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## Hydroelectric Amazonia: Cultures Caught in the Crucible of “Order and Progress”

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Brazil is currently engaging in a phase of large-scale infrastructural development projects geared toward increasing economic growth by tapping Amazonian resources. This government-led development is most notable in Brazil's energy sector, where 30 large hydroelectric dams are planned for the Amazon's largest tributaries (Fearnside 2012). While ambitious, these initiatives impinge on the basic human rights of indigenous peoples, exposing these cultures to the crucible of rapid acculturation. Such development is in violation of Brazilian constitutional provisions, which mandate the consultation of these groups whenever proposed projects affect their interests (Jaichand and Sampaio 2013). Brazil's 1988 Constitution was penned in the wake of delayed construction plans for the government's championed hydroelectric dam project, Belo Monte; on hold for political, environmental, human rights, and particularly financial reasons (Jaichand and Sampaio 2013). Brazil is a signatory on multiple international human rights documents, including the International Labour Organization's Convention 169 (Hanna et al. 2014) and the UN's (2007) Declaration on the Rights of Indigenous Peoples. The latter document greatly influenced the World Commission on Dams report (2000), which emphasizes the importance of public participation in dam development, urging governments to appeal for the *free prior and informed consent* (FPIC) of indigenous peoples to aid in *gaining public acceptance* for these projects. Brazil's legal policies, as written, show a commitment to respecting indigenous land rights by not unnecessarily forcing communities to relocate. However, a precedent implementing dam-related forced resettlement policies began in 1984, when the Tucuruí hydroelectric dam became operational on Brazil's Tocantins River (La Rovere and Mendes 2000). Tucuruí flooded 2500 square miles of uncut forest (see Fig. 1), displacing 35,000 people and six small towns (Hall and Branford 2012). Officially, the Brazilian government recognizes that the ties communities retain with their homeland play a crucial role in structuring, maintaining, and reproducing indigenous and local cultural identities—i.e., connections to archaeological, ceremonial, mythic, and burial sites (Brasil, MMA 2008, 59). However, the realities of resettlement practices, like those implemented in the Tucuruí case, have been “chaotic, badly planned” and disastrous to the livelihoods of impacted populations in terms of delayed compensation and failure to provide alternative farmland (Hall and Branford 2012, 854). Ostensibly, new policies following legal human rights guidelines defined a new era for equality and respectful relationships between the Brazilian government and indigenous communities. However, the Belo Monte case is emblematic of how far things might be from that laudable goal. In practice, overtures to participation and sustainable development in written directives fail to meet these goals or uphold the intended meanings of these concepts by inadequately including stakeholders with the most to lose (USAID 2010). Eletronorte for example, described the mitigation of socio-environmental impacts in the Tucuruí case as a *low official priority* (Hall and Branford 2012, 854).



**Figure 1.** (Google 2014) Red dot indicates the location of Tucuruí Dam, the flooded reservoir (below red dot), and the level of deforestation in the area from 1984 (when Tucuruí operations began) to 2012 (most recent cloud-free Landsat imagery).

In an attempt to render Belo Monte legally and ethically irreproachable on environmental grounds, new project plans (ca. 2001) incorporated the language of sustainable development and clean energy (Bingham 2010). However, the Brazilian Institute of Environment and Natural Resources (IBAMA) refused to grant environmental licenses for Belo Monte, or accept the project's Environmental Impact Assessment (EIA), recommending further impact assessment studies (Fearnside 2012). Following this decision, two top IBAMA officials resigned, citing "high-level political pressure" to approve licensing for Belo Monte (MXVPS 2010), a protest repeated in 2011 when the president of IBAMA likewise resigned, noting similar pressure from Eletronorte (Hanna et al. 2014). A few weeks after the first two resignations, new IBAMA officials were appointed, and Belo Monte received its environmental licenses, setting a precedent for allowing construction activities to begin before satisfying required legal conditions (Fearnside 2012). In response to political pressure, and antithetical to its role as environmental oversight agency, IBAMA is currently acting in collusion with corporate and government interests (Fearnside 2012), not unlike current trends in U.S. fracking policies (Smith and Ferguson 2013).

