THE SLOW DEATHS FROM CLIMATE CHANGE: A Planetary View from Papua New Guinea

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November 4, 2021. It is "Energy Day" at the COP26 Climate Summit in Glasgow, Scotland. It is the Conference of Parties (COP) meeting for the twenty-sixth time as part of the United Nations Climate Change Conference. The COP process repeats each year, with small victories mentioned in the press, and grand failures noted by those pushing for real change. Coal was the major focus of the day, the goal to achieve sustainable energy production globally. However, only twenty-three nations agreed to phase out the use of coal, and only five of these ranked among the top twenty coal-users globally. It was not exactly the achievement activists were looking for. For any agreement on coal to matter, experts estimate that coal production and coal-fired power plants must be reduced by 45 percent this decade.[1]

Because of different time zones, I sat in my office watching a replay on Twitter (now X) of the presidency press conference with COP26 president Alok Sharma and United Nations Framework Convention on Climate Change's executive secretary Patricia Espinosa). Simultaneously, I kept an eye on Greta Thunberg's twittering responses to the day's events in another window on my computer. Thunberg lamented:

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> #cop26 has been named the m[o]st excluding COP ever. This is no longer a climate conference. This is a Global North greenwash festival. A two week celebration of business as usual and blah blah blah.[2]

Strangely highlighting this point, while some of the questions at the press conference focused on coal and the West's failure to act, reporters kept circling back to COVID-19 and reports of infections among conference participants. Apparently, climate change alone could not hold the stage. It was an abstraction in this context, made up of models and figures lacking a material presence. While I listened to the broadcast, Thunberg retweeted *Washington Post* reporter Maxine Joselow, who noted that the event took place in an auditorium called the Climate Pledge Theater. Joselow snarked about the performative aspect of the event: "At least they're being honest?"[3] On *stage*, speakers refused and then offered a muted response to the COVID questions. But no one made the connection between climate change and the health concerns raised by the reporters, much less that between climate change and increased health risks globally. Nor did they connect the two to violence on marginalized and racialized bodies in the Global South (though this came up in the protests around the event). The global and local were not easily reconciled (Swyngedouw 2004). The COVID-19 pandemic could intervene because it made for a more urgent and immediate physical concern, even in the context of debates around the climate crisis we all face. The pandemic was not abstract, as it had immediate impacts on the bodies of attendees, and it shifted spatial relationships by requiring the exposed and infected to remain in isolation. At a conference focused on strategies for global governance, the relationship between a changing climate and emerging diseases did not form part of the calculus.

While COVID was rendered effable in public discussions, climate change was the subject of technopolitical fixes and complex modeling, which often admittedly falls short (Mann 2017). Climate is a black box defined by governing structures and scientific measures more than the physical manifestations made all too real in the lives of protesters off stage and throughout the Global South. The Climate Pledge Theater can be seen as a location in this global mess, with its own histories of social, economic, and political disparities defining who gets to speak and when. But it remains a position of power when compared to the tragic sites where climatic events slowly tear at the fabric of earthly relationships necessary for making one's place in the world. This is a problematic that has come to characterize the Anthropocene; the uncomfortable tensions between climate,

race, marginalization, nationality, industry, media, and a pandemic disease that tensely comingled in what was to be a celebratory moment regarding regulations on coal by some nations. Activists noted the failure to achieve what they deemed meaningful changes in the way the global community dealt with coal and climate change. While certainly related to the material conditions experienced on the front lines of climatic shifts, the theater provided no direct solutions or connections.[4]

Although we have made much of what climate change and the Anthropocene mean for our relationships with other living beings (e.g., Tsing et al. 2017), scientific research (e.g., Kirksey 2015; Moore 2019), state and capitalist power (e.g., Wainwright and Mann 2018), ultimately it constitutes a material and planetary process (Clark and Szerszynsik 2021; Yusoff 2018). Though the Anthropocene was recently denied salience as a geological concept,[5] current discussions of it within the social sciences tend to celebrate a multispecies conviviality and human relationality, while ignoring ethnicity and histories of racial violence made even more pertinent in this moment of climate change (Karera 2019; see also Gilroy 1993). This is where scale matters, as planetary forces intersect with different levels of socioeconomic and political disparities. In particular, the Anthropocene's climatic force exposes communities to what Rob Nixon (2011, 8) calls a "slow violence of delayed effects." I argue we might better use Lauren Berlant's (2007) conceptualization of *slow death*. While she focuses on infrastructures of health, slow death reflects the broader implication of climate change as moments of both species extinction and the suffering and loss of human lives. Positing climate change as a force revealed during specific events makes for a "redefinitional tactic" that "misrepresents duration and scale," absolving capitalism and its infrastructures of responsibility (Berlant 2007, 760). By using the concept of slow death, I seek to call attention to the urgency of rendering climate change matterful across scales and temporalities, and to the earthly relations and histories that render it so deadly.

