC), a consumer rights NGO, initiated a campaign to raise awareness about transgenics. Despite lacking participation from major civil society actors and media, the initiative represented an expansion of stakeholder voices in the debate over GMOs in Peruvian agriculture.

In July of 2004, the Cartagena Protocol, which was signed in 2000, was ratified by the Peruvian Congress. During the debates over the Protocol, the Peruvian delegation voted against a portion of the protocol called the binding instrument—a tool designed to make corporations responsible for the potential negative impacts of GMOs (Martinez & Pinzás 2014). Their voting against this portion of the Protocol reflected Peru's support for transgenics and non-corporate responsibility. Despite the Peruvian delegation's opposition to this portion of the protocol, the other parties to the protocol reached consensus in favor of the binding agreement, solidifying corporate responsibility for negative externalities of transgenics.

On July 11, 2006, Peru's Congress approved the General Law for the Development of Modern Biotechnology. This law provoked vehement opposition from NGOs and other anti-transgenic activists around issues of patentability of biotechnological inventions (intellectual property) and the rights of indigenous peoples over their traditional knowledge and practices related to their biodiverse cultural heritage (Martinez & Pinzás 2014). This drew attention to the epistemological divergence between indigenous folks and neoliberal science. Later that

year, after much debate, the Peruvian government signed a Free Trade Agreement with the United States. This intensified neoliberal Peru and created a path for the entry of transgenics.

Up until this point, the debate over GMOs in Peru heavily exemplified a products approach (Winickoff et al. 2005) and world polity philosophy (Quark 2012) towards biotechnology. However, the second stage of the debate, beginning in 2007 and up until the moratorium in 2011, amplified the involvement of NGOs and civil society organizations in the controversy over transgenics in Peru, bringing forth a more skeptic and critical approach.

Civil society participation intensified in 2007 when Dr. Antonietta Gutierrez, a biologist from the National Agrarian University La Molina and Director of the Sustainable Environmental Development Association reported that GMOs were found in sample sites in the Barranca Valley, an agricultural community on the northern edge of Lima province (INIA 2010; Ortiz 2007). In 2008, Dr. Gutierrez published more results from an extended sample of the first test she carried out in 2007. In her new research, Gutierrez included the departments of Lima, Piura, Lambayeque, La Libertad and Ancash. She found that samples from Lima, Piura and La Libertad contained GMOs (Gutiérrez-Rosatti 2009; Luna 2009; Martinez & Pinzás 2014).

In the 2000s, Peru's economy continued to grow—a result of the neoliberal economic restructuring of the Fujimori administration. Fujimori emphasized attracting foreign direct investment (FDI) in natural resource sectors such as metals, oil, gas and agriculture (Bury 2005). Peru's participation in globalized agricultural markets has continued to grow since, which produced tensions within the neoliberal framework. The Exporters Association of Peru (ADEX), for example, has committed to organic crops and argued Peru's incompatibility with GMOs.

ADEX's worry is that depending upon transgenics will only benefit the few corporations that own the intellectual property embedded in GMO crops (Martinez & Pinzás 2014).

In 2008, the Ministry of the Environment (MINAM) was created and named Dr. Antonio Brack Minister. Dr. Brack, an ecologist, teacher and biodiversity researcher, publicly spoke out against transgenics. For Brack, the major issue was the potential contamination of Peru's endemic agrobiodiversity by GMOs. The MINAM, and Brack's appointment as Minister, helped balance the debate over transgenics within the state (Martinez & Pinzás 2014).

Despite this growing opposition to transgenics, in April 2011, President Alan Garcia's administration issued Supreme Decree 003-2011-MINAG, allowing farmers and corporations to use GMOs in agriculture or forestry. This took place three months before the end of Garcia's term as President, a term marked by support for the economic interests of multinational corporations. These new parameters were drafted solely by the MINAG, an agency historically in support of transgenics, without any participation from MINAM (Martinez & Pinzás 2014).

MINAM opposed President Garcia's last ditch effort to allow the widespread use of GMOs in Peru. MINAM was not the only state agency in opposition— lower level governments and municipalities issued ordinances declaring their jurisdictions "transgenic-free territories." In total, thirteen of Peru's regions did so (Martinez & Pinzás 2014). At this point, and up until the GMO moratorium, the debate over GMOs in Peru seemed to shift and evoke a more process based approach (Winickoff et al. 2005) and world-system ideology (Quark 2012) towards the utilization of GMOs in Peru.

In 2011, Manuel Pulgar Vidal was appointed the new minister of MINAM. Vidal, much like his predecessor Antonio Brack, opposed GMOs in Peru and supported a moratorium.

Finally, on June 7, 2011 Congress adopted Law No. 28911, declaring a moratorium on the entry of transgenics into the country for a period of ten years. On December 8, 2011, under the new Presidency of Ollanta Humala, the new law was officially authorized. The objective of Law No. 28911 is clear: to prohibit the entry—from both external importation and domestic production— of transgenics into the environment. However, this excludes GMOs that are used in confined laboratory spaces and for pharmaceutical or veterinarian uses. The second goal of the moratorium goes beyond just prohibiting and sanctioning the usage of GMOs. In addition, the moratorium is designed to give the Peruvian government more time to enhance their capacity for biotechnology governance, and to prepare for the eventual entry of biotechnological products within their borders.

Despite this second, more insidious goal, the 2011 GMO moratorium represented, at least for the time being, a pushback against scientized political rhetoric on behalf of a movement of lay public opinion, third-party expertise and State intervention that questioned the outright usage of transgenics in Peruvian agriculture.