Following Belo Monte's approval, the project's EIA was reassessed by a consortium of top environmental researchers, who found the document to be: lacking in critical data; inadequate in addressing social-environmental impacts, or veiling risks beneath jargon; and an exaggeration of the dam's energy potential (Magalhães and Hernandez 2009). Purposeful obstruction of empirically quantifiable ecosystem data in EIA reports makes illustrating the importance of data related to issues of cultural patrimony and human rights—data that is inherently less quantifiable, and more value-based—even more difficult to demonstrate to policy-makers with different values. Eletronorte redesigned Belo Monte plans to avoid direct flooding of communities, in technical adherence to the law, but the redesign will still cause significant indirect impacts to indigenous lands and local community cohesion (Jaichand and Sampaio 2013, 413). These redesigned plans removed the legal obligation to consult indigenous groups, by quite literally cutting communities off from the river, altogether (see Fig. 2). La Rovere and Mendes (2000) state that permanently disrupting the socio-cultural connections a tribe maintains with their homeland often causes near complete cultural collapse. Current governmental imperatives forcing local communities to exchange their autonomous social-environmental relationships and sustainable land tenure practices for third-tier status in the global economic system will have disastrous local impacts. This is the crucible to which the article's title refers: the rapid, active, and transformative process of acculturation and cultural interactions associated with large-scale development. Like super-heated chemical elements in a crucible, communities may survive this process, but they will be forever altered, becoming wholly different people and societies, culturally and physically entangled in an admixture of foreign elements that will reduce formerly unique cultural identities to vestigial traces; the byproducts of "modernity." Though acculturation can provide benefits, large-scale hydroelectric dam development fundamentally restructures whole river basins, disproportionately placing the burden of associated risks on local populations, disrupting group functionality and exacerbating their vulnerability (La Rovere and Mendes 2000). The lack of a shared experience among stakeholders is perhaps the greatest source for perpetuating problems associated with dam development projects, which are typically developed off site and out of cultural context by non-locals who stand to make significant financial and political gains without the negative effects (Hanna et al. 2014). Conversely, people on the ground will rarely see benefits from dam development (Júnior and Reid 2010). Instead, drastic regional alterations will cause extensive irreversible changes to local health, subsistence, and socio-economic systems, as current landmark flooding in areas surrounding recent hydroelectric dams, operating on the Madeira River, seem to indicate (Ansar 2014).

Similar scenarios abound in the U.S., where indigenous peoples and cultures suffer as a result of acculturation. As a Cultural Resource Management (CRM) and academic archaeologist for the last fifteen years, I have conducted fieldwork across the lower 48 U.S. states, Hawai'i, Guyana, and the Brazilian Amazon. Archaeological work with several large construction projects has demonstrated the complexity, conflicts, and difficulty inherent when attempting to implement official procedures and policies in the field. Even well intentioned directives and plans can be misrepresented and misused, by alternative interpretations of a policy's intended purpose. On several occasions, I have been a member of archaeological crews assembled to recover human remains from native burial grounds disturbed or damaged by construction activities in Vermont, California, and Washington State. These disturbances occurred despite the protective umbrella of NAGPRA (Native American Graves Protection and Repatriation Act), or pre-construction knowledge of burials on adjoining properties.