In this essay, I examine the slow deaths caused by climate change within a community in rural Papua New Guinea, far removed from COP's annual gatherings and the musings of climate activists. I argue for understanding climate as an everyday and everyplace, a slow and painful manifestation of a warming planet. Colonial and postcolonial infrastructures set a markedly different stage for the Biangai speakers of Elauru village (Morobe Province, Papua New Guinea) than for those at the COP in Glasgow. Climate change is implicit in their daily lives, not as a singular event, but as an inescapable earthly force manifested over time

as cycles of drought, erosion, fires, and torrential rains. Their ability to engage and understand these changes is informed by Indigenous ontologies of place and world-making practices that I argue collapse distinctions between place and person. However, while relations with the earth have long informed Biangai ideas of hope and future possibility (Halvaksz 2020), climate change is reshaping these potentialities. Like other communities, Biangai inhabit the tensions between their own world-making and the world that is being made. For Biangai, climate change combines with histories of gold and timber extraction, coffee production, and road construction to slowly destroy lives and livelihoods. I show that understanding the slow deaths of climate change requires transcending models and the extreme tragedies to attend to the ongoing, everyday loss of life and well-being. I follow a specific ethnographic case of the more-than-human relationships with the planetary, tracing gold and coffee across the roads and bodies of extractive capital, Indigenous personhood, and place. Finally, the article tells the tragic stories of two men whose livelihoods are but one of the many casualties of our present moment, but whose lives nonetheless deserve our attention.

EARTHLY RELATIONSHIPS

Attending to the planetary requires that we focus on processes that in many ways have exceeded the limits of our gaze; they are hard to trace, but they still operate at local scales that are deeply real in the experiences of communities (Clark and Szerszynsik 2021). When, for example, early political ecologists showed how colonial policy shaped erosion among peasant societies (Blaikie 1985), we could ask causal questions linking it back to government agents and policies. Tracing waste (e.g., Reno 2015; Resnick 2021), pollution, and health risks (e.g., Nading 2014), as well as the failing infrastructures that facilitate disaster (e.g., Anand, Gupta, and Appel 2018), characterizes some of the best ethnographic work. But everyday climate change resists such careful tracings. While some materialities are easy to follow (like commodities, minerals, people, and even services), others defy clear networks connecting urban haze to flooding in another continent (e.g., organic and black carbon, sulfate, nitrous oxide, etc.). Instead, attending to the climate in the Anthropocene requires that we understand the effects of dynamic and complex geophysical and ecological encounters as they intersect with human lives across a multitude of temporal and spatial scales (Hecht 2018). Most of time, these constitute slow processes, imperceptible in everyday lived experiences, while at others they are dramatic and fatal. Hannah Knox (2020) calls for thinking like a climate to disentangle these

relationships, as the processes of climate change don't really operate at a singular scale. As Jerry Jacka (2016) notes, we are not interested in tracing changes in aggregate averages as the only manifestation of local realities.

In response to these concerns, attention to the planetary-local tensions focuses on the ways in which different scales manifest in the perspective of specific places like the Climate Pledge Theater or, in the case presented here, a rural agricultural system in Papua New Guinea. More importantly, it also attends to the ways in which these places can speak to each other. Both sites distill complex geopolitical and ecological forces moving across time and space at different intensities into specific localities and specific bodies. And both can tell the story of climate change in productive and meaningful ways by relaying the tragedies and hopes for living and world-making. Here, I tell the story of a particular place in Papua New Guinea where climate, coffee, roads, and Indigenous futures come together in a tragic narrative not easily traced across scales. While specific to Biangai living in communities along the Upper Bulolo River of Morobe Province, they reveal the complex planetary relationships of the Anthropocene, its impacts on living beings, and the physical transformation of earthly processes and bodily harm. COP26 also matters in this story—as a reflection of the relative disconnect between the Climate Pledge Theater and the more-than-living impact of intergovernmental indecision about effective responses. The failure to address the climate crisis is apparent in increased rainfall, frequencies of droughts, and extreme temperatures experienced in Papua New Guinea (Sapala, Cheng, and Li 2021). But it is also apparent in the work of extractive industries, agriculture, and the infrastructures of development in a postcolonial Global South. Much like the events taking place on the stage of the Climate Pledge Theater, the drama of events experienced by Biangai prove to be larger and more cumbersome than the local experience.

