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## Gold Mining and Unequal Exchange in Western Amazonia: A Theoretical Photo Essay

Gordon L. Ulmer  
*The Ohio State University*

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## Gold Mining and Unequal Exchange in Western Amazonia: A Theoretical Photo Essay

GORDON L. ULMER  
*The Ohio State University*



Figure 1. *Caranchera* (semi-mechanized mining machine) on the Madre de Dios River in Peru

### Introduction

Two young men working in the Madre de Dios Watershed in Amazonia Peru pump sediment through a *caranchera* (semi-mechanized mining method, (fig. 1) to extract gold from the riverbed. One miner is on the beach operating the small motor while the other is submerged in the river, navigating a suction pump into gold-bearing sand when a large tree limb floating downriver knocks him unconscious and hurls him into the rapids. His body and countless others each year subsidize the profits of gold investors in a chain of global trade linking to the New York Stock Exchange. Illnesses and mortalities, coercive labor, local and national government corruption, pollution from mercury contamination and fuel spillage, and deforestation so vast that it is visible from Landsat satellites<sup>1</sup> beckon our attention to the devastating and undeniable consequences of the twenty-first century gold boom in Madre de Dios, Peru.

Despite growing global awareness of the crisis in Madre de Dios, a valence of *mystification* conceals the broader system of exchange that

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<sup>1</sup> For Landsat annual timelapse (between 1984 to 2012) of deforestation in Madre de Dios, Peru due to gold mining, see this Google Earth Engine animation:  
<https://earthengine.google.org/#timelapse/v=-12.97805,-70.51164,9.853,latLng&t=2.87>

underwrites global profits at the expense of local life and environments. Ironically, an advertisement for a gold investment firm was published in the same *Smithsonian* February 2012 issue featuring the article entitled “The Devastating Costs of the Amazonian Gold Rush,” which demonstrates the insidious ways mystification works, even in the process of enlightening readers. Mystification veils crucial linkages of global trade through popular media that hold local laborers in Peru culpable while remaining virtually silent about the role Wall Street plays in the destructive outcomes of gold fever. In this paper, I reframe the problem to elucidate gold mining in Madre de Dios as part of a global system of *unequal exchange* in which “the accumulation of money and technology in core areas of the world-system occur at the expense of the natural resources, environment, and health of their peripheries.”<sup>2</sup> While global trade is often critiqued for its uneven distribution of profits, an important and often under-examined corollary is its uneven or asymmetrical distribution of risks and consequences.

First, I discuss the interconnections between Amazonian gold mining and global financial markets to outline important linkages and developments between global trade and local history. Then, I examine health and social outcomes of mining labor (*embodied labor*) and its environmental impacts (*embodied land*) in Madre de Dios. Finally, I describe the processes of *mystification* and *fetishization*, or how mining machinery and the miners themselves in Madre de Dios are held culpable for these consequences, which in turn mystifies unequal exchange by detracting our eyes from the broader machinations of capital accumulation and the global gold trade.

This analysis examines the localized material, social, environmental, and health consequences of the global gold boom in Madre de Dios. I synthesize published data on public health and environmental impacts of gold mining in Madre de Dios with my ethnographic research and fieldwork photography in the region over a period of fifteen months between 2013 and 2015. Through the camera aperture this photo essay literally illuminates how local and global forces coalesce around gold mining and influence peoples and environments in Western Amazonia. Photographs are theoretically contextualized with ethnographic description and critical reflection to help visualize how global power relations shape local environments and human life at the local level.

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<sup>2</sup> Alf Hornborg, “Zero-Sum World Challenges in Conceptualizing Environmental Load Displacement and Ecologically Unequal Exchange in the World-System,” *International Journal of Comparative Sociology* 50, no. 3-4 (2009): 237-62.