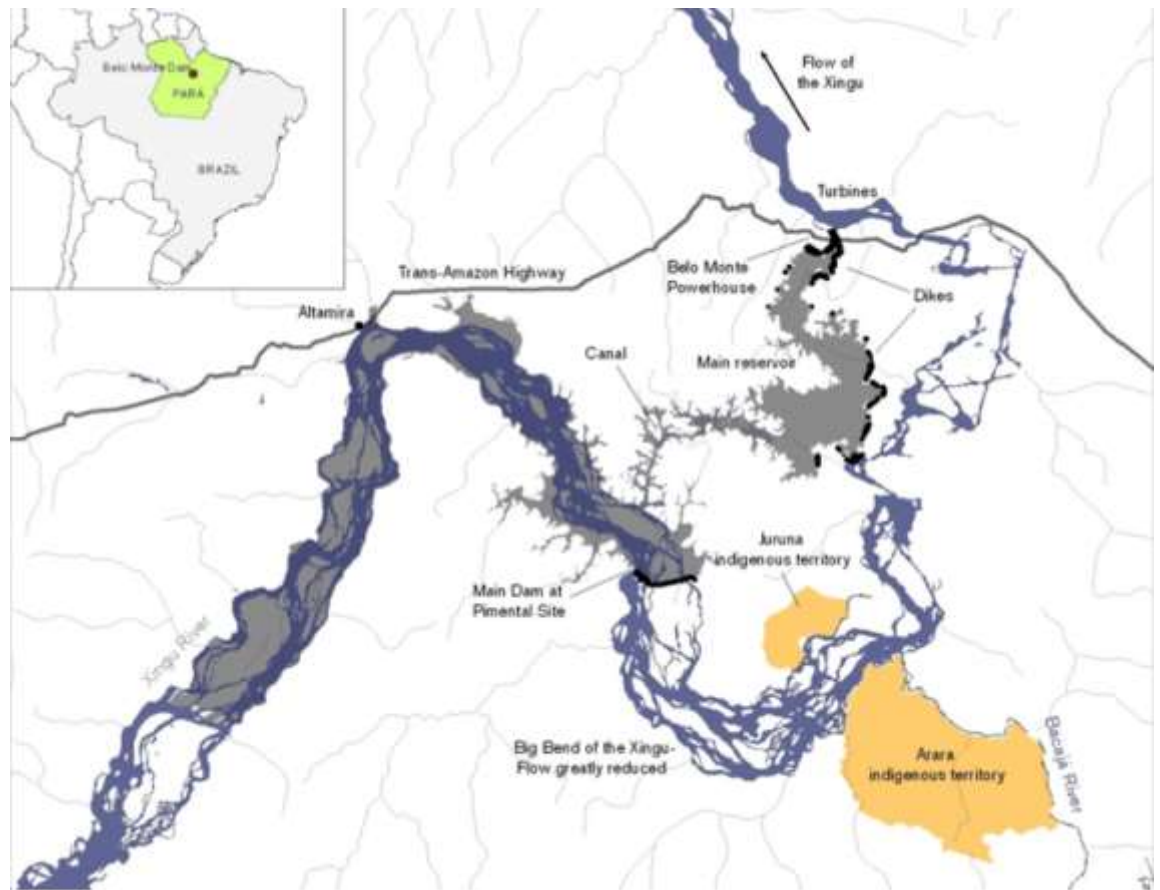
In 2005, I worked with roughly one hundred Lower Elwha Klallam and Maka tribal members at Tse-whit-zen archaeological site, in Port Angeles, WA, assisting in the recovery of 300 Klallam burials and extensive archaeological material (Orff 2013). This project involved the largest native village site ever excavated in the state, occupied from 700 BC until AD 1930 (Orff 2013), when the government forcibly removed the Klallam in the interests of industry (Busch 2008). Even earlier, in 1910, dams powering paper mills were constructed on the Elwha River, causing major cultural disintegration for the Klallam, separating the tribe from critical and culturally significant resources, such as ocean spawning fish species (Egan 2012). A signed treaty assured the continuance of the Klallam fishery, but required relocation, which many of the tribe opposed. Opposition gave way to compliance when the dam gave way, in 1912, and washed away the homesteads of several Klallam members attempting to stay in the area (Busch 2008). Elsewhere, traditional Klallam villages refusing relocation had their homes burned, continuing an already active process of pushing the Klallam into increasingly "less habitable settings", as they were forced from the region's most desirable lands—their ancestral homelands, including Tse-whit-zen (Busch 2008, 7). Like current Brazilian policies, the U.S. legal framework protecting archaeological and native burial sites appear as legitimate check-valves on paper, meant to

account for, minimize, or alleviate officially calculated risks to local communities, cultural resources, and ecosystems (Zhou and Oliveira 2012). However, in practice, legal protections are often misused or under-utilized, causing adverse social-environmental impacts (Queiroz and Motta-Veiga 2012).