Biangai experience also requires attention to what Nigel Clark and Bronislaw Szerszynsik (2021, 65) have called "earthly multitudes," recognizing "the collective ways in which humans articulate themselves in the structures and processes of a dynamic planet." For Clark and Szerszynsik, the Anthropocene challenges us to think through and do our work in relation to the planetary, incorporating geological and ecological systems into our thinking. Working through the "earthly multitudes" of plants, animals, geological formations, and climatic forces, I examine the negotiated relations among communities, consumers, gold mining, coffee groves, and roads. It is the sort of narrative that we can tell of lively capital in the Anthropocene, forming new ecological relations in light of

broader changes (e.g., Chao 2022; Kirksey 2015; Tsing 2015). However, in connecting our narrative to earthly systems that are coproduced with anthropogenic and planetary forces, I seek to tell a much more profound story of being human in the Anthropocene as we shape and are shaped by the broad geological forces of the Earth (Wynter and McKittrick 2015). Our relationships with this planet are often quite messy. They are wrought by colonial and postcolonial political ecologies that we have become attuned to dealing with (e.g., Jacka 2015). As discussed below, Biangai ideas about earthly relationships as mutual becomings run counter to the materialities of capitalism generative of and implicated in climate change. I argue that we must understand these earthly forces as multiscalar relationships that are complex, chaotic, and barely predictable, even as they shape local experiences. We cannot speak of climate as a singular force within the planetary; instead, we must make legible its material manifestations in heat, drought, fire, wind, rain, and sea-level rise. If aggregate changes in weather are notable, we don't need to trace it back to a specific pollution event to know that climate change is at work.

Thus, thinking the local in relation to the planetary offers an important challenge for anthropology, one that necessitates we move beyond the patchiness of our current thinking by troubling place and holding it in tension as it distills geological and planetary processes into local meaning. But also, we must consider how those local becomings reveal the contours of climate. In this, it matters that Biangai produce global commodities, that Biangai bodies are treated differently from white colonial and postcolonial bodies, and that climate change means not only species extinction and disasters but also a slow death of humans and their livelihoods.

Coffee and gold are different facets of how Biangai engage with the world of earthly processes. On the one hand, coffee makes for a lively compatriot, a stimulate of social engagement, a tree, a plant, and an economic crop widely consumed (West 2012). It exists in tension among the communities as a vital part of the postcolonial landscape, and a reminder of capital's intrusion on Indigenous ways of knowing the earth. On the other hand, gold is the earthly other of abstract value, whose practical sensibilities are often muted in public discourse. Instead, it is a luxury, a decorative bit of jewelry, a component of technical and mechanical engineering, and a powerful symbol of social differentiation. Both manifest across planetary scales in human practice via trade networks that assemble disparate centers of power with plantations and extractions (Arboleda 2020; Jacka 2018; West 2012, 2016).

Biangai ideas of earthly relations shape these relatively new commodities as they view them in their own terms. *Klimat senis*, or climate change, is a recognized part of local ecologies. Working in gardens and coffee groves in 2001 alongside my Biangai interlocuters, I was pointed to the 1997 El Ninõ dry season as a time of climate change. The same held true during more recent El Ninõs in 2015 and 2016. Climate change was associated with changes in plants' abilities, the location and movement of animals, and extreme cycles of rain and drought. By understanding Biangai experience with climatic slow deaths that can't easily be reduced to modeling, we can rethink the contours of climate change as a multiscalar and temporal phenomenon.

NGAIBILAK/PLACEPERSONHOOD

Missing from global governance is the temporal and spatial context in which the tragedies of climate change occur as they remain beyond easily perceived causal relationships. Important for Biangai are the entangled relationships between places and persons. Biangai personhood is complex, and in some ways emblematic of the sorts of worlds many post-humanist scholars like to imagine. Tied to local histories and practices of making place, it offers an alternative to the capitalist tendency to separate and commodify life and livelihoods. According to local histories, the first man was killed by his own sisters for threatening the lives of their children.[6] On his deathbed, he told them that he would return in a form that would sustain Biangai in the future, and from his grave arose the first yams. As a result, being Biangai is as much about being connected to the land as it is about connections to kin. The yams themselves are likened to children who need constant care and attention until they are "birthed" from the earthly womb. In the garden, and across the land, ecological relationships are embodied in ways that collapse distinctions between place and person. Further, on death, the spirit is said to travel the paths across their land, traversing named places and events (see Basso 1996). These travels are commemorated in mourning songs called *yongo ingi* that reveal a complex network of land and kin across places; a specific place can appear in the songs of different ancestors, connecting them and their descendants to the land (Halvaksz 2003).

Biangai refer to the land as *ngaibilak*, which loosely translates to "cared-for land." But the caring is not uni-directional: Biangai care for their land and the land cares for them. This produces what Tāvita Ka'ili (2017), in the context of a Tongan concept of timespace (*tā-vā*), refers to as "beautiful relationships." Ngaibilak is very much connected to who Biangai are, mapping genealogy across

the surface of the planet as *placepersonhood* (Halvaksz 2020). Placepersonhood acknowledges the collapsed distinction between Biangai and the earth, emphasizing the localization of planetary connections to the many beings that share this space. Expanding their reach in the post-mission, postcolonial economy, Biangai have continued to see places as part of their being. Kausa, a community leader and an educated catechist for the Lutheran Church, explained to me that Biangai lands are the source of all things: gold, tall pines, language, and so on. Each spread out from the Upper Bulolo Valley into the rest of the world. In another, often repeated story, an elder Biangai man recounted the biblical history of the Old Testament but emplaced the events in Biangai lands. Everything from the emergence of Adam and Eve to the arrival of Noah looking for dry land, rivers, stone outcroppings, and Biangai histories matched these biblical stories. While very much aware of their placement on the margins of global wealth, Biangai in these narratives rescale their own *ngaibilak* as located at the center of planetary frameworks.