## Interconnections Between Amazonia and Wall Street

The gold mining economy in Madre de Dios is an outcome of local, national, and global articulations. Madre de Dios is located in the southeastern lowland Amazonian region of Peru and shares international borders with Bolivia and Brazil and departmental borders in Peru with Cusco, Puno, and Ucayali. The construction of roadways in 1965 joined Andean and Amazonian regions of the country and enabled a boom of logging in the north and gold mining to the south.<sup>3</sup> During the 1970s the Peruvian government offered blanket tax-exemption for individuals and companies to exploit gold in Madre de Dios as international prices precipitously climbed in response to the oil crisis and floating international exchange rates when gold moved from a currency standard to a global tradable commodity.<sup>4</sup> The state-run *Banco Minero* (Miner Bank) assisted in developing the region using grubstake loans to encourage gold exploration and by purchasing gold at prices that followed global market rates that rose until 1980. Migration in the region increased by over 40 percent during this period and coincided with record high gold prices.<sup>5</sup> The lull period from 1981 to 2000 or the 'bear market' in gold did not reduce migration to Madre de Dios, which was viewed as a region of opportunity for Andean peasants affected by a severe drought in southern Peru. Mining activities rapidly increased as the international price of gold climbed from economic growth in India and China at the turn of the twenty-first century, high U.S. national debt that had been growing since 2001, and the global economic recession that began in 2008. The Transoceanic Highway, a multinational infrastructural development project,<sup>6</sup> was completed

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<sup>3</sup> Cesar Mosquera, Mary Luz Chávez, Victor Hugo Pachas, and Paola Moschella, *Estudio Diagnóstico De La Actividad Minera Artesanal En Madre De Dios* (Lima, Peru: Cooperación, Caritas, Conservation International, 2009).

<sup>4</sup> Gold prices in the 1970s surged from \$38 per ounce to \$455 after U.S. unilaterally pulled out of Bretton Woods and world moved from a fixed to flexible exchange rate system. This marked the end of the gold standard and the beginning of the gold trade.

Anna Asheshov, *The Gold in the River: A Journey in the Jungles of Peru* (Hodder and Stoughton, 1975).

David Hammes and Douglas Wills, "Black Gold: The End of Bretton Woods and the Oil Price Shocks of the 1970s," Available at SSRN 388283 (2003).

<sup>5</sup> Jesús Guillén-Marroquín, "Child Labour in Peru: Gold Panning in Madre De Dios," in *Combating Child Labour* (Geneva: ILO, 1988).

<sup>6</sup> The highway connects Brazilian and Peruvian traffic circuits and Atlantic and Pacific seaports and is part of the Initiative for Integration of Regional Infrastructure in South America (IIRSA), a multinational effort to integrate resource rich areas in Amazonia such as the MAP frontier (an acronym for Madre de Dios in Peru, Acre in Brazil, and Pando in Bolivia) into greater chains of commerce and development plans (Southworth et al. 2011). This transnational trade route between the two coasts stretches across Amazonia and



Figure 2. A view of the Transoceanic Highway on the way to the mining corridor.

during the global recession and enabled migrant workers to access Madre de Dios mining areas from the neighboring Andean departments of Cusco and Puno (fig. 2).

Gold was the best performing asset in the first decade of the twenty-first century as investors and central banks sought a safe financial haven in a volatile world market.<sup>7</sup> While gold profits soared on Wall Street during the global recession (reaching a record high of around \$1900 per ounce), the precious alloy incurred myriad consequences for environments and peoples in extractive enclaves across the globe. The intensification of mining caused a tripling rate of deforestation<sup>8</sup> (also see Swanson et al. 2011) and a surge of human rights issues and labor abuses in Madre de Dios, such as de facto slavery through debt

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snakes through the Andes, enabling greater mobility for migrants from the highlands in Cusco, Puno, and elsewhere to access the mining labor market in Madre de Dios.

<sup>7</sup> "Could Certain Commodities Etf's Yield a Potential Gold Mine for Investors," *Forbes*, 2014. Shahriar Shafiee and Erkan Topal, "An Overview of Global Gold Market and Gold Price Forecasting," *Resources Policy* 35, no. 3 (2010): 178-89.

<sup>8</sup> Gregory P. Asner, William Llacayo, Raul Tupayachi, and Ernesto Ráez Luna, "Elevated Rates of Gold Mining in the Amazon Revealed through High-Resolution Monitoring," *Proceedings of the National Academy of Sciences* 110, no. 46 (2013): 18454-59.

peonage (Verité 2013), human trafficking and child prostitution,<sup>9</sup> and exposure to unhealthy levels of mercury in soils, waterways, and aquatic food supplies.<sup>10</sup> An estimated 50 thousand miners in Madre de Dios produced an annual 18 tons of gold worth \$800 million during the peak of the boom (Arthur 2012) and gold revenue surpassed cocaine, usurping its place as the most profitable illicit export commodity.