When I met the Klallam they were striving to reclaim their language and cultural heritage from ethnographic data, and were actively engaged in a complex process of maintaining the cultural elements still remaining in the crucible of the U.S. government's forced acculturation policies (Leonard et al. 2004). Needless to say, many of the tribe opposed the overarching construction project, including the recovery of cultural material and human remains either at risk or already disturbed by construction (Wheeler and Smith 2009). Both construction and archaeological preservation were generally viewed as a further disruption to their culture and way of life, a disregard for native voices, and a blatant perpetuation of abuses against native bodies by further exhuming burials, which should remain undisturbed. However, for other tribe members, particularly those working at the site, archaeology became an exciting process of literally digging into their own past. The Klallam were now caught between two emotional extremes. At one extreme was the thrill of re-discovering their culture through archaeological research, and physical engagement with the tools of their ancestors (TPAB 2006). At the other extreme existed the pain associated with experiencing the tangible reminders of culture loss, especially witnessing the exposure and removal of so many burials from ancestral resting places (TPAB 2006). On a positive note, after decades of fighting for their deconstruction, in 2011, dams on the Elwha River were removed in the largest dam removal project in North American history, leading to the recovery of the river and river species at a rate far exceeding estimations (Egan 2012). Unfortunately, cultural knowledge does not rebound in this way. We must learn from the ethnography and archaeology to avoid such scenarios of culture-loss before they happen in Amazonia, where an already damaged cultural continuity is only recently being understood (Heckenberger 2009), rather than use this data to pick up the pieces after a disaster.

Many indigenous Amazonian communities are currently experiencing an impressive population boom, despite a complex and difficult history. But, as long as Brazilian national policies are dominated by economic growth-orientated initiatives, such forms of development, however *sustainable*, will continue to be deleterious to the interests of indigenous Amazonians. Large-scale hydroelectric development in Amazonia will permanently disrupt the trend of indigenous resilience and enduring cultural legacies (Rodrigues 2002) by further exposing these cultures to the crucible of "order and progress". Massive protests by local and global activist groups speaking out against Belo Monte have garnered much attention, but at this moment, Belo Monte is already near completion, bringing the Brazilian government's vision of a hydroelectric Amazonia one step closer to reality. All need not be lost, however. As Bingham (2010) has noted, if current top-down, one-size-fits-all, policy-driven interpretations and methods of implementing sustainable development concepts were to be reevaluated in the global discourse, significant shifts in tropical development perspectives can occur.

The possibility still remains for future projects to be backed by new legislation more aligned with, or adequately representative and inclusive of core local values, by negotiating the space between economic and conservation imperatives. Or, minimally, develop better methods for implementing current policies in order to increase their ability to assess (before), mitigate (avoid/minimize/compensate), and monitor (afterward) social-environmental and health impacts associated with dam development. In thinking beyond the Amazon's resource and economic potential, this author prefers to follow the concept put forth by the Commission on Development and Environment for Amazonia "of an Amazonia that exists above and beyond the world of fantasy and myth: an Amazonia of flesh and blood, of human toil, of human history, of human faces and hopes, and future human beings" (2001, ix). Just as crucibles are resistant to high temperatures, so may Brazil withstand the latest wave of large-scale development, by embracing more than the hydroelectric Amazonia envisioned by politicians, but also an Amazonia *writ large*, including centuries of accumulated indigenous knowledge.



**Figure 2.** (Amazon Watch 2014) shows the degree to which Belo Monte plans will reduce the Xingu's flow through the Big Bend, rendering the river unsuitable for fishing, fresh water storage, or transportation and leaving the Arara and Juruna indigenous communities high and dry.

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