Research Methodology

This project relied upon multi-sited and macro-ethnographic research methodologies (see Burawoy 1998; Hine 2007; Marcus 1995) and various stakeholder groups to tell the story of knowledge production surrounding the Peruvian GMO moratorium. I conducted participant and non-participant observation, and in-depth interviews with agriculturalists, academics and activists. I supplemented these techniques with a discourse analysis of official documents to gain an understanding of the official state discourse around the moratorium. I spent six months

collecting data, predominantly in a semi-rural and agricultural community in the *Rio Santo* Valley of Ancash. I focused on two districts within the province of Yungay. Within one of the districts, I conducted interviews with participants from different annexes of the same small community. In total, I conducted nine semi-structured interviews with three women and six men. The data was then coded and analyzed over the course of three months.

In the community of interest, there are 489 agricultural producers, comprising a total of 1,885 plots (farms) and a surface area of 9,294.41 agricultural units. The average number of plots per producer is 3.85, each with an average surface of 4.93 agricultural units (INEI 2012). The majority of the land is owned with a title. The family size of the agricultural producers ranges from two or three members to four or five members, with roughly 1,022 members of the family (over the age of 6) working in agricultural reproduction (INEI 2012). Majority of the agricultural producers are men, falling between the ages of 45 and 64. Majority of both men and women have incomplete primary educations (INEI 2012). Majority of the crops produced are for sell in local Peruvian markets, self-consumption and animal consumption, respectively (INEI 2012).

I drew data from three distinct populations (1) representatives of the state (mostly derived from a desktop review of state documents); (2) academics and activists; and (3) smallholder farmers. The typology used in this research is not comprehensive, nor are the categories discrete or hierarchical. Rather, I organized my populations heuristically to depict the *geographic* distance between those who created the law and the lands and lives it ostensibly protects as well as the *epistemological* distance between smallholder farmers and the moratorium's architects. This framework illuminates discrepancies and differences

(porousness) of understanding that form around this legislation and highlight its politicization and scientization. It is in these moments of porousness where knowledge is constructed, validated and rejected.

I acquired my participants through convenience sampling. Following Quark (2012), I chose participants from throughout the different levels of involvement with the GMO moratorium. I attained multi-sited variation across levels of urbanicity and ruralness. I sought participants with dissimilar beliefs, opinions and ways of knowing about Peruvian politics and biotechnology to obtain ideological and epistemological variation. Informants included agriculturalists, community health professionals, academics (for example, agro engineers, ecologists, sociologists and geographers), national and international NGO representatives, and vendors of agricultural products (i.e. seeds and agrochemicals). I followed Carolyn Ellis' (2007) notion of "process consent" to ensure anonymity and reinforce research ethics.

Scientific Porousness: Three Ways of Understanding the 'Same' Thing

Three modes of understanding comprise the bulk of public discourse around GMOs and their prohibition in Peru. The State discourse draws from a world polity ideology and products approach towards biotechnology in order to create scientifically essentialist and neoliberal knowledge about the moratorium. The academics and activists—through their criticism and skepticism of the moratorium— exemplify a cautionary knowledge as described by process and world-system approaches towards transgene governance. Similarly, the agriculturalists evoke a localized knowledge of biotechnology and agricultural practices that does not agree with the original propositions of the GMO moratorium. These variations in these discourses underscores

the constructedness and porousness of scientific understanding.

Political and Governmental Discourse

Official state discourse is characterized by two central elements: (1) A neoliberal emphasis on open and free development of agriculture in order to boost trade GDP; (2) The scientization of politics and the politicization of science, which shapes policy decisions about the use of biotechnology in Peruvian agriculture.

The residue of the liberalizing political maneuvers set forth during the Fujimori presidency was still present one decade later when the GMO moratorium was enacted. The GMO moratorium then ran counterintuitive to the political leanings of the time. The goal of Law No. 28911 is two-fold; one goal is to “prevent the entry, production and release of [living modified organisms] LMOs” within Peruvian territory (MINAM n.d.). The moratorium is therefore a barrier to free trade and challenges neoliberal hegemony. A Global Agricultural Information Network (GAIN) report, for example, wrote, “the regulation poses a potential threat to conventional seed trade given the steep fines and zero tolerance standard” (Nolte 2016). Ostensibly the Peruvian government was concerned for the potential degradation of native agrobiodiversity and the rural and agricultural lifeworlds are attached to that diversity (Branford 2013; Iparraguirre 2012). However, a more critical look at the law reveals a discursive mode more aligned with scientized neoliberal policies.

The second goal of the GMO moratorium is to “strengthen national capacities, develop infrastructure and generate baselines that allow adequate evaluation, prevention and management of the potential impacts on native biodiversity from the release of LMOs

environment” (MINAM n.d.). It would seem then that the moratorium is only a placeholder for the eventual adoption of biotechnology. This quotation reveals both a products approach to governing transgenics as theorized by Winickoff et al. (2005) and a world polity frame work as posited by Quark (2012). The development of “infrastructure”, and “baselines” for the “evaluation, prevention and management” of biotechnology assumes not only a reliance on the essentialism of science, but also on scientized politics, legislation and governing bodies that support that essentialism. The mechanism for this sort of capacity building and scientific research is the National Council of Science, Technology and Scientific Innovation (CONCYTEC). This council is responsible for the laboratories that produce biotechnological research, the equipment utilized in those labs, and the knowledge created from their experiments and procedures (MINAM n.d).