Meanwhile, the value of exported gold material rises the farther away it moves from the dredges in Madre de Dios as it exchanges from the hands of laborers to buyers and ultimately reaches industrialized economies. Gold is used in destination countries as a money commodity to protect national currencies and grow capital investments (e.g. in bullions, ETFs, futures trading, etc.), to articulate elevated socioeconomic status (e.g. high luster ornaments, dentistry, and jewelry), and to conduct electricity in solid-state electronic devices (e.g. small cellular phones and computer technologies). Understanding these interconnected processes reveals how the costs and risks of the global gold trade are unevenly distributed so that profits are privatized and externalized while the costs to human health and environments are socialized and localized in Madre de Dios.

### **Embodied Labor**

My first argument about unequal exchange is that pollution from the global gold trade is *embodied* in the local population in Madre de Dios. Embodied labor in the Marxian sense refers to how human time and energy produce commodities. To further develop this concept from the perspective of medical anthropology, embodied labor can also denote how commodities are produced by human vitality, which can be measured by the embodied effects of labor on health. Embodiment constitutes a powerful analytical tool to explore biosocial relationships and understand processes by which people biologically absorb the social and material world.<sup>11</sup> Krieger's (2001) work shows how increased risk of

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<sup>9</sup> Instituto de Estudios Internacionales (IDEI), "La Trata De Personas Con Fines De Explotación Laboral: El Caso De La Minería Aurífera Y La Tala," *IDEI y OIM, de la Pontificia Universidad Católica del Perú* (2009).

"Risk Analysis of Indicators of Forced Labor and Human Trafficking in Illegal Gold Mining in Peru," *Verité* (2013).

<sup>10</sup> Katy Ashe, "Elevated Mercury Concentrations in Humans of Madre De Dios, Peru," *PloS one* 7, no. 3 (2012): e33305.

Sarah E. Diringler, Beth J. Feingold, Ernesto J. Ortiz, John A. Gallis, Julio M. Araújo-Flores, Axel Berky, William K.Y. Pan, and Heileen Hsu-Kim, "River Transport of Mercury from Artisanal and Small-Scale Gold Mining and Risks for Dietary Mercury Exposure in Madre De Dios, Peru," *Environmental Science: Processes & Impacts* (2015).

<sup>11</sup> Nancy Krieger, "Theories for Social Epidemiology in the 21st Century: An Ecosocial Perspective," *International Journal of Epidemiology* 30, no. 4 (2001): 668-77.

hypertension in African Americans is the physical embodiment of material and socio-political factors, such as occupational and residential segregation, discrimination, and exposure to toxic substances. From this perspective, illnesses are often “biological expressions of social relations” in which physical afflictions are signs of social inequality.<sup>12</sup> Paul Farmer’s (1999) penetrating analysis reveals how significant differences in morbidity and mortality rates in Haiti from HIV, malaria, tuberculosis, and other preventative diseases “track along social fault lines.” Moreover, it demonstrates that both local and global forces of inequality determine why some people are predisposed to illness (due to political economic factors rather than physiological ones) while others are safeguarded from risk. These linkages between labor, embodiment, and inequality call for an analysis that should “inscribe this relationship into a broader historical and sociocultural framework.”<sup>13</sup> Embodiment theory enables us to see how local



Figure 3. A small child helps her mother wash clothes for miners on the banks of the Madre de Dios River in the mining corridor, where *Ribereño* communities are exposed to exceedingly high levels of mercury.

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Thomas J. Csordas, *Embodiment and Experience: The Existential Ground of Culture and Self*. Vol. 2 (Cambridge, UK: Cambridge University Press, 1994).

Byron Good, *Medicine, Rationality and Experience: An Anthropological Perspective* (Cambridge University Press, 1994).

<sup>12</sup> Nancy Krieger, "Theories for Social Epidemiology in the 21st Century: An Ecosocial Perspective," *International journal of epidemiology* 30, no. 4 (2001): 668-77.

Sarah Horton and Judith C. Barker, "Stigmatized Biologies," *Medical Anthropology Quarterly* 24, no. 2 (2010): 199-219.