In seeing the planetary as emplaced in local practices, Biangai acknowledge the earthly multitudes (Clark and Szerszynsik 2021) as part of their personhood. Emplacement proves central to a Moanan/Pacific Indigenous identity (Māhina 2010). In the yam garden, for example, a Biangai farmer refolds the soil once planted by their ancestors and originating with the first man, connecting the living and the dead through the earth. When Yansom helped me plant my first yams in 2001, he leaned over them, sprinkling dirt. As he explained to me, he was using garden magic to "let the ancestors know [I was] allowed to plant here." In holding the soil held by his ancestors, he was helping me place the seeds of yams descended from those planted here before. Further, the ideal marriage occurs between those whose kin groups (*solonarik*) maintain belongings to adjacent places. Marriage brings together parcels of land, uniting older relationships among the living and the dead, as well as the earthly multitudes that inhabit these spaces.

The golden veins of ore that run through the land also form part of who Biangai are, in the same way that the soil, streams, trees, mountains, plants, and animals form relationships with the community. Since 2000, Biangai have explained the story of the first man as having two meanings. Yes, it is food that emerged from his body, they would say, but it is also gold that aids them in this future. Derived from the body of the first man, gold connects Biangai to global commodity demands and exploitations. Since gold mining, missions, and colonialism entered the valley in the 1920s, Biangai have reworked their relationship

to the material world, expanding *ngaibilak* relationships and their own placepersonhood. It is this ongoing connection to earthly relationships that gives Biangai hope *grounded* in the relations of past and present gardens, as well as coffee and gold, trusting that the places will still be there. Their idea of materiality folds the land and its relations into the soil, and in these relationships, planetary processes are made meaningful.

Indigenous scholars have long emphasized the foundational nature of place for identity, tied to specific and ethical ways of being in and of the world (e.g., Coulthard and Simpson 2016; Watts 2013; Whyte 2018; Wildcat 2001). As Vanessa Watts (2013, 21) succinctly defined what she calls place-thought, "the land is alive and thinking and that humans and non-humans derive agency through the extensions of these thoughts." More broadly, the anthropologist and philosopher 'Okusitino Māhina has articulated an alternative theory of reality in which to ground Moanan (Oceanic) scholarship oriented around the concept of *tā-vā* (Māhina 2010; see also Ka'ili 2017; Refiti 2017; Wendt 1999). *Tā-vā* might be easily translated into "time and space." And we can quickly "translate" it into Western ideas of emplacement as a discursive (Basso 1996) or bodily experience (Bachelard 1964; Ingold 2002), but Māhina sees it as transcending these Western constructs. A better realization would be to think of space as relating over time. Albert Wendt (1999, 402) defined *vā* as "the space between, the betweenness, not empty space, but space that relates," with the emphasis on the relationships between ancestral histories, earthly others, and living descendants. While not sharing this common linguistic referent with Austronesian linguistic groups throughout Oceania, Papua New Guinean understandings are not dissimilar. For Bougainvillean author Regis Stella (2007, 29), place is an "extension of the indigenous self and integral component of the indigenous identity." Biangai continue to maintain an optimistic view of their futures through placepersonhood as a practice (Halvaksz 2020). Like many colleagues (e.g., West 2016), I have sought hope in Biangai perspectives despite my own pessimism, but it is increasingly hard to ignore the specific kinds of violence and death that the Anthropocene imposes on their relationships with earthly multitudes. In the following sections I attend to the specific forms of extraction and production that challenge Biangai relationships with physical places.

GOLDEN VEINS

There is still some speculation as to the origin of gold. While gold is thought to be produced through supernova nucleosynthesis at the beginning of

the universe, its circulation through the earth places it in unique ways that matter for the fortunes and losses of many communities. Geological processes that gave rise to the central mountains of New Guinea are but one way that gold is made more accessible to capital across the planet. Papua New Guinea's unique legal framework grants benefits to Indigenous landowners, creating an unusual, though tense, partnership between extractive industries and impacted communities. But the same processes that created golden opportunities also shaped a landscape suitable for other, more lively occupants. Biangai relied on the earth to grow crops, support animals, both domestic and hunted, and provide the resources needed to shelter them from the weather and threats.