The Program of Biotechnology and Competitive Development further betrays the neoliberal ends of this ostensibly progressive law. This program, built within the National Institute of Agrarian Innovation (INIA), “is responsible for the promotion of the use of modern biotechnology”[...] “the identification of biotechnology applications with a multisectorial character, and evaluation of their relevance and opportunity in the solution of specific problems in national production processes or in the generation of services for the competitive and sustainable development of the country” [and] “the generation of conditions, instruments and legal and financial mechanisms that propitiate the competitive development of biotechnology” (MINAM n.d.). These three processes of the Program of Biotechnology and Competitive development highlight the mixture that can solidify between the dual discourses of neoliberalism and scientism as hypothesized by Kinchy, Kleinman & Autry (2008). Neoliberal

concepts such as “national production processes” and “competitive development” coalesce with “modern biotechnology applications” and the construction of “conditions, instruments and legal and financial mechanisms” that catalyze the development of biotechnology in Peru. From this discourse, what comes to the surface then, is a mindset that merely means to appease the idea of protecting agrobiodiversity while more intentionally trying to development agriculture in hopes of garnering FDI and raising GDP.

It is also stated that “this Program may establish alliances and strategic partners, as well as generate conditions for the promotion of investments for the development of biotechnology.” (MINAM n.d.). This is especially interesting because the U.S. government is very active in biotech marketing, outreach and capacity building in Peru (Nolte and Beillard 2014). The Foreign Agricultural Service (FAS) in Lima, a subsidiary of the USDA, cooperates with the Peruvian Ministers of Agriculture and Trade, sponsors biotechnology roadshows, conferences and seminars and funds the Centro Internacional de la Papa for biotechnology research—all with the goal of increasing “local producers’ awareness of biotechnology’s economic and ecological benefits” (Nolte and Beillard 2014). This relationship between the US and Peru further complicates the goals and efficacy of the moratorium. Anderson’s (2002) work on post-colonial technoscience begins to come to life with this realization, complicating what might seem like a purely economic relationship with questions of epistemological violence and the construction of legitimized and oppressed knowledge systems.

The neoliberal context in which the law was being created impacted how representatives of the state made sense of the moratorium, how it should operate and what it

should mean for the country. The presence of scientized ways of thinking about the moratorium, and the reliance on various politicized institutions in order to construct governance strategies, catalyze capitalistic development and foster techno-economic relationships with other countries. It is with this sort of analysis that we begin to question the motivations of the moratorium, and if this temporary law is doing what it is supposed to do—protecting both the agrobiodiversity of Peru and the people who make their livings in small-scale agriculture.

The Academics and the Activists

The next way of understanding the GMO moratorium will serve as the first example of the lack of continuity between the discourse produced at the political level and the knowledge found in the academic and activist discursive mode. The next part of this research will show: (1) that according to some academics and activists, the GMO moratorium has a lot of room for improvement; and (2) that its applicability is questionable; and (3) its capacity to be congruently understood amongst some academics and activists specializing in Peruvian agriculture is unclear.

Some academics and activists who are involved in Peruvian agriculture bring to light a general skepticism of the moratorium. Activists and academics tend to be critical of the moratorium. They generally see it as ambiguous, lacking teeth, reinforcing corruption, and failing to substantively protect smallholder farmers. Academics and activists generally believe the GMO moratorium is ineffective. Academics critique the moratorium for being a highly abstract document and having few tangible outcomes. There is very little biotechnological

research happening in Ancash Province, which reinforces this notion of ineffectiveness.

Antonio, an agro-engineer working in the *Rio Santo* Valley, stated,

I think that the country [...] it has to recover the commissioned institutions [...] from the previous years. You have to have institutions that see what agricultural research work is. [...] because now neither the universities [are doing research]. The investigation in Peru ... has fallen a lot. There is no investigation. The government is not looking at an investigation.

One can hear, in Antonio's statement, his frustration around the lack of state involvement in research focused on the use of biotechnology. Research, for Antonio is key to giving the moratorium policy effectiveness on the ground.

In addition to a lack of active and current research of biotechnology, there also seems to be a similar sentiment about the lack of regulation of GMOs in Peru. Mateo, an activist working for a Peruvian NGO that focuses on environmental rights, expressed similar dissatisfaction with the governance of GMOs, "There are people who, there are some universities, some NGOs that do a lot of [...] evaluation at random [of GMOs]." Later, he described the process of regulation in Peru as "informal". Both Antonio and Mateo are dissatisfied with the research and regulation of GMOs in Peru despite the moratorium stating that there would be plenty of both. In article 10 of a document published by MINAM, it states that CONCYTEC, the governing body of the National System of Science Technology and Technological Innovation (SINACYT), "will prioritize support" for scientific research (MINAM n.d.).

To explain their skeptical view of the moratorium, academics and activists referenced corruption and the vagueness of the law. Antonio blamed the ubiquitous presence of corruption in Peru, “Corruption hides [the presence of GMOs], or leaves it aside. If the government comes up, I, as a businessman, do not care. They give me [a] pass and [I continue.]”

Cristian, a manager of an agribusiness store that sells agricultural inputs such as seeds and agrochemicals in the *Rio Santo* Valley, shared this perspective. Gesturing to imaginary money in his hand, and then slipping it into his back pocket, Cristian, explained to me how he believes GMOs continue to be sold and planted in Peru. When I clarified saying, “so corruption you mean?”, he replied, “you said it not me.” When asked to talk about the disconnect between the media produced image of Peru being a ‘GMO-free agricultural sanctuary’ (see Ottman 2014 for an example), and the current reality, both Antonio and Cristian pointed towards corruption. The reality of corruption within Peru is made worse by the selling and usage of GMOs despite the moratorium.