<sup>13</sup> Vinh-Kim Nguyen and Karine Peschard, "Anthropology, Inequality, and Disease: A Review," *Annual Review of Anthropology* (2003): 447-74.



communities in Madre de Dios pay the price for global gold profits with their bodies. Mercury, which is used to extract gold flakes from slurries of sand, mud, and stone, is subsequently discarded, re-deposited, and metabolized across ecosystems.<sup>14</sup> Mercury recycles across trophic levels and bioaccumulates, ultimately reaching human populations through inhalation of mercury vapors created during processing amalgams (i.e. the separation of mercury from gold) or consumption of methylmercury-contaminated fish.<sup>15</sup> Ashe (2012) found that fish consumption in Madre de Dios was the most predictive indicator of elevated mercury levels in humans. Mercury levels were also found to be higher among men than women (likely because men constitute the majority of the labor force in gold mining) and for people whose residence locations were within mining zones (see fig. 3). In the first study to identify increasing mercury contamination and food web accumulation over a large geographical range where artisanal mining is widespread, Dilinger et al. (2015) discovered that communities located hundreds of kilometers downstream from artisanal and small-scale gold mining operations are at risk of dietary mercury exposure that exceeds safe limits. They found that over one-third of carnivorous fish had limits of mercury that surpassed international standards. Moreover, their study reveals that populations that do not participate in gold mining also bear the consequences of its toxicity.

My ethnographic fieldwork with miners also sheds light on negative health outcomes due to exposure to various pollutants and other deleterious conditions of labor. For example, during interviews most miners described enduring illnesses as a common consequence of working in the mines, including maladies from consuming food prepared with water contaminated by sewage, heat stroke and other effects from day-long exposure to powerful tropical UV rays, and insect borne diseases like dengue, malaria, and leishmaniasis. Mining also takes a toll on the body through the physical stress of working 24-hour shifts (depending

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<sup>14</sup> Ronald Eisler, "Mercury Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review," Patuxent Wildlife Research Center, Laurel, MD (1987).

Marcello M. Veiga, Jennifer Hinton, and Cameron Lilly, "Mercury in the Amazon: A Comprehensive Review with Special Emphasis on Bioaccumulation and Bioindicators," *Mercury in the Amazon: A Comprehensive Review with Special Emphasis on Bioaccumulation and Bioindicators* (1999): 19-39.

<sup>15</sup> Ellen E. Yard, Jane Horton, Joshua G. Schier, Kathleen Caldwell, Carlos Sanchez, Lauren Lewis, and Carmen Gastañaga, "Mercury Exposure among Artisanal Gold Miners in Madre De Dios, Peru: A Cross-Sectional Study," *Journal of Medical Toxicology* 8, no. 4 (2012): 441-48.



Figure 4. A *prostibar* (prostitution bar) in a remote riverine pueblo along the Madre de Dios River.

on the type of semi-mechanized mining method) which are often followed by alcohol binging and prostitution, the latter of which may lead to increased risk of contracting sexually transmitted infections.<sup>16</sup>

Prostitution has surged in Madre de Dios due to the gold boom and a staggering 2000 adolescent girls and women are working at any given time in the 400 *prostibares* (prostitute bars, see fig. 4) in the region.<sup>17</sup> Young girls from the Andes are often recruited through deceptive tactics under the guise that they will work in well-paying jobs as restaurant servers in small riverine pueblos near mining camps or as temporary gold miners.<sup>18</sup> Through the pernicious effects of debt peonage, children are sequestered in workplaces as slaves and their wages are gouged to pay debts amassed from the exorbitant prices of their meager food provisions and bunking arrangements. Young girls cannot make enough money to survive by earning only ~30 U.S. cents per beer they sell at the cantina and prostitution is often the only means to remunerate debts and escape servitude.

<sup>16</sup> The number of HIV cases in Madre de Dios is ten times national average. In 2010, regional average was 31.6 while national average was 3.4 per 100,000 inhabitants. Areas with highest rate of HIV are located in the mining corridor, including Laberinto, Colorado, and Mazuko (see Andina 2013).

<sup>17</sup> "La Mafia De La Trata De Mujeres En Madre De Dios," *La Republica* (2013).

<sup>18</sup> Instituto de Estudios Internacionales (IDEI), "La Trata De Personas Con Fines De Explotación Laboral: El Caso De La Minería Aurífera Y La Tala," *IDEI y OIM, de la Pontificia Universidad Católica del Perú* (2009).



Figure 5. Families in the regional capital city of Puerto Maldonado congregate at the cemetery during *Día de todos los Santos* (All Saint's Day), during which they celebrate their deceased loved ones by consuming their favorite foods and drinks, dancing to music in their honor, and lighting candles at their graves. Countless people in Madre de Dios have died while toiling in the mines.

During fieldwork I occasionally heard the terms “*charapita*” (little turtle), “*peladita*” (little stripped thing), and “*jovencita*” (young sweet girl, the diminutive suffix ‘*cita*’ denotes affection) in reference to highly desired child prostitutes who work along the river in the pueblos where miners stock up on supplies, imbibe between shifts of work, and seek the service of prostitutes. The trafficking and exploitation of the female body and molestation of adolescent girls are the perverse effects (and local embodiment) of the global gold trade on local and migrant communities in Madre de Dios.

