

The Expanding Techniques of Progress: Agricultural Biotechnology & UN-REDD+

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Introduction

This inquiry seeks to engage in a comparative analysis of agricultural biotechnology and the United Nations program for reduced emissions from deforestation and forest degradation, referred to as REDD.¹ Despite the existing differences between the technical manipulation of biological organisms and a conservation program aimed at reducing carbon and protecting forests, the two share commonalities in ideological origin, application, and values. Presented as positive developments, both seek to address large-scale issues such as global hunger (McGloughlin, 1999) and climate change,² but both remain controversial issues.

The integration of biotechnology and REDD to the “developing world” requires a critical analysis. Both these programs are imposed with national and international institutional support, requiring large sums of public and private funds, while biotechnology dedicates large expenditures to advertising and public relations, projecting an image of positive environmental change (Spitzer, 2001; Newell, 2009; Shiva, 2013). Each section will begin with a brief background on each program, followed by the application of William Dugger’s (1988, 1989) four invaluation processes as a means to unravel the social relationships and contradictions inherent in the development and application of these technologies and programs. This inquiry acknowledges biotechnology and UN-REDD as advancing the techniques of colonialism at the molecular and international scale by entrenching relationships of control and market dependency within the genetic and wild frontiers of nature.

¹ For simplicity, REDD will refer to the updated REDD+.

² *The UN-REDD Programme Strategy 2011-2012.*

Biotechnology: Foundation and Disposition

In order to grasp the origins of biotechnology, we must understand the concept of progress—the original techniques and its rising institutional developments. The earliest formation of biochemical engineering (biotechnology) is found in Sumeria and Babylonia with the conversion of sugar into alcohol by yeast to make beer as well as with the Egyptians in 4000BC who used brewer's yeast to leaven bread (Friechter, 2000). This knowledge spread and developed within and between Empires with a philosophical doctrine forming with Giambattista della Porta's (1535-1615) 1558 book, *Magiae Naturalis* (Natural Magic), which studied the hermetic sciences, describing the importance of altering and changing nature in order “to make nature to be his [man's] instrument” (Merchant, 1983: 111). At a time when the metaphor of the earth as an organism was still dominant, Della Porta instrumentalizing of nature was not seeking to control nature but to support and serve the seasons and growing periods (Merchant, 1983). This disposition changed, from serving nature to dominating it with the rise of the mechanical metaphor, replacing the organism metaphor of earth that allowed the mechanical science to flourish. This simultaneously discredited the hermetic sciences such as Vitalism and Alchemy during the scientific revolution in the 17th century. Progress during this period, ironically developing together with notions of peace (Kende, 1989), became synonymous with modern, mechanical sciences, representative of Francis Bacon and other mechanical philosophers, that social power was solidified with the Royal Society of London of 1660 forming from the ashes of the Witch-Hunts (Merchant, 1983; Shiva, 1989).

The notion of progress created standards, spawning ambitions to live up to those standards that eventually “penetrated all strata of contemporary societies,” says Teordoar Shanin (1997, pp. 68-9), who laid out two indispensable points about the power created by its social acceptance. First, those people who originally adopted the idea progress, such as mechanical philosophers, were able to define its meaning and refine its ideological content. Second, the modern state became emblematic of progress, which legitimized its power, bureaucratic rationality, and use of “objectivity” to manage subjects. This is an immense power that often goes unacknowledged, consequently emerges industrialization as the emblem of progress.

Important to the rise of biotechnology was the organizational context of modern agriculture. Karl Polanyi (2001, pp. 188-90) saw in England the violence and hardships that came with the rise of the Enclosure Acts, “commercialization of the soil,” and the “industrial agricultural division of labor.” These were organizational traits characteristic of the “English model of 1689” that enforced the

freedom of export coupled with import taxes centered on an agricultural division of labor focused on specialization akin to what Thorstein Veblen (1904, p. 313) calls the “machine process” applied to agriculture (Foucault, 2007: 34). The idea of efficiency through specialization spawned monocropping, a farming technique organized by maximizing yields of one crop in order to accommodate an export oriented economic strategy. Specialization created a food system dependent on machines, market centers (cities), and eventually global supply chains with the spread of modern agriculture through the colonial project and *laissez-faire* economics.