Academics and activists also critique the moratorium for its vagueness. When asked to talk about the standards of regulation that are built into the law, Daniel, a representative from an international NGO focusing on indigenous communities’ rights and conservation of natural resources stated, “this moratorium is very ambiguous. [...] It seems to me that what has been done is a mockery [...] a joke.” Similarly, Antonio said, “There is always darkness. Capitalism operates in the dark. In other words, [the] moratorium law is not worth anything. Right now in this government situation.” What is interesting about the statements from Antonio is that he

references the neoliberal “government situation.” Later, he also commented on the role of the neoliberal market in the existence of GMOs in Peru. Antonio mentioned that it is the “neoliberal market” that allows for the indirect entrance of genetically modified products into Peru. The “power of capital” allows genetically modified crops like yellow corn and soy into Peru. This would make sense considering that countries like the United States have strong interests in trading their corn and soy for livestock and poultry production. This bilateral relationship with Peru is worth about \$10 million every fiscal year (Bean & Nolte 2015) and comes from stocks of U.S. soybean and corn that are 94% and 89% genetically modified respectively (Wechsler 2018).

What the sentiments of Daniel, Antonio and Cristian reveal is distrust and dissatisfaction with the Peruvian government and its apparent inability to research and govern biotechnology effectively and equitably. In addition to that, critiques of the moratorium arise around the ambiguity of the law, and its ostensible shadowy or disguised mechanisms. The potency of these sentiments, and their application to sociological theory reveals itself when conceptualized through the lens of the sociology of risk.

In hypothesizing about the modernization of capitalist societies, Beck (1992) wrote about risky societies that were taking a leave from the past— from the traditional ways of doing things—and opening themselves up to a problematic future. In the case of biotechnology in Peru, and in the *Rio Santo* Valley more specifically, this research sheds light on this departure from traditional agricultural practices and the beginnings of a problematic future reliant upon, and reflexively in contradiction with, biotechnology.

An outcome of this type of modernization, as theorized by Beck (1992) and Lidskog & Sundqvist (2012), can be a general distrust of scientific prowess. Taking from what we know now about the intimate relationship between neoliberal politics and science, based on Habermas (1970), Kinchy, Kleinman & Autry (2008) and Quark (2012), this suspicion and mistrust of the Peruvian government on behalf of the individuals from this stakeholder group makes sense. In the types of risky societies Beck (1992) writes about, a demystification and demonopolization of scientific knowledge can occur while at the same time the role of science in society can intensify. This counterintuitive description characterizes the GMO moratorium accurately— despite political debate and unsteadiness at the political level and skepticism paired with criticism at the academic level, the moratorium is only temporary; with its main goal to pave the way for more and potentially risky biotechnical advancements in the Peruvian economy and agriculture.

Knowing the long term and more permanent goal of the GMO moratorium—that being the eventual adoption of biotechnology and biosafety mechanisms— it does not take much to question who the moratorium is actually for. If one purpose of the moratorium is to protect agrobiodiversity and the lives (often rural and indigenous) tethered to that diversity, then why would the moratorium be so short term? In addition, why would the Peruvian government build in processes for capacity building that would essentially undo the level of protection that was previously and supposedly offered? Understanding the neoliberal context that the moratorium is occurring in, and how that context effects policy decisions and dissemination of knowledge about the moratorium, sheds light on how agriculturalists on the local level are knowing about the moratorium (or not), and how those discrepancies in knowing bolster the

idea that the GMO moratorium was only ever neoliberal lip service and never designed for complete and equitable protection of small scale and diverse Peruvian agriculture.

The Agriculturalists

The major elements that characterize this stakeholder group are: (1) a lack of usefulness of the GMO moratorium for small-scale farmers; (2) a different type of knowledge about agriculture and genetic engineering derived from traditional agrarian practices; (3) pride in agricultural products as they are and a sentiment that biotechnology is not necessary. This contrasts with the epistemology of the state in that it does not employ the same products approach and world-polity ideologies. Instead, these agriculturalists prefer to utilize agricultural practices that have served them for decades and are generally more cautious of redefining the knowledges and technologies they currently use.

Academics' ideas about how farmers understand the moratorium contrast with what farmers actually describe. When talking to academics about what they perceive the agriculturalists know or do not know about the GMO moratorium, a sentiment arises that expresses the idea that agriculturalists do not understand much. Daniel, a representative from an international NGO, had this to say, "I really get the impression that it is a topic that they [are not aware of] and that they do not know at all." Furthermore, he spoke about the topic of the moratorium as being "remote"—an adjective that helps portray the epistemological distance or discrepancy in knowledge between individuals who are indeed aware of the moratorium and those who are not. Mateo shared his thoughts on the topics,

“There are farmers who know it. But, again, it depends. A lot of the modern, commercial, coastal farmers, know that it exists formally. The farmers, that are in the Andean highlands, probably do not have any knowledge of this, but if they do have it, there is no commercial interest in planting transgenics crops in these places. The one [interested] in transgenic crops is not the small farmers.”

This quotation is interesting because it plays with the question, “who is the moratorium actually for?” Mateo brings to the surface the fact that many of the farmers who are interested in biotechnology and know specifically about the moratorium and its proposed purposes are not small holder farmers. To the contrary, they are large scale, industrial and coastal farmers. During an interview, Mateo described how the coastal farmland in Peru is devoted to production of export crops, whereas the sierra and jungle of Peru is devoted to the production of food for Peruvian consumption.