In a discussion about consumption habits among isolated male extractivist work groups, Wilk (2007a; 2007b) contends that binge drinking and repetitive sexual interactions with prostitutes anesthetize the extractivist’s lifestyle of isolated labor in extreme physical environments, which is “built around a rhythm of hard work alternating with release” (ibid; also see Clark 1993 on a discussion about binge consumption and sex among gold miners in Papua New Guinea). This alternating cadence of excessive work followed by binge consumption fueled by addiction form part of the ‘engine’ of labor that ‘drives’ gold mining in Madre de Dios, and alcohol and female bodies comprise the ‘fuel’ that further motivates extractive labor.

Human life also fuels the machine of capital accumulation from gold mining in Madre de Dios and most miners I interviewed have witnessed multiple deaths while working in the mines. The most common danger is when the *oyos* (large pit craters) cave in and entomb workers, but other risks include falling into the rapids, drowning in the river, injuries from machinery malfunction, and strangulation from hoses connected to pumps that extract river sediment while working underwater. Many *obrerros* (laborers) work overnight shifts and depend on stimulants to prevent drowsiness. Miners chew coca leaves, smoke cigarettes, or drink rum, coffee, or energy drinks to remain alert, but accidents due to fatigue are commonplace. Gold commodities are not only produced by embodied labor, but also disembodied labor as profits are subsidized by the cheap price of life in Madre de Dios. Profits and economic recovery in part due to gold investments during the global recession have occurred at the expense of illness, addiction, and death (fig. 5). This linchpin between affliction and inequality reveals that gold commodities depend on unequal exchange and asymmetrical distribution of profits and risks among stakeholders of the global gold trade.

### **Embodied Land**

My second argument about unequal exchange is that pollution and other consequences from the global gold trade are *embodied* locally in the *land*. Synthesizing World Systems theory and ecological economics,<sup>19</sup> we can understand commodities like gold to also contain “embodied land” or an “ecological footprint” in addition to embodied labor (see Hornborg 2009; Hornborg et al. 2007).<sup>20</sup> The anthropogenic effects of gold production on the

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<sup>19</sup> Samir Amin and Brian Pearce, "Unequal Development: An Essay on the Social Formations of Peripheral Capitalism" (1974).

Stephen G. Bunker, *Underdeveloping the Amazon: Extraction, Unequal Exchange, and the Failure of the Modern State* (Chicago, IL: University of Chicago Press, 1985).

Andre Gunder Frank, *Capitalism and Underdevelopment in Latin America* (New York: Monthly Review Press, 1967).

Howard T. Odum, "Self-Organization, Transformity, and Information," *Science*, no. 242 (1988): 1132-39.

Immanuel Wallerstein, *The Modern World-System IV: Centrist Liberalism Triumphant, 1789-1914* (Berkeley, CA: University of California Press, 2011).

Eric Wolf, *Europe and the People without History*. Second ed. (Berkeley, CA: University of California Press, 2010).

<sup>20</sup> Alf Hornborg, "Zero-Sum World Challenges in Conceptualizing Environmental Load Displacement and Ecologically Unequal Exchange in the World-System," *International Journal of Comparative Sociology* 50, no. 3-4 (2009): 237-62.

Earth can be measured as the “embodied land” of gold commodities. These phenomena can be understood from synthesizing the perspectives of thermodynamics and economics (first pioneered by Georgescu-Roegen 1971) which reveals that economic production increases total *entropy*, or material and energetic disorder. An important question remains unaddressed: where is *entropy* from booming gold production distributed and what does this distribution of “disorder” and environmental load displacement tell us about global trade?

Trade between nations at different levels of technological development tends to be unequal in terms of distribution of energy (commodities, capital) and entropy (material disorder, e.g. waste, pollution, etc.; see Hornborg 2009). From this perspective, extractive enclaves in Amazonia are at a disadvantage in what



Figure 6. Aerial view of *La Pampa*, a significantly deforested mining area in the Madre de Dios region

Bunker (1985) calls an “uneven flow of energy and matter” in which central powers appropriate profits to control the hinterlands. The entropy of gold

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Alf Hornborg, John Robert McNeill, and Juan Martínez Alier, *Rethinking Environmental History: World-System History and Global Environmental Change* (Lanham, MD: AltaMira, 2007).

production in Madre de Dios is localized and manifested by deforestation, desertification, loss of habitats, mercury pollution, and the release of other contaminants into ecosystems (fig. 6, 7) while profits and other benefits generated from its production flow centrifugally to distant locales.