Colonization and its export oriented agricultural strategy had detrimental and devastating effect on the developing world. In India, Vandana Shiva (1989, pp. 58 & 83) notes the British for introducing “scientific management” into agriculture and forest management of which, clear cutting was introduced as a harvesting technique. The colonial mindset, fueled by the subjugating scientific gaze and liberal economics, exemplars of modernization, saw no intrinsic value in forests, water, or people. It reduced the values of the world into resources and labor. Industrial agriculture regimented and imposed an industrial framework on the land, disregarding the laws of natural cycles in the name of economic rationality, causing *long-term* problems in the name of *short-term* economic gains. This agricultural layout soon required chemical fertilizers and pesticides as substitutes for depleted soils, and insect infestations, which eventually led to the application of biotechnology to agriculture (Shiva, 2013).

As mentioned earlier, molecular manipulation began with fermentation techniques during Antiquity and advanced considerably in the late 19th and 20th century leading to gene splicing, cloning, and ergonomics common to biotechnology today. Louis Pasteur and John Tyndall supporting theories of microbial life in the nineteenth-century and the antibiotic industry in the twentieth-century inaugurated processing strategies for strain improvement, laying the foundations for biological engineering (Friechter, 2000). Research for molecular engineering for plants emerges around 1941, with a research center established by the Rockefeller Foundation for plant breeding in Mexico, taking the name in 1961 as the International Maize and Wheat Improvement Center (CIMMYT) (Shiva, 1989). By the 1950s this center created HYV wheat, which laid the foundations for the Green Revolution in India with gene technology taking hold after 1973 with the first gene transfer into *Escherichia coli*. This brought investments into research and development, while gene transfer in microbes, animals, and plants emerged as a common practice (Friechter, 2000). In the United States, Andrew Kimbrell (1996, pp. 133-4) views the formal origins of commercial biotechnology starting in 1980 with the Supreme Court case *Diamond v. Charkrabarty*, which concluded that “life forms were simply chemical products that could be patented just like any

other ‘manufacture.’” This idea was furthered in 1985 by the US Patent and Trademark office (PTO) extending patents under the *Charkrabarty* ruling to seeds, plants and plant tissues—and again in 1987 to include “all living organisms including animals.”

Genetically modified (GM) seeds emerged as the embodiment and the intensification of *agricultural progress*, representing another market *opportunity* for entrepreneurs, and another *need* for farmers. Publically and privately funded, biotechnology gained widespread support particularly from developed countries, to name a few: USAID, Ford Foundation, OPEC Special Fund, UN Economic and Social Commission, UN Food and Agriculture Organization (FAO), Japan, United Kingdom, and Shell Chemical Company (Shiva, 1989, pp. 100-3). Despite the claims and aspirations of biotechnology to produce higher yields, alleviate hunger, reduce the use of chemicals, and act as a solution to climate change resilience these attempts have been heavily criticized if not denied all together (Shiva, 2013; Newman, 2009; Kloppenburg & Burrows, 1996).

William Dugger’s (1988, pp. 92-101) four invaluation processes: *contamination*, *subordination*, *emulation*, and *mystification* are able to display the complicated and underlying techniques of power that shift, conceal, alter values, and perceptions. The four invaluation processes originally written to unravel the social mechanisms of corporate power retains a double meaning applied to biotechnology, which is largely advanced by the private sector.

Contamination refers to the reconfiguration of internal (anti-authoritative) values with an external (authoritative) value system. Representing the new frontier of progress and the free market, biotechnology acquires a cultural footing as the logical *disciplinary* progression to “improve” the output of nature. The same corporate controls—direct and indirect—exerted over employees are being refined towards nature through the control, patenting, and marketing of biological material. The proliferation and dominance of biotechnology in India that is common around the world, Vandana Shiva (2013) says gets its footing from structural adjustment programs (SAPs) recommended and imposed by the World Bank (WB) and International Monetary Fund (IMF) and through the rules and dispute ruling of the World Trade Organization (WTO). Economic liberalization associated with SAPs cut social spending, privatize national industry that erode democratic protections, while also eliminating or significantly reduces trade and tariff barriers that allows the penetration of foreign direct investment (FDI) or large sums of money into smaller economies of scale that cannot compete with large companies from robust economies. In short, small-holder agriculture cannot compete with American and European subsidized and genetically engineered crops that flood the country at remarkably low prices (Klein, 2007; Bello, 2001, 2009). Mexico as one classic example among many, after SAPs, the Privatization of communal property, and