In the case of Ancash, Antonio had this to say about the difference between production on the coast and in the sierra, “In Ancash, of the 100% agricultural coverage that it has, 27% is for export on the coast. [...] and 83% of the agriculture is for sustenance.” He went on to say that when talking about transgenics in Peru, the type of farming operation involved in that conversation is “commercial” and “international.” He critiqued the moratorium for not having much “transcendence” and for not having “relevance” and “importance” for the small scale agriculturalist, whom, in the case of Ancash, are doing majority of the food production. These quotations are interesting because they run counter to many of the conceptions about the purpose of the moratorium—that the primary goal of the moratorium is to protect valuable and

endemic agrobiodiversity and the communities who are working with that agriculture.

What the academics had to say about these individuals was both short-sighted and correct (to a certain extent). What was not helpful and short-sighted was the assumption that agriculturalists do not know. According to the hypotheses of the social construction of knowledge, not knowing about something is rather hard to come by. Instead, what is more helpful to a discussion about knowledge production is thinking about it in terms of *knowing differently*.

Javier and his wife Elena, agriculturalists who mostly grow avocado, spoke about processes of genetic manipulation with good detail and expertise. Specifically, Javier told me about the process of hybridization he uses to grow his avocados. To grow avocado plants, Javier first begins with the seed he calls "*el mexicano*." Once the plant has grown about a quarter of a meter, he transplants the bud from a different type of avocado plant he calls "*la fuerte*". From there, the hybrid plant grows and produces avocados that are high-quality and successful in the marketplace. Javier explained that if one were to only use *la fuerte*, that the plant would grow but not produce fruit. He also mentioned that in "the time of his grandparents", they were only growing *el mexicano*. It was after generations of selective breeding and planting of the seeds from the most successful plants that they began to produce *la fuerte*. Javier and Elena spoke proudly of their work and of the agriculture from his community. For them, it is a "right" and privilege to work in the farm. They value their agricultural products for the time and energy they put into them, for their unique quality and success in the marketplace. In a similar conversation with Richard, an agriculturalist and professor at a local school, it became apparent

that this process is also used to produce his peaches. Richard spoke with detail about the hybridization he employs and how he understands it to be a form of “genetic manipulation”.

Martin, a community member and security guard, spoke in length about his knowledge around the concept of genetic engineering. With a background in agronomy, he explained to me the transplant process that is utilized in modern forms of genetic engineering. When prompted to talk about the GMO moratorium, Martin spoke openly that he would support a law like the GMO moratorium. When prompted to talk about why, he referenced the uniqueness of the agricultural products that come from his community, specifically of the avocado. In doing so, Martin also talked about how the majority of community members save and recycle their seeds from one harvest to the next—especially for avocados, sweet limes and oranges. He said,

“It’s because of [recycling seeds] that the fruit is different from others. Because if you brought seeds from somewhere else, it would be different. When it’s from here, the fruit is sweeter and more pleasant for all the markets where it gets sold. They always ask for fruit from here.”

From his perspective, there is no need for biotechnology—that the plants his community grows are successful enough with the knowledge and processes they already employ. The practice of saving seeds is an ancient practice that guarantees autonomy over one's crops and that only the best of a certain crop are planted into the next harvest. It is a way of ensuring that the diverse types of plants and crops continue to be grown. The introduction of biotechnology threatens this sovereignty over seeds because transgenic seeds are considered technology and

intellectual property of their owner, whom are often foreign and multi-nation corporations (Martinez & Pinzás 2014).

Cristian, the owner of the agro inputs store, also spoke in good detail about the processes of modern biotechnology. He was clear and concise about his opposition to genetically-engineered crops because of their potential to harm the human body—a perspective shared by Dona & Arvanitoyannis (2009), Ewen & Pustazi (1999), and Pelletier (2005, 2006). Cristian also spoke about how GM seeds are not economically lucrative for him to sell because the majority of his community “do not buy them because they are very expensive.” He also mentioned that other communities of similar size and socio-economic status have the same reasons for not using genetically-modified seeds.

What Antonio had to say about the lack of “transcendence” and “relevance” built into the GMO moratorium is valuable for the conversation about the localized qualities of knowledge (see Goldman and Turner 2011). Understanding and knowledge about the moratorium, being that it is constructed and contextualized in specific social arenas, changes as it moves from one place to next and from one mind to the next. It transcends and obtains various levels of relevance depending on the stakeholder group. The “transcendence” referenced by Antonio is especially helpful to help conceptualize the porousness of the GMO moratorium. That is, how certain facets of the more general epistemological understanding of the law drop off or get lost in translation as it moves from one context to the next.

It is obvious that the agriculturalists who participated in this research are anything but not-knowing. Their experiences on the material level of Peruvian agriculture have imbued their lives with experiences and knowledges that enrich their contextual understanding of agriculture

in unique ways. Despite certain pieces of information about the formalities of the GMO moratorium not making their way to the discursive field of the agriculturalists— a result of the non-transcendental qualities of the moratorium—they continue to be in possession of complex and personal understandings of agriculture, and therefore, discursively express their knowledge of the physical world in a localized manner that is unattainable by the other two stakeholder groups in this research.