The tripling rate of deforestation in Madre de Dios is significantly correlated with dramatically rising gold prices in the New York Stock Exchange;<sup>21</sup> however, this correlation should be the point of departure, rather than the final word, to compel questions about what this asymmetrical relationship means. Deforestation and mercury pollution are part of what Martinez-Alier (2002:70) calls “ecological distribution conflicts,” or the unequal distribution of environmental degradation. Hornborg (2009:242) contends that our “cosmology” of neo-classical economics and faith in market prices “train us to think that market transactions are by definition fair and equal” but when considering other measurements such as energy, labor, materials, hectares of land, and environmental degradation, world trade is highly unequal.

During narrative elicitations miners described an ideal time prior to the gold boom of the twenty-first century during which “beaches sparkled with gold flakes” and “boats went downriver, packed with Coke bottles filled with gold.” Now it is difficult to find gold on the beaches and river levels are high during the rainy season so many operations move deeper into the forest to extract gold. Larger mining operations use bulldozers and tractors to remove the top layer of soil and to dig large pit craters or *oyos*, which dramatically alter forest structures and riverine ecosystems. “We had no idea there was so much gold under the soil,” said a former artisanal miner who witnessed the countryside where he once panned gold with only three other miners turn into a desert wasteland of hundreds of machines, migrants from the Andes, and widespread pollution.

*When I worked in artisanal mining there was a large aguajal [palm swamp] where we panned gold around what is now kilometer 119— but this was before the [Transoceanic] highway was paved. It took all day to get there... we arrived at 4 p.m. and started working the next morning. We used to hunt peccary, monkeys...there was so much food back then. I returned six years later after the machines arrived... now it is completely plundered... a desert with craters where machines have sucked out all the gold. They now call it La Pampa.*

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<sup>21</sup> Gregory P. Asner, William Llactayo, Raul Tupayachi, and Ernesto Ráez Luna, "Elevated Rates of Gold Mining in the Amazon Revealed through High-Resolution Monitoring," *Proceedings of the National Academy of Sciences* 110, no. 46 (2013): 18454-59.

-Former artisanal miner

Local residents in Puerto Maldonado, the capital city of the Madre de Dios region, nostalgically remember their hometown when it was a small pueblo where residents could leave their front doors open and children could safely ride their bicycles down the main streets without concern. But rapid development from the booming gold industry has upended local lives. Crime has escalated in recent years and is usually cited in interviews with residents when asked about the greatest changes they have seen in the city during their lifetimes. “*Carreteristas*” (lit. ‘Highwayers’) ride on motorcycles and snatch purses and backpacks from pedestrians and people on the back of motorcycle taxis. “*Choros*” (slang for ‘thiefs’) frequently assault residents in certain *barrios* (neighborhoods) of town. Denizens of Madre de Dios also complain about the inflated price of goods when compared to other parts of Peru where gold mining is not the predominant economic activity. Some locals who describe themselves as “*neto*” (native) from the region lament growing disappearance of local foodways, as local dishes such as *tacacho con cecina* (jerk pork with plantain balls) or



Figure 7. Artisanal miners clearing vegetation to expand beaches along the Madre de Dios River

*patarashca con yuca* (fish cooked in banana leaves, served with boiled manioc) are less common while Andean dishes such as *rocoto relleno con pastel de papas*

*y tallarín al horno* (stuffed peppers, potato cake, and baked noodles) and *carnero asado* (roasted lamb) are frequently found written on the daily chalkboard menus on the streets of town. The socio-cultural outcomes of the gold boom have been afforded very little attention.

### Fetishism and Mystification

My third argument about unequal exchange is that mining machinery (and their local operators, the miners) are fetishized so that unequal global trade is bewildering. Marx was concerned with processes by which unequal relations of social exchange are obscured (*mystification*), especially through attribution of autonomous agency or productivity to certain objects and “things” (*fetishization*). Miners and their machines comprise the culpable agent for the consequences of embodied labor and land previously outlined (e.g. deforestation, slavery, pollution, and so forth), while simultaneously detracting our eyes from the broader machinations of capital accumulation and the seemingly sacrosanct organization of the global economy.