North American Free Trade Agreement (NAFTA) had roughly 15 million people displaced from agrarian lifestyles into less traditional jobs in maquiladora's (factories), cities, and migration to employment in the United States (Bello, 2009). This process was strengthened, secured, and spread globally by the WTO enforcement of trade related intellectual property rights (TRIPs), Trade Related Investment Measures (TRIMs), and their predecessors agreements that protected and enforced seed and gene patents and trade that facilitated monopoly control over agriculture (Shiva, 2013; Bello, 2001, 2009). Dugger (1989, p. 94) notes the contamination of corporate values to begin in schools, where the contamination of GM products, supported by subsidies, begins in supermarkets. The integration of GM foods was not framed as a political issue, but dumped onto mainstream society as a normal technological advancement with productive outcomes and no adverse health effects (Durham, 2009). These claims appear misleading as one 2009 study among many finds GM corn to cause adverse health effects on a variety of organs in mammals, but most specifically the liver and kidneys (Shiva, 2013, p.180). Biotechnology, just as *lassie-fair* economics and later SAPs, were not innate processes, but a structural enforced action of society.

If values refuse contamination, then the next step is subordinating them, establishing a hierarchy of values. This is done indirectly by calling on a "higher good," for biotechnology, this is feeding people, preventing starvation, and food shortages. This notion is rejected on two points. First, starvation and food shortages are a result of poor distribution and poverty. Second, biotechnology does not address the needs of destitute people (Altieri & Rosset, 1999). McGloughlin (1999, pp. 163-174) responded with, (1) the absence of practical alternatives, and (2) GM rice strains are injected with vitamin A as a response to children going blind from hunger. In response to the first, the premise assumes the structure of industrial agriculture as the only way of farming, denying the wide range of radical as well as reformist alternatives to farming. From natural farming, urban and rural permaculture techniques, transition towns, the food sovereignty movement, and institutional support and investment of small scale farmers, which are able to "feed millions of peasant families," preserve biological diversity, and are more efficient in their use of land and water (De Schutter, 2011: 546; Otero & Pechlaner, 2009: 31). In response to the second, there are radical problems with food availability, health, and social structures that biotechnology is unlikely to alleviate. Food distribution, quantity, and quality are the real problems—GM rice escalates the problem of poverty into a new market—making vitamin A deficiency a market opportunity for agribusiness corporations. These companies give the impression that biotechnology is the superior way of farming, while subordinating agriculture to the corporation's legal obligation to profit maximization.

Emulation is the acceptance, embodiment, and reproduction of social processes. Once the discourse and process of biotechnology takes hold within society, emulation expands that power—creating an example to admire and mimic. The root of emulation is ambition, in farming the ambition is focused on increasing the productive output of farms—a task GM products claim to provide (McGloughlin, 1996). The Union of Concerned Scientists released a report stating that genetically engineered crop have not contributed to yield increase (Gurian-Sherman, 2009). However, biotechnology has resulted in increasing debt to an alarming degree. In India this debt associated with agricultural projects such as Monsanto’s Round-up Ready Crops, Round-Up II, and Smart Stax was marketed as with all businesses to “create a captive customer base” (Shiva, 2013). The hopes and aspirations of yield increases and gene and seed monopolies created large amounts of debt in the cotton belt in India that previously had 1,500 varieties of cotton, has now changed with 95 percent of the cotton being infamous Bt. cotton controlled by Monsanto (Shiva, 2013). It is no surprising that a quarter-million suicides by indebted Indian farmers over the last sixteen years was concentrated in the cotton belt of India (CHR & GJ, 2011, p. 1). Dugger (1988, p. 97) writes, “[t]he pressure of emulation has placed a heavy hand of competitive conformity over everyone.” Food insecurity makes people susceptible to emulate biotech farming, especially with its claims as a superior method of farming. Subsidies and wealth generating effects influence formal and informal social hierarchies that influence the use of “improved” corps that are marketed to increase yield as well as unfavorable farming conditions—arid soil, drought resistant, pest resistant and so on. Adherence and acceptance of biotechnology creates a cumulative social effect, often exacerbated by public relations and advertising that dominate mass-media outlets, which degrades and minimizes other alternatives and value systems. This reinforces modern norms dictated by the law, subsidies, and the free market, where dialogue on long-term effects is marginal, or had at all, seeks to turn food shortages or environmental disaster as with UN-REDD below, into a new investment scheme (Klein, 2007; Sullivan, 2009, 2013; Fletcher, 2012).