Further Analysis & Critique of the GMO Moratorium

There are differences in how the three stakeholder groups construct their knowledge about the GMO moratorium. The three stakeholder groups vary in terms of how much technical knowledge they possess about biotechnology and the moratorium, and how much trust they are willing to place in new agricultural practices. These differences and discrepancies highlight apparent shortcomings of the moratorium with respect to its political conceptualization having material impact on agriculture in the *Rio Santo* Valley. In this section I discuss the social construction of knowledge about the moratorium, specifically one that is occurring in a highly neoliberal hegemonic context. Second, I illustrate the skepticism surrounding the GMO moratorium and its relationship to the sociology of risk. Lastly, I address the question, “who is the moratorium really for?”

A Scientized Neoliberal Discourse

The official governmental discourse about the GMO moratorium diverges from how

academics, activists and agriculturalists understand the law. The state discourse is neoliberal. This discourse, with its genesis in political and economic restructurings of the 1990s, then informs how the law gets conceptualized and eventually operationalized. The GMO moratorium is about a highly scientific topic. For this reason, the role of science is also important to consider when thinking about how individuals from this stakeholder group understand the moratorium. In political rhetoric, two dominant ideologies, neoliberalism and science, coalesce into a hegemony that downplays the importance of the role of small-scale agriculturalists while bolstering an eventual adoption of modern biotechnology in Peruvian agriculture. This is counterintuitive because one of the integral reasons for the moratorium in the first place was to protect traditional and natural agricultural practices and the people that employ them.

What one finds then, with respect to the Peruvian governmental and political discourse, is an emphasis and reliance on biotechnology as a mechanism for further neoliberal capitalistic development. The intertwining of this scientific essentialism into the policy that controls Peruvian agriculture is made possible through a products approach towards thinking about and governing GMOs (Winickoff et al. 2005). The discursive field of the Peruvian agricultural policy assumes that minimal risks are involved in the process or application of transgenics. If the science and product itself is well-designed and an appropriate regulatory apparatus is put into place, then usage of transgenics is considered safe. On paper, this mindset makes sense. Discourse analysis of Peruvian governmental documents shows a myriad of theorized governance strategies. The National Superintendence of Tax Administration (SUNAT) is in charge of customs control, The National Agrarian Health Service (SENASA) is in charge of monitoring plant and animal products, and the Technological Fisheries Institute (ITP) is in

charge of governing hydro biological resources (MINAM n.d.). Whether or not these theorized mechanisms become materialized is up for debate—a debate where the academic sand activists of his research argue otherwise.

The world polity framework can also be applied to the scientized political hegemony that operates at this level (Quark 2012; Pellow & Brehm 2013). By applying this framework to analyze the discourse found at the political level, we uncover an ideology where science becomes normalized and universal. Under the assumption that science is value neutral, science becomes the end all. Biotechnology in Peru becomes a mechanism for agricultural, and therefore economic, development. We learn from Habermas (1970) however, that science can never be value neutral. That instead what Peru has is a system where science is intimately connected to and influenced by political power and rhetoric.

Skepticism of the GMO Moratorium & the Sociology of Risk

Academics and activists are skeptical of GMOs. Specifically, individuals from this group have problems with the “ambiguousness” of the law and its inability to function properly. The academics and activists from this stakeholder group referenced how Peruvian capitalism operates in the “darkness”—covering up a lot of instances of corruption that are responsible for the continued sale and use of genetically modified products in Peru despite the GMO moratorium. According to the 2017 Corruption Perceptions Index, Peru is ranked fifth in South America (Transparency International 2017). Public corruption in Peru is motivated by power of

public officials making decisions on economic matters—especially those concerning natural resources (Enrique Escalante from Diaz 2014). The Department of Ancash suffers from high levels of corruption. Findings from a study by the University of Ruiz Montoya corroborate this sentiment— “This study shows that Lima has 6,000 complaints [of corruption] in the Office of the Attorney General, the largest number nationwide. They are followed by Ancash and Junín with 2,771 and 2,261 respectively” (Castillo 2017). However, “Ancash currently has over S/ 170 million worth of public investment stalled while Lima has S/ 140 million” (Dreckschmidt 2017). With these types of numbers, it makes sense why individuals would place such a heavy emphasis on the problem of corruption.

The skepticism and mistrust that is represented at the academic and activist level can result in a demonopolization of science. This occurs alongside the ever increasing role of science in society and the uneven access to education around it which creates skepticism and misunderstanding. However, it also places even more onus on the shoulders of science to answer the difficult questions and assess the risks. On this topic, Giddens (1990) writes, “Modernity reduces the overall riskiness of certain areas and modes of life, yet at the same time introduces new risk parameters largely or completely unknown to previous eras” (p. 4).

In writing about ‘reflexive risk societies’, Beck (1992) and Lidskog and Sundqvist (2012) hypothesized that in a rapidly developing society, the prowess and universal qualities of science and technology would be questioned. That eventually, the society would reflexively turn inward in order to critically analyze the modernization that was occurring. In addition to that, that it would modernize further and use more technology to combat some of the societal risks it was creating. Through this ongoing modernization process, modern institutions are questioned by

the process of modernization itself (Zinn 2008). On a larger scale, we can see this process occurring in Peru. We can see that the government has created the GMO moratorium in order to slow down the development of biotechnology in Peru— at least temporarily. The moratorium was first and foremost a measure to mitigate the threat to Peruvian agrobiodiversity and traditional livelihoods. However, the government is also simultaneously working to enhance the regulatory structures and economic relationships that will eventually come with the adoption of biotechnology at a commercial level.