Although scholarly articles, gray literature, and mainstream media acknowledge a correlation between global gold prices and the consequences of gold mining in Madre de Dios, most publications continue to vilify local miners



Figure 8. A miner working on a *draga* (barge) on the Madre de Dios River

and portray them as principle agents of chaos— as if deforestation, mercury pollution, and labor problems in Western Amazonia are inherent problems in the



region rather than particular local responses to broader forces and opportunities. Sidney Mintz (1977) similarly observed that the study of slavery in the Caribbean was also frequently understood as a result of ‘internal consequences’ in the region. This atomistic view, Mintz argues, compels one to analyze such cases as detached from the global economy as if they generate “their own internal dynamic without respect to their position in wider fields of forces”.<sup>22</sup>

Most literature describes *fiebre de oro* (gold fever) in Madre de Dios as resulting from commercial interests running amok in what Yu et al. (2010) call “low-governance areas,” where state enforcement of regulations and laws is absent.<sup>23</sup> Thus, miners and their absent government are considered the culpable forces of destruction and exploitation. But how is it that the peasant who migrated to Amazonia to escape destitution and who now works 24-hour shifts operating mining machinery for a meager short-term wage has come to represent unfettered capitalism rather than the multi-millionaire investment banker on Wall Street who profits most from deforestation, pollution, prostitution, slavery, illness, and death in Madre de Dios?



Figure 9. A *draga* (barge) mines for gold on the Madre de Dios River before they were banned in 2011. The *draga* completely mechanizes the process of alluvial gold mining.

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<sup>22</sup> Sidney W. Mintz, "The So-Called World System: Local Initiative and Local Response," *Dialectical Anthropology* 2, no. 1 (1977): 253-70.

<sup>23</sup> Douglas W. Yu, Taal Levi, and Glenn H. Shepard, "Conservation in Low-Governance Environments," *Biotropica* 42, no. 5 (2010): 569-71.



Figure 10. Andean migrants working in artisanal mining on a riverbank

This scapegoating is part of the process of mystification, which entails obfuscating capitalist production, veiling unequal social dynamics, and treating them as if they were natural and inevitable. The belief in market prices and advancements in technology are part of what Hornborg (2001) calls *machine fetishism*, in which machine technology (i.e. notions of development and progress) mystifies social relations and conceals unequal material exchanges. Miners in Madre de Dios represent environmental destruction because they are the most immediate, visible appendage of the global machinery of extraction and capital accumulation.<sup>24</sup>

However, miners and other people in Madre de Dios also have their own perspective and *fetishization* of the machine. The phrase “*antes de las machinas*” (before the machines) is a common chronological distinction people often make during ethnographic interviews that refers to the pre-boom era when miners worked manually with pans, shovels, and wheelbarrows (locally called ‘*cholobomba*’ method, see fig. 10) instead of semi-mechanized or fully mechanized mining machinery (see fig. 8, 9). This distinction can also be moralistic, as machines represent greater environmental destruction, but also excessive profiteering while artisanal mining refers to a time when workers only mined for subsistence. “I worked only to eat” and “I worked to survive, not to profit” are moral distinctions many miners have made during interviews.

Mystification also works to reduce complex interregional processes

<sup>24</sup> Alf Hornborg, “Symbolic Technologies Machines and the Marxian Notion of Fetishism,” *Anthropological Theory* 1, no. 4 (2001): 473-96.

related to structural inequality, migration, and mining. Most miners in Madre de Dios are impoverished migrants from the Andes (fig. 10, 11). Global gold prices and poverty in the Andes are often given as reasons for the mass exodus from the Andes in recent decades. However, these “push” and “pull” factors superimpose the laws of supply and demand onto complex human situations and have



Figure 11. Where the Andes and Amazon meet, biogeographically, economically, and culturally

dominated migration theory for half a century.<sup>25</sup> Migrants choose to move for a complexity of reasons, such as an individual's social role in the household and community, their local traditions, geography, and belief that migration will lead to economic well-being (Cohen 2004).<sup>26</sup> Treating migrants as passive responders to global market demands mystifies the political economic processes that created the conditions that enabled the gold rush.

These processes include neoliberal reforms prescribed by the IMF, which cut social services and effectively perpetuate poverty under the guise of remedying it. Treating migrants as passive responders also mystifies class-based, racially-drawn land reforms in the Andes that favored large landholders over smallholders, a political culture of *centralismo* (centralism, rooted in New

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<sup>25</sup> See: Everett S. Lee, "A Theory of Migration," *Demography* 3, no. 1 (1966): 47-57.