Mystification is the manipulation of valued symbols to promote a given cause or product, often akin to Orwellian “Newspeak.” In terms of biotechnology Monsanto’s website provides an excellent example.³ The website headline link states: “Monsanto~A sustainable agricultural company.” Inside the website a title reads: “improving agriculture” and “improving lives.” There is nothing sustainable about dependency on bioengineered inputs in farming, except the possibility of sustainable profit stream. Kloppernburg & Burrows (1996, p. 63) provide a simple example of mystification: “Monsanto has constructed the problem as the Potato

³ <http://www.monsanto.com>

Beetle, not as potato monoculture,” which displaces the problem by disregarding the structural layout of monocultures and the ability of weeds and pests to adapt to farming inputs, which coincides with their overall failure to work within existing ecological cycles and processes. Mystification displaces the problem, misleads consumers, and devalues the meaning of language in the process. The purpose of mystification is to confuse people and their values as well as to make positive linkages between biotechnology and agriculture. The mass-media, advertising, and public relations firms play a vital role in articulating and refining techniques of mystification also known by the father of public relations, Edward Bernays, as “the engineering of consent” (Bernays, 1947:113).

UN-REDD: New Boss, Same as the Old

The idea behind the United Nations- reduced emissions from deforestation and forest degradation (UN-REDD) is to provide economic incentives to developing countries and land owners to preserve their forests. Initially rejected as a concept before the Kyoto Protocol, REDD was then reintroduced in 2005 by a group of countries under the name of Coalition for Rainforest Nations; making it a topic issue in 2007 at the Conference of the Parties to the UNFCCC in Bali (COP-13). In October, 2008 the general idea was accepted, with continued debate, negotiations, and later implementation in 2012.⁴ Supported by the UN-Food and Agriculture Organization (FAO), the UN Development program (UNDP), the UN Environment program (UNEP),⁵ along with the World Bank (WB) saw deforestation as the leading contributor to climate change seeking to place a financial value on forest for conservation. REDD over time, developed into REDD+, which extended to include forest management and conservation, and carbon sink enhancement. And later again updated as REDD++, integrating the preservation of biodiversity (IISD, 2009). REDD⁶ a mechanism largely responding to market failure, sought to reduce the externalization of cost to the natural environment by placing a value on forests.

REDD has three main funding mechanisms proposed.⁷ First, a voluntary fund, national or international, that raises funds from both the public and private sector. Second, a direct market mechanism developed by the European Emission Trading Scheme and World Bank payment for ecosystem services programs that integrate REDD credits into an existing framework of verified or certified emissions reduction (CER) schemes and cap and trade systems a part of the clean

⁴ <http://www.redd-monitor.org/redd-an-introduction/>

⁵ http://www.un-redd.org/Stakeholder_Engagement/History/tabid/55719/Default.aspx

⁶ REDD for simplicity is the culmination of REDD++.

⁷ http://unfccc.int/files/methods_science/redd/application/pdf/tfd-redd-finance-background-paper.pdf

development mechanism (CDM) emerging from the Rio+ 20 Earth Summit in 1992 (Corbera, 2012). Third, a combination of the two, utilizing a hybrid between a voluntary fund and market mechanism that establishes an auction process or a dual market system compatible with CERs, which has gain interest and support from the World Bank.