When the moratorium is over, the country of Peru will more than likely continue to adopt biotechnological advancements on a national agricultural scale. Its largest commercial production sectors, such as the coast of Peru (which ironically is a desert environment with limited rainfall), will implement biotechnology in order to reap larger harvests of some of its most important cash crops such as sugarcane, cotton, quinoa, and asparagus. In addition, it will welcome the trade of genetically modified corn and soy beans in order to feed its production of cows, pigs and fish for Peruvian consumption.

Peru should be cautious about this type of economic development. In developing societies such as Peru, the social production of wealth—often times through liberalized economies— systematically exacerbates the social production of risks (Beck 1992). Put more bluntly, wealth accumulates at the top while risks accumulate at the bottom (Lidskog & Sundqvist 2012). Accordingly, Peru will experience more problems and conflicts related to the production, governance and distribution of techno-scientifically created risks such as biotechnology. What we may see happen then, with respect to Peru's reliance upon the

advancement of biotechnology in agriculture, is a society where the capitalistic few continue to produce, modernize and accumulate capital, while simultaneously distributing techno-scientific risks— through the production and consumption of GE crops and products— onto other populations within Peru.

Who is the Moratorium Really For?

This law that seemed to be ratified in order to protect agrobiodiversity and traditional agricultural populations and their practices transformed into a politicized and scientized decision to lay the political and economic groundwork for the eventual adoption of modern biotechnological advancement in Peruvian industrial and commercial agriculture. This argument gives rise to questions around who the moratorium is really for.

The Peruvian GMO moratorium is inadequate at addressing the realities of small-scale and traditional agriculture in the *Rio Santo* Valley of Ancash. The questionability of the moratorium—and its proposed facet of protecting agrobiodiversity— is revealed when certain clues are taken into consideration. The first and most obvious is the timeline of the moratorium. The protection of agrobiodiversity and livelihoods attached to that diversity was never meant to last more than ten years. When President Humala ratified the moratorium in 2011, it was always understood that the president who finds themselves in power at the time of the moratorium's expiration date would be able to overturn its power. It is true also that they could also extend the moratorium, but based on what we know about the neoliberal political climate before and during the moratorium, and the active efforts on behalf of other nations such as the USA to lobby against the moratorium, it is plausible that this would not

occur.

The GMO moratorium is shortsighted in the sense that it proposes to protect a population of people and agricultural practices from a technology that is not economically realistic for them in the first place. A field observation reads,

I went into a store that sells all kinds of remedies, herbicides, insecticides and seeds. I told the man I was curious about the seeds he sells and where they came from. He quickly said the United States, and even quicker told me not worry, “No son transgenicos” [they are not transgenics]. He told me that they were natural and that the transgenic seeds are too expensive. They don’t sell well he said.

What this observation reveals, beyond the obvious bi-lateral and biotechnological relationship between Peru and developed nations like the US, is an economic discrepancy in the reality of the GMO moratorium. Small-scale farmers, like many of the agriculturalists from my sample, are not using transgenic products in the first place—they are simply too expensive. If the moratorium proposes to protect these types of farmers, how do they compensate for the fact that population under their watch very rarely interacts with biotech products?

The GMO moratorium is not relevant for the agriculturalists in my sample and others like them in the *Rio Santo* Valley, nor for the agricultural practices they currently utilize. When Antonio mentioned the lack of “transcendence” of the moratorium, he was referring to the lack of relativity of the moratorium on the level of the small-scale agriculturalist and agrobiodiversity that the law is hypothetically supposed to protect. This lack of relevance can

also be thought about in terms of porousness—that is, the inability of the moratorium, and its intentions and mechanisms, to adequately reach, both epistemologically and geographically, the populations and practices of the agriculturalists it was designed to protect.

Epistemologically, we know the participants of this research know differently about agriculture than the academics, activists and political discourse. Many of them hold unique understandings of seed recycling, genetic manipulation and hybridization and have been practicing these techniques for generations. Others possess knowledge about more modern forms of biotechnology and disagree with that degree of genetic manipulation. They disagree because of its potential health impacts on the human body, and because they see no point in changing the practices they currently employ. They are proud of their unique agricultural products and see no need to manipulate them further.

The GMO moratorium was never designed for the small-scale, traditional, and often indigenous farmer in the first place. Despite the political discourse, academics and activists from this research believe that the GMO moratorium has very little reality in the material world. In addition, many agriculturalists possess and practice unique and contextual environmental knowledges that do not necessarily encompass the same political and technological language that created and sustains the GMO moratorium. The discrepancy between the types of knowledge possessed by agriculturalists in this study and the rhetoric displayed on the governmental level, along with the criticism and skepticism of academics and activists, hints to the moratorium's ineffectiveness as a law for the protection of Peruvian agrobiodiversity, as well to its more implicit objective of fostering the eventual adoption of

biotechnology.

The reality of the GMO moratorium and its apparent contradictions begin to make sense when seen through the lens of ‘neoliberal multiculturalism’ (Hale 2002). In writing about Guatemala, Hale explains that during the 1990s there was a lot of mobilization of indigenous and underrepresented groups. Specifically, both national and international legal instruments were created to protect the land rights of these groups. Similar changes were also happening on the Peruvian front under the Fujimori regime. Ironically, the decade in which many of these mobilizations were occurring is also remembered as the era of neoliberalism ascendancy in Central and South America (Hale 2002). To make sense of this counterintuitive phenomenon—of the simultaneous advancement of both cultural rights and the neoliberal hegemony—neoliberal multiculturalism describes the process whereby neoliberal governments actively support a substantive and limited version of cultural rights as a mechanism for resolving their own problems and propelling their own political agendas (Hale 2002). Examples include language reform, anti-discrimination measures, and in the case of Peru, the moratorium on GMOs.