Gold surfaces alongside colonialism and missionization, driving global migrations and subjugation to government forces. Prior to Western conquest, we have no evidence that Biangai noticed the golden flakes that appear in the wash of their rivers and streams. Or at least, no evidence that they found value in the shiny bits of metal. But gold is the reason Europeans and Australians found their way into Biangai lands during the 1920s, and it is the main reason corporations continue to send experts to scour the area for its traces. As a result, mining gold not only changed governance structures across the island but also required infrastructures of extraction. Roads, airports, power grids, and residential compounds developed alongside deforested and stripped mountainsides. The township of Wau turned into a robust outpost of colonial administration: government offices, various businesses, roads, and housing offered Biangai a vision of what modernity might promise (Halvaksz 2007, 2020). But it also provided their introduction to the global scale of the Anthropocene as a planetary set of relationships. Miners were drawn to the region in the 1920s and 1930s by the erosive power of streams and rivers that slowly unearthed nuggets and dust, and eventually corporate interests coalesced around large, earth-moving technologies (Waterhouse 2010). As noted above, many reimagine gold as the body of the first man. One elder described his body lying under the headwaters of the Bulolo, stretching many kilometers under several communities. In this view, gold is incorporated into the *ngaibilak*.

Indigenous alluvial miners and large international corporations continue to burrow into the ground looking for gold and other minerals to this day, reshaping not just the lives of Biangai but also those of the multitudes of organisms that call the area home. But it was the demand for timber to support mining that greatly reshaped Biangai earthly relationships outside the mining towns of Wau and Bulolo (Halvaksz 2015; Mitio 1984). Roads were cut through their

territories in the 1960s and 1970s, removing trees that had long emboldened the tropic soils against rains. Today, mining continues in many forms, ranging from industrial mountain-top removal to alluvial extraction by small-scale miners. However, it was the extraction of large Klinki and hoop pines, needed in mining infrastructure, that transformed Biangai landscapes along the Upper Bulolo, exposing tropical soils to sun and rain. Some places were replanted in coffee, but much remained exposed, overrun by grasses, and prepped for erosion. As shown below, extractive industries set the conditions for climate impacts and slow deaths. The violence of climate change doesn't just happen in isolation, but within histories of colonial and postcolonial exploitation.

LIVELY INFRASTRUCTURES

Gold is not the only global commodity to find purchase along the Upper Bulolo, for coffee, too, has become central to how communities find meaning. The first coffee plantation in Wau was established in 1928, but didn't gain importance beyond local consumption until the 1950s. Government officers introduced coffee to all seven of the Biangai communities in 1955. At first, it was not successful, and it remains an awkward earthly partner in the global economy. As discussed below, coffee groves ran contrary to flexible and overlapping land-rights practices, and the small amount produced in a single season, as well as limited and difficult-to-access markets, made coffee feel like a lot of effort for little reward. Yet the development of roads, more accessible markets, clear-cut forests, and surging prices in the mid- to late 1970s provided some reward for the expansion of individual coffee groves. One widow referred to her coffee as her bank, a place where she can withdraw money as she needs it. Still, it was logging and the roads that supported mining that most immediately reshaped how Biangai related to the earth, as they held ongoing access to the area and could replant coffee in the aftermath of logging.

In contrast to other crops planted by Biangai, coffee trees transform a landscape, making places of swidden agriculture and hunting into fixed groves maintained for many decades. In planting any tree, Biangai establish rights to its products for many years to come. A man or woman can have a tree, such as those that produce karuka nuts or the local betel nut, planted on land that is led by a sibling, an aunt or uncle, or even a friend. However, the fact that they planted it supersedes the rights of others to harvest its nuts and fruits. Such trees help maintain connections to kin, and parents will often plant a tree in the name of one child on the land designated for another as a way of reinforcing social

relationships through land. These arboreal relationships form an important part of placepersonhood as a multispecies connection to the land and ancestors.

Subsistence garden lands, by contrast, are more flexible, tied to groups of kin called *solonariks*, who are collectively related through the land. Each member of the kin group has shared rights to access and use named parcels of land. Ancestral forces of those that worked the land before remain active agents, ensuring the productivity of the land and guarding against misuse by those without rights. These spiritual forces are felt in the successful, or failed, crop, in injuries and even death. Both living and ancestral agents retain a sense of belonging to specific parcels through a history of labor in the garden. When going to plant a garden with an elder man and his wife, I asked why they were inviting so many of his in-laws to plant alongside them. He explained that this was her land, and that they had to invite those with rights. This holds especially true for yams, where a gardener who has first say over the use of a parcel is expected to invite others with rights to plant in a single, though divided space. In this patch of the Anthropocene, people and places mutually make one another meaningful and related as placepersons. Sharing a garden means sharing an earthly relationship through the soil. As such, earthly multitudes incorporate the very relationships that make sociality among persons meaningful. Coffee complicates these relationships, but Biangai have found ways to fold the groves into their own multispecies flourishings, even if they do so with a great deal of tension over land rights and alienation (Halvaksz 2020; see also Chao 2022).