The basic premise of UN-REDD is problematic in two ways. First, forest reservations was traditionally a colonial technique used to control and cut off villagers from accessing forest resources that resulted in the displacement of people into planned settlements and cities (Shiva, 2002; Escobar, 2012; Peluso and Vandergeest, 2001, 2011; Antipode Special Issue, 2010). The term “forests” for example was originally used to demarcate the land and hunting ground of the kings and English nobility that used enclosures, game laws, and taxes among other methods to control and displace populations into work-houses and later factories during the rise of industrialism (Perlman, 2007; Merchant, 1983, p. 63). Nancy Peluso and Peter Vandergeest (2001, 2011: 588) coined the term ‘political forests’ that refers to the political and often violent relationships underlying the discursive and functional aspects of territorial control that establish domesticated forests of the state as opposed to wild jungles of the anti-state insurgents. This political and social construction of nature was widespread during the colonial period around the world, but continued into post-colonial regimes with notions of “fortress conservation” and “participatory conservation.” The former militarized, displaced, and excluded native populations from nature reserves by any means necessary, which has been critiqued as an indirect way to arm foreign governments during the Cold War and to control land that has compiled an outstanding record of human rights abuses in Africa, Asia, and Latin America (Peluso, 1993; Hitchcock, 1995; Duffy, 2000; Neumann, 2004; Ybarra, 2012; Ojeda, 2012). The latter was a more progressive adaptation that sought to integrate people into forestry and resource management, but surprisingly are known to continue this trend of displacing local forest dwellers (Benjaminsen and Bryceson, 2012; Benjaminsen et al., 2011; Cooke and Kothari, 2001). Conservation displacement is widespread, Agrawal and Redford (2009: 4) estimate displacement from conservation to be in the range of 8.5-136 million people between the 1980s and 2003. UN-REDD stands as the next advancement in this progression of conservation, combining both the legal and enforcement of fortress conservation, the integration of local populations with participatory conservation, and integrating market mechanisms guided by payment for ecosystem services (PES) and clean development mechanisms (CDMs).

Second, acknowledging, the extensive and deep-seated causes for deforestation may expose REDD’s obsolescence. *Getting to the Roots (GTTR, 2010, pp. 7-18)*, three year report on deforestation, lists two primary categories for deforestation. First, industrialization: urbanization, infrastructure, increasing

demand for monocropping and tree plantations (biofuels). Second, government policy: enforcement, corruption, illegal logging, and neoliberal economic policies. These two historical points already raise the question: why impose a program on small scale farmers and indigenous, least responsible for the industrial economy? Why not reform the industrial processes and lifestyles dependent on industrial consumption? There is a legal system in place to mediate and solves social and political issues, why *develop* another one dependent on the same legal framework?

Contamination, as with biotechnology, the principle justifications for REDD remains the international market and modern science. The economy is presented as both the problem and the solution and modern science as the means to measure REDD's progress.⁸ Subjective epistemological paradigms associated with modern science and neoliberal economics appear as underlying both the measure of qualification and values for REDD, constituting a positive feedback loop for the modern industrial economy. Sian Sullivan (2009, 2010, p. 113, 2012, 2013) demonstrates the way in the tradition of Karl Polanyi's (2001: 75) "commodity fiction" how PES and CDMs are creating a "new commodity fiction" out of nature.—reducing and abstracting nature to distinct services and commodities to be bought, sold, and traded. Sullivan (2012) analytically breaks down four ways the natural environment is integrated into the market. First *nature work*, aided by The UNs Millennium Ecosystem Assessment (MEA) established twenty-four service categories, such as provisioning services (food, water, timber, etc), regulating services (natural environmental crisis), and so on. This separates and commodities nature in order to provide the building blocks PES that seeks to sell nature to save it. Second is *nature finance* that integrates nature as a commodity into financial systems with indexes designed to develop and enhance investment strategies into emerging "green markets"—carbon and biodiversity—with Inflection Point Capital Management and the World Bank's Forest Carbon Partnership Facility that encourages investment by conventional banks into green markets." Third, *nature banking* creates bank accounts out of industrial tree plantations and conservation sites with carbon sequestration and biodiversity preservation that can be developed and managed in financial markets. Finally, *nature derivatives*⁹ transfer the logic of derivatives to the domain of species survival and carbon sequestration. Working in accordance with carbon credits and other commodity systems to quantify pollution and conservation, REDD acts as a vehicle spreading market relationships to the furthers forests and jungles around the globe.

⁸ <http://www.un-redd.org/UNREDDProgramme/InternationalSupport/MeasurementReportingandVerification/tabid/1050/language/en-US/Default.aspx>

⁹ Derivatives are financial instruments that promise payments derived from bets on the future value of something else (Sullivan, 2012: 207).