Initiatives that endorse a neoliberal multiculturalism, such as the moratorium, have clear limits built into them (Hale 2002). The 10-year timeline is perhaps the most obvious of these limits. The lack of relevance of the moratorium at all stakeholder levels described in this research is also a limit. The porousness of the moratorium—a result of the social construction knowledge and the disconnect between localized contexts where knowledge is produced—inhibits the law from adequately addressing the realities of all stakeholder groups. Whether or

not this inadequacy was purposely built into the moratorium, as a tactic for the advancement of a political agenda, is up for debate, however Hale might answer in the affirmative. So how is this justified? Hale (2002) argues that “multicultural reforms [...] are not focused primarily on the rectification of past injustice through established citizenship rights; rather, they involve affirming new rights and implementing a new (and presumably more just) relationship between historically oppressed groups and the rest of society” (p. 521-22). In the case of Peru and its moratorium, what then are these new “rights” and “relationships” that Hale is referring to?

Besides protecting agrobiodiversity and traditional livelihoods from the contamination of transgenics, the GMO moratorium was also always designed to enhance the capabilities of the Peruvian government to eventually adopt biotechnology as an agricultural and economic boon. The “rights” then, came in the form of the moratorium itself. It protects the rights to agrobiodiversity and traditional livelihoods. These rights however, are bound to expire— even proponents of biotechnology in Peruvian agriculture endorse some facets of multicultural rights, “so long as it *does not go too far*” (Hale 2002; 490, emphasis in the original). The 10-year timeline is a clear reminder that this moratorium was never designed for the long haul.

The “relationships” then, are what the Peruvian government is forming in order to adopt biotechnology in the most environmentally and culturally sensitive way. New relationships amongst themselves—with the formation of new committees and agencies; new relationships with science—through the implementation of biotechnology; new relationships with other nations—through the economic seduction that comes with buying and selling transgenic crops in both domestic and international markets; and new relationships with agro

biodiverse traditional farming practices and livelihoods— one at risk from the threat of unruly biotechnology.

Conclusion & Contributions

The scope of this paper was two-fold: to briefly introduce the history of biotechnology in Peru; and to collect multi-sited ethnographic data in order to create a discussion on the contextualized construction of knowledge about the Peruvian GMO moratorium. Guided by the experiences of its participants and grounded in sociological theory, this research attempted to answer the question, “how do varying stakeholder groups, involved in different geographical and epistemological levels, make sense of the GMO moratorium?” During the research process, a second question surfaced, “who is the moratorium really for?”—which in turn became a critique of the moratorium.

In answering these questions, I argued that the GMO moratorium is largely ineffective and questioned on behalf of academics and activists. I argued that the GMO moratorium is not relevant for the population of small-scale agriculturalists and agrobiodiversity that it proposed to protect. Lastly, I evoked the concept of neoliberal multiculturalism to argue that the GMO moratorium was never fully committed to accomplishing its primary objective of protecting agrobiodiversity and agriculturalists, but instead was designed to appease certain groups and create an action plan for the eventual adoption of biotechnology in Peruvian agriculture.

This research has largely drawn from the theoretical foundations of the sociology of science and technology. In addition, the research drew heavily from political ecological

discourses and anthropological thought processes. By doing so, it has added ethnographic data and contextual examples that support scholarly literature in multiple disciplines. This research serves as an example of a multi-sited and macro ethnography, combining different perspectives from different stakeholder groups in order to highlight the nuances, similarities and differences between the groups (Burawoy 1998; Marcus 1995).

This research has given more life to the localized reality of the construction of knowledge—specifically, in a neoliberal context (Bourdieu 1998; Brenner & Theodore 2002; Goldman & Turner 2011). Similarly, this research proposed connections to and advanced the conversation surrounding the sociology of risk—that is, the connection between neoliberal capitalist development and the social production of risk in quickly modernizing societies (Beck 1992; Lidskog & Sundqvist 2010; Zinn 2008). In doing so, this research has built upon and advanced social theories about the intersection of the neoliberal hegemonic discourse and science (Habermas 1970; Quark 2012; Kinchy 2010). This research has provided more basis for conversations about the governance of biotechnology, the politics involved and the potential rift between theoretical beginnings and material outcomes (Kinchy 2012; Winickoff et al. 2005; Pellow & Brehm 2013). Lastly, this research has advanced the discussion about neoliberal multiculturalism (Hale 2002). Via the critical mind of Hale and his conversation on identity politics in Guatemala, this research proposed a critique of the GMO moratorium that extends neoliberal multiculturalism to the Peruvian context.

This research has opened the door for further sociological research focusing on the GMO moratorium in Peru. The moratorium is set to expire in 2021—where the country goes

after that is not certain. However, this research has hypothesized about the very probable outcome of the full adoption of biotechnology in Peru. It will be important to continue to examine this political and scientific decision and follow its socio-economic outcomes. Specifically, how certain groups adapt to these changes and reconstruct their relationship and knowledge about agriculture in the face of increased biotechnical changes.

By extending the discussion about neoliberal multiculturalism, this research also proposes questions about the ideas of appeasement, advancement and achievement—that is, the difference between these three concepts with respect to multicultural legislation in neoliberal contexts. In other words, are these laws designed to *appease* certain groups while primarily *advancing* the neoliberal hegemony, or are they designed to actually *achieve* better livelihoods for marginalized groups?

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