Planted alongside banana, papaya, and common shade trees (*Albizia chinensis*, *Casuarina equisetifolia*, *Leucaena Piper aduncum*), the coffee groves stabilize the landscape against erosion, engaging the soil in nutrient exchanges to form a diverse habitat. While certainly different from the biodiversity found in precolonial and pre-Anthropocene periods, this ecological community of organisms from Africa, the Americas, and Asia is uniquely produced by each farmer, ensuring a more diverse landscape than found among corporate plantations (Perfecto, Jiménez-Soto, and Vandermeer 2019). It is what Eben Kirksey (2015) has called emergent ecology, where coffee has replaced logged-out forests; as has happened in other emergent ecologies, Biangai have learned to love coffee. Or at least, they have found ways to flourish among the trees. For Biangai, the groves nestled along the rivers and streams have become places of quiet joy. Often, when a family could not be found sleeping in the village, I would run across them the next day on a visit to their groves. Many families establish small secondary homes among their trees, ostensibly to be closer to the work of coffee, but also

to avoid the growing pressures of communal life. In at least a few instances, Biangai would "hide" there to avoid tensions or obligations. Despite their relative novelty in Biangai lives, coffee groves have become part of their very idea about connecting with the invested labor of their ancestors. The trees are earthly others that entangle local ways of knowing the earth, but the groves also offer ways of traversing different scales of the planetary and, inherently, capitalist forces.

The planting of groves of 100 to 2,000 coffee trees per parcel of land transforms relationships to land in important ways. Coffee reorders the more-than-human and more-than-living earthly relationships by creating continuity across generations and gendered land rights through semi-permanent tree plantations, with each tree transcending time and place to connect the living with the dead, the farmer with the cup of coffee consumed across the globe (West 2012). It forms part of a more-than-living infrastructure, with the productivity of coffee trees tied to the relationships among living and ancestral beings, as well as to the assemblage of roads, finance-scapes, and technical programs. But this multispecies story remains incomplete without considering its place in wider scales, earthly multitudes, and the roads that connect them.

A ROAD TO THE PLANETARY

The road that runs through the village forms a complex figure in the landscape. It is both a network to the world, as well as a conduit for the expansive power of climatic forces. In the Bulolo district of Morobe Province, road histories trace back to colonial gold mining in the 1920s and 1930s. Even before the Bulolo Highway was constructed following the Second World War, connecting the region to the coast, vehicles were airlifted into the towns of Wau and Bulolo for use on the limited routes connecting mining operations in the 1930s. Colonial town council members named the streets after fellow miners and themselves, and they maintained them through independence. However, as gold mining waned, the roads fell into a state of constant disrepair, subject to landslips, rockslides, impassible river crossings, and, where paved, slowly turning to rubble due to the shifting mountainous terrain and tropical rains.

In recent years, a former member of Parliament, the late Sam Basil, directed government funds toward updating and maintaining this system of roads. Using funds allotted to him as well as tapping into the resources provided by industrial gold mines, he had streets regraded, paved around the urban areas, and developed deep into Bulolo district. But even as roads were attended to, geological and climatic forces continued to carve and shape their possibilities. The

roads were not fixed, but entered into a dialogical relationship with the planetary phenomena of climate change decidedly beyond human control.

The initial road to Elauru village was constructed along older footpaths in 1973 by New Guinea Goldfields (NGG), one of the companies that had mined the valley for gold since 1929. In the years following the Second World War, NGG had diversified into logging, which was needed to both support the industry and to expand the company's revenue streams beyond minerals. In the early 1970s, the company worked with the leaders of Elauru to log the klinki and hoop pines that had once dominated the valley. But first they had to construct the road that still winds along the Bulolo River before ascending the final ridge over the Kuper Range into neighboring Biaru Valley. Biangai fondly remember this operation as the first signs of wealth for the community, funding educational opportunities, employment, and compensation from the sale of timber. Elders involved told me, "We didn't need a contract or agreement, just the road." The road reinforced Biangai connections to the wider planet, linking Elauru to places beyond the shorelines of the nation through relationships among forests, gold, coffee, and global resource demands.

The road also revealed the more-than-lively relationships between people and the material world. As the road was built, Biangai danced before the lead bulldozer, welcoming it into their land, but also announcing this change to their ancestors through song and performance. As noted above, ancestors remain very much tied to the place on the earth that they traveled in life; they remain active agentive forces whose will must be continuously acknowledged. So the bulldozers from the road were also cutting across relationships between the living and the dead. The songs performed followed the style of mourning songs (Halvaksz 2003), expressing the grief of women at the loss of trees and the turning of the soil to make the logging road possible. When they received compensation for the trees that were extracted, the community put part of the money into replacing cemetery markers with more permanent tombstones, each with engraved plaques and cement coverings for the ancestors in the cemetery. I was told repeatedly that they needed to honor those whose rights don't end at death.