Through the valuation and commodification of nature combined with global capitalism, REDD operates as a mechanism to make forest conservation and marketization dependent on pollution. The market mechanisms integrated into the REDD program, merging the idea of economic growth with sustainability, reaffirms the markets dominance by failing to address the inherent non-sustainability of the modern industrial economy. REDD *is not* a program that seeks to facilitate a shift towards sustainable agriculture, addressing the non-sustainability of the industrial economy, but to advance it. The authoritative language concerning certain stakeholders is telling, *giving* a “role” to rural populations,” where they are “properly involved,” and establishing “guidelines of free, prior, and Informed Consent (FPIC)” (Lawolor, etc, 2010; Clark, 2012; FPP, 2012). This gaze of management is colonial in nature, creating subjects, by integrating unmanaged territories and previously excluded people into a legal system, where FPIC represents the equivalent to indigenous Miranda rights under this new imposition of law advanced by REDD. It is no surprise when Esteve Corbera (2012, p. 616) says that REDD enhances “inequalities in income and access to resources, particularly when pro-poor management measures are not adopted, as well as create economic enclosure through territorialization for biodiversity and carbon conservation.” Rights are useful for protection against a legal framework, but they often do not question the framework itself. In the end REDD’s progressive bureaucratization is reminiscent of the Bureau of Indian Affairs (BIA) and the Indian Claims Commission (ICC) in North America, which acted as a mechanism of legitimizing colonial land acquisition through a legal framework that provided monetary compensation, not the return of land (Churchill, 2003). Forced acquisition, with compensation acts as the velvet glove of territorial usurpation, which makes the violent battle between police and villagers in Jambia, Indonesia because of a REDD eviction notice in December 2012 seem not only necessary, but inevitable outcome of the imposition of REDD (Tobias et al., 2013)

Subordination, the hierarchicalization of values, is done with REDD by placing natural environmental issues under market mechanisms. REDD’s increasing emphasis on participation and integration of rural populations into the market and a framework of legal rights, despite its positive connotation, must remain questioned. Foucault (2003, p. 145) would take us back to the Roman Empire with the concept of “equalitarization,” a tactic of war, where once a territory was invaded, the idea of equality was used to persuade people into a framework of rights instead of revolting. The idea of equality and protection of rights under Empire or the modern state was historically no more than shifting to a low-intensity war to manage an orderly and productive social body (Trocci, 2011). Ivan Illich (1978, p. 43-4) brings us up to date by pointing out the difference between liberties and rights. “Liberties protect use-values as rights protect the

access to commodities.” Illich (1978, pp. 43-44) continues stressing the social subreption inherent with rights that encourage people to “believe that the publicly sponsored pursuit of rights leads inevitably to the protection of liberties.” When REDD introduces rights, it also introduces a legal system that enforces the free market, intellectual property rights, and by extension bio and nano technologies that advance the *progress of privatization*. REDD’s introduction to the Amazon, Africa, India, and the Far East serves to expand state and corporate control, which inherently subordinates the intrinsic values of nature to production and corporate services. Heike Schroeder (2010, p. 321) notes, “[T]he relationship of states with their indigenous peoples in the REDD design negotiations exemplifies the continuing dominance of the state.” More control, means more bureaucracies that require funding for enforcement, or under neoliberalism, corporations utilize both legal code, law enforcement, and paramilitaries in order to protect mining and logging activities (CEC, 2011). This suggests not only an increase in conflict, but a diminishing of liberty and agency as land is enclosed and policed. Nature becomes subordinated to the double-bind of bureaucracy and privatization, managing an industrial progress that delimits the world to a resource colony.

REDD then promotes *emulation* on two broad levels. The first as mentioned above, on a micro level, where people will begin to socially accept their subordination to forest reservations, property rights, or their resettlement into strategic hamlets¹⁰ and planned reservations. While the real damage to the natural environment with modern large-scale cattle ranching, agriculture, and agroforestry designed for an export-oriented economy, which REDD does not address, but promotes through advancing market mechanisms and investment into forests conservation enclosures, financializing nature with carbon and biodiversity nature banks. Forests are placed at the mercy of a legal system, where deforestation can be legitimized, the delicate ecological cycles of nature is often not recognized, and where corruption appears inherent (GTTR, 2010, pp. 14-7). In short, REDD reinforces the social emulation of an industrial relationship with forests. Second, on the macro level, the more internationally constructed successes as both a source to prevent deforestation and provide investment opportunities acclaimed by the UN, Word Bank, and their subsidiaries, REDD will gain more power and international entrenchment as a program. Creating new markets in a feel good top-down from the bottom up investment scheme, which increases the commodification of nature, delimits the rights of people by *giving* them a framework of rights, makes forests dependent on pollution for conservation, increases the values of nature banks with rising pollution and environmental

¹⁰ Militarized rural settlements that seek to observe, control, and strategically use populations in counterinsurgency warfare. Developed in Malaya during the British Colonial wars and coined strategic hamlets during the Vietnam War.

degradation, which also reduces space for alternative values and lifestyle of peoples—human and non-human.