<sup>26</sup> Jeffrey H. Cohen, *The Culture of Migration in Southern Mexico* (Austin, TX: University of Texas Press, 2004).

Spain's colonial regime) in which Lima extracts wealth from the countryside. *Centralismo* perpetuates underdevelopment, marginalization, and impecuniousness of *la provincia* (e.g. peripheral areas of Peru) and creates geographies of vulnerability where people depend on coca production, human/narco/arms trafficking, logging, artisanal mining, and other informal markets for survival. Peru's *Centralismo* policies promote extractive activities through internal colonialism.<sup>27</sup> Under conditions of economic development, regions compete against one another for scarce institutional support, creating cultural divisions, or "internal colonies" as the state increasingly becomes the redistribution broker.<sup>28</sup> At a structural level, unequal exchange is institutionalized through a political system that privileges a minority of wealthy people at the cost of the poor majority.<sup>29</sup>

### Concluding Reflections

If indeed "fetishes are symbols that have become masters of their authors" (Hornborg 2001:482), then the way gold miners and the machines they operate in Madre de Dios have been ideologically represented encourages the atomistic way we think about and compartmentalize profits and consequences of global trade. This theoretical photo essay disabuses such rationale. The Marxian concepts of unequal exchange, embodied labor, embodied land, fetishization, and mystification help to understand how opulence and capital accumulation in economic centers of the world occur at the expense of lives and environments in the hinterlands. Through fieldwork photography it is possible to visualize how consequences of gold mining are localized and socialized, which serves to

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<sup>27</sup> Peter Alexis Gourevitch, "The Reemergence of "Peripheral Nationalisms": Some Comparative Speculations on the Spatial Distribution of Political Leadership and Economic Growth," *Comparative Studies in Society and History* 21, no. 03 (1979): 303-22.

Michael Hechter, *Internal Colonialism: The Celtic Fringe in British National Development, 1536-1966*. Vol. 197 (Berkeley, CA: University of California Press, 1977).

See: José Carlos Mariátegui, *Siete Ensayos De Interpretación De La Realidad Peruana* (Caracas, Venezuela 1928).

<sup>28</sup> Susan Olzak, "Contemporary Ethnic Mobilization," *Annual Review of Sociology* (1983): 355-74.

Michael Hechter, *Internal Colonialism: The Celtic Fringe in British National Development, 1536-1966*. Vol. 197 (Berkeley, CA: University of California Press, 1977).

Charles C. Ragin, "Ethnic Political Mobilization: The Welsh Case," *American Sociological Review* (1979): 619-35.

<sup>29</sup> Marisol de la Cadena, *Indigenous Mestizos: The Politics of Race and Culture in Cuzco, Peru, 1919-1991* (Durham, NC: Duke University Press, 2000).

Karsten Paerregaard, *Peruvians Dispersed: A Global Ethnography of Migration* (Lanham, MD: Lexington Books, 2009).

Zoila S. Mendoza, *Shaping Society through Dance: Mestizo Ritual Performance in the Peruvian Andes*. . Vol. 12 (Chicago, Il: University of Chicago Press, 2000).

contrast from the more visible view of gold in which benefits are globalized and privatized through the New York Commodity Exchange and the several intermediary hands across which gold is exchanged. Interestingly, after I inquired about local gold prices during interviews, some miners reversed the question and asked me, “How much is a gram of gold in your country, a lot more?” to demonstrate awareness of unequal exchange in the global gold trade. While many people in Madre de Dios intuitively understand this relationship to be unequal, mystification conceals the inimical impacts on peoples and environments that are produced and perpetuated by global trade.

Problems from gold mining in Madre de Dios cannot be reduced to binary distinctions of good and evil or perpetrators and victims; such reifications continue to mystify these issues rather than to help us critically think about them. Moreover, miners in Madre de Dios are not passive responders—they have agency, motives and ambitions. Many miners are aware of mercury contamination, but some are skeptical and do not trust data on its deleterious effects from NGOs or government institutions, which are sometimes suspected to be colluding to thwart local livelihoods. Mistrust of the government must be understood historically, considering that Andean communities were persecuted during Peru’s civil war and many continue to suffer from *centralismo* policies. Thus, history, power, culture, health, and environment are inseparable issues and we must examine their linkages to further shed light on the realities of global trade.



Figure 12: Small-scale “*cholobomba*” operation on a riverbank

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