Attention to road infrastructure remains central to contemporary development discourses. For example, the 2011 Productive Partnerships in Agriculture Project, funded by the World Bank and implemented by the Coffee Industry Corporation and PNG Cocoa Board, included direct funding for road projects as well as for technical assistance programs (World Bank 2010). At the same time, individual members of Parliament and the official National Transportation Plan

emphasized a national road development, connecting different economic centers for the first time via a highway system (Papua New Guinea Department of Transportation 2013). The government invested in equipment, maintenance, bridges, road expansion, and technically planned drainage systems to protect the investment. Past efforts had simply let water flow where it wanted, doing great damage to the newly graded roads, while dispersing runoff evenly along the way. Histories of timber extraction facilitated the runoff, without the established forests to absorb water and reduce erosion. Roads are more than just routes between places. They reshape local spatial relations and geological processes. Drainage systems seek to manage some of these, but complex planetary forces are difficult to model, especially when made worse by global climatic shifts.

Road maintenance and repair over the past twenty years was performed without local consultation, and without attention to the relations among roads and coffee, places, and persons. There were no songs for the ancestors, no acknowledgment of the more-than-human sociality that defines places and persons. And certainly, there was no consideration for local world-making and the way that a road might shape local earthly relationships. In fact, a rerouted segment diverted the road directly through an old village site, angering ancestral forces who troubled further construction and, according to my Biangai friends and informants, trapped a bulldozer for weeks in a mud pit. "Ancestors put a stop to this," I was told by groups of young men that had gathered to observe the sinking machine. Furthermore, the resulting changes in road runoff, the disruption of ancestral agencies, and altered local land rights have proved devastating. While many Biangai do value this particular effort, those with coffee planted in the valley below the road have suffered great losses as planetary forces are brought to bear on local placeperson relationality. The story of Yalamu's coffee illustrates the complications of earthly relationships and experiences.

TROUBLED PLACES IN THE ANTHROPOCENE

When I first visited Yalamu in his coffee in 2001, he was proud to show me the grove of trees mixed in with subsistence crops, and the small house where he stayed when working. The coffee was planted by the community as a demonstration garden in the 1950s. His parents had expanded it as coffee grew in importance, and Yalamu's family continued to add to it in recent years. His marriage to Naomi solidified the connection to the land, as they overlapped in *ngaibilak* and placepersonhood. Together, they carefully pruned, replanted, and tended to the grove, as it also met their needs. It proved an important stand for the community

as well, referred to by everyone as *namba wan kopi*, or the first coffee. I spoke with Yalamu often in this coffee grove, working alongside him and his family, sitting in his garden house talking about Biangai histories and practices (Figure 1). His house was modeled after precolonial men's houses, low to the ground, lacking windows and heavily insulated with pandanus leaves instead of woven bamboo strips, with a fire pit running through the middle for warmth. It was a place where he and his wife found much comfort.

By the time of my research trip in 2011, everything had changed. Looking to find Yalamu in the village, I was told that he and his wife Naomi had left, moving to stay with family in the village of Wandumi. One of his sons told me that his parents were too sad because of what had happened at *namba wan kopi*. In previous years, road crews had worked at improving the drainage of the road that runs along the ridges above most of the Biangai coffee groves, and in doing so, they had hoped to reduce the amount of maintenance necessary for road upkeep. However, the improved infrastructure had diverted the seasonal rains directly onto the coffee-lined slopes below. *Namba wan kopi* was the first of many to be inundated. Landslides and excess water killed the entire grove. Yalamu was not the same person when I finally met up with him. He was in mourning for the lost connection to his father's labor, to his own labor, and to the coffee trees that had been so fundamental to his daily practices. The destruction of trees had

Figure 1: Yalamu (front) in 2001, with his kids next to his coffee garden house. Naomi, his wife, stoops over a pot in the background, beginning the preparation of a meal. The photo highlights the many different crops and plants that intermingle among the coffee (visible directly behind Yalamu). Photo by Jamon Alex Halvaksz II.

dramatically separated the place from Yaluma's personhood. He kept his visit on that day short, attending to a church meeting before going away again to be with his wife in Wandumi village. He simply said, "There is nothing for me here." His voice was weakened as well, rasping as if losing the ability to speak. The pain of thinking about his coffee grove was too great.