REDD's *mystification* of valued symbols and concepts remains fundamental to the program. The establishment of “protected areas,” the foundation of the idea of conservation, has had adverse effects under REDD. The notion of protected areas has failed to prevent deforestation over the last twenty years, instead creating a value attracting potential investors (GTTR, 2010, pp.11-2), with the resource demands of national security apparatus overriding protected areas (Sullivan, 2013). In essence, REDD creates “option value” for forests, adding an option to cut forest down at a later date with an increased market value (Dunlap, 2010). This is orchestrated through a discourse that speaks in broad terms, about the consent of “developing countries” and establishing “farmer’s rights” (Zerbe, 2007). These terms are general and homogenize the different values and relationships farmers hold with the land into a one size fits all neat public relations package suitable for investment. The differences between natural, organic, small-holder, cattle, and industrial farmers—cannot be minimized—because each has a different relationship and effect on their environments. Reducing the application of consent to countries and farmers reduces the complexity of the problem to a manageable issue that will advance market relations that encroach on local and regional value systems. When it comes to preventing deforestation and promoting the conservation of wild nature, what is the difference between legal and illegal logging? Further, what is the difference between industrial illegal logging and subsistence illegal logging? REDD mystifies the radical problems facing natural environmental degradation—while advancing the modern states’ control and the markets capacity for acquisition and usurpation.

Conclusion

Both biotechnology and UN-REDD advance and intensify the relationships of control and profiteering against nature. Biotechnology advances market relationships and state control at the molecular level, while REDD to the wild and remote territories in South America, South East Asia, and Africa. Operating at different scales, they are part of the same project of progress, seeking to homogenize and control the diversity of nature and man, transforming the world into a controlled, industrialized order, based on large networks of consumption and production. Alternative approaches to Climate Change, biodiversity loss, and deforestation that challenge the market, state control, and the advancement of cybernetic organization supporting the latter are neglected and marginalized, if not rejected all together.

UN-REDD currently has a fund of \$124 million and rising.¹¹ *If* preservation and rehabilitation of the natural environment is the intention of these programs, why make forests the object of law, when the industrial economy and the market are the catalysts for degradation and destruction? The United Nations and the Bretton Wood Institution, the modern state and the private sector, form managerial layers resembling the good cops and bad cops of global industrial order that mediate relationships, subordinate values, and degrade soil and human and biological diversity into categories of labor and resources in order to be integrated into financial markets. Alternatives to biotechnology and REDD should resemble the opposite in scale, values, and relationships than the present encroachment of market and state control at the molecular and international level.

If conservation is the goal, then enforce conservation, not a convoluted program that merges the idea of investment with conservation and participation or a program that claims infusing rice with vitamin A, while imputing a profit motive, will address the problems of poverty. REDD and biotechnology funds should be transferred to support programs that educate, subsidize, and nurture an agriculture that improves soil quality without dependency on inputs, and a localized market independent from subsidy ripples and violent market fluctuations. This should also include programs that promote urban self-sufficiency with urban permaculture techniques such as green walls, roof top gardens, radical home gardening systems, and community gardens just to name a few. The alternatives and solutions are there, it is just a question of institutions and financial networks cooperating to support value systems built on genuine social and natural environmental sustainability as opposed to project, market, and financial sustainability. The latter imply a profit motive, which have complicated social and natural environmental relationships teaching people the economy is more important than the land that supports it. Climate Change, desertification, and modern poverty are anthropogenic industrial problems, which purported solutions such as biotechnology and UN-REDD suffer an *industrial pragmatism*. A gradual shift away from industrial values and profit motives may begin a praxis addressing the systemic problems of biotechnology, UN-REDD, and civilizations as a whole.

¹¹ <http://www.climatefundsupdate.org/listing/un-redd-programme>

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