Over the past decade, each subsequent "improvement" in the infrastructure resulted in more landslides, and more sediment filling the waterways. Streams and creeks overflowed their banks, with the increased sediment load saturating the ground around coffee groves further downstream, ultimately killing the trees. Climate change exaggerated El Niño events, bringing periods of drought followed by extreme rain. Massive amounts of sediment and water flowed down the road during these events, through the government created drainage ditches directly into the coffee groves. Having counted the total number of coffee trees in production in 2011, I could see the impact that these planetary processes were having on the community.[7] In subsequent years, I continued this counting to document these changes. In total, thirty-six different household groves showed signs of water damage during my garden surveys in 2014. Between 2011 and 2014, coffee gardens showing noticeable damage from the roadwork lost 27 percent of their mature coffee trees, with some households experiencing a total loss. The effectiveness of the drainage at protecting the roads did little to protect those who depended on them, as the abstract ideal of a national infrastructure took precedent over local ones, and the planetary view was ignored. The increasingly awkward earthly assemblages of roads, coffee, earth, rain, and people met with tragedy. Others experienced this loss in different ways. Some shifted their efforts to more distant places within their ancestral ties to *ngaibilak*, while others migrated to towns, forging new relations with new places. But the result proved the same: a separation of these damaged places from the persons that cared for them. As climate change increases the likelihood of more weather extremes, the loss of productive land for coffee, as well as of subsistence gardens, will likely increase. The costs on lives are real, but hidden from the stages of Western theaters where treaties are celebrated for their minor achievements.

By 2016, many had experienced a total loss. While some celebrated a return to robust crops after the El Niño droughts of the previous year, others experienced total devastation. Ben and Wannoa's experiences highlight this ongoing, slow-moving tragedy. Located upstream for *namba wan kopi*, their household groves were not initially impacted. However, with the heavy rains in 2015, water forced its way over the government-constructed drainage ditches and into an

older stream. In the past, the stream made for a welcome resource for Ben and Wannoa as they worked among the coffee. It formed part of the process, drawn on to wash the newly picked cherries and to operate the pulping machines that produced the coffee beans that would be carefully dried in the sun before making their way to market. But now, carrying the rock and sediment load built up as water surged down the road, the small creek overflowed its banks, drowning the coffee and destroying younger saplings. The water-soaked land slowly gave way, adding to layers of mud and stone. Ben and Wannoa lost everything. "All the labor of all my kids and ancestors, washed completely away," Ben said. In 2024, Biangai reported through social media that the area below the road was a total loss, not just for Ben's and Yalamu's household, but also for their neighbors. Relations realized through the more-than-living places suffer in this tragedy, as those who garden next to you are family, and the destruction of groves, the buildup of rock and sediment, sever these connections as well. The abstraction of climate modeling failed to "see" or make legible such minor events, but they make up the majority of tragedies that climate change inflicts each day across the planet.

FINAL THOUGHTS

Yalamu and Ben's stories are not unique in Papua New Guinea, or in the Global South, as many experience losses due to complex entanglements with climate change. But both were emotionally felt. Both men died in the years following these losses. And one of their deaths resulted in sorcery accusations that led to further violence, expanding the slow death of climate change across earthly relationships within the Biangai community. If we are to take seriously the cost of climate change, we must view these deaths as a result of planetary processes that found purchase in an Indigenous community. Connected to knowable, but still untraceable networks of industrial pollutions, greenhouse gases, extreme weather events, roads and rainfall, on the one hand, and, on the other, enmeshed with the commodity demands for coffee, gold, and timber sourced among Ben, Yalamu, and their kin. Death in the Anthropocene can be immediate and dramatic, scaling up and down without predictability, but also slow and emotionally painful. The men's wives continued to work alongside their children, mostly tending to grandkids. But the pleasures of being in their gardens had been lost, along with the relationships that made those places come to life with laughter, story, and the joy of earthly companionship. There are real tragedies at stake in the debates around climate change theaters, ones that place the abstractions of climate change and global governance into meaningful local becomings and

Figure 2: Ben sits in the darkness at the head of his coffee in 2016 looking over the rocks, sediment and dead trees below him. Photo by Jamon Alex Halvaksz II.

disappearances. In the final years of our visits together, both Yalamu and Ben were certainly changed men; they had aged suddenly following the losses. One had lost his sight, while the other had lost the power of his booming voice. Gone were the motivations to work the lands that made them and their families.

Political ecologists have long told us that erosion in places like Papua New Guinea result from colonial and capitalist-induced inequalities (e.g., Blaikie 1985). Here I have shown that the processes are deeper and broader in scale, involving planetary forces that might begin with colonialism, but also incorporate extraction and emissions elsewhere. It does matter that coal-producing and -using nations fail to reach agreements about our planetary future, and that recent COP negotiations continue to fall short of the aspirations of the Global South. The reality of losses is emotional, as they directly impact the intimate relations between persons and places. When Ben visited his coffee for the first time in 2016 (Figure 2), having stayed away in sadness after a series of landslides, all he could do was sit and examine the scene. I can't imagine what he was thinking, the pain, how it must have felt to see the work of so many ended so effortlessly. In the end, climate change–powered assemblages of rain and roads revealed the value of these more-than-human relationships among coffee, places, and persons as fundamental to Biangai strategies for world-making in a global economy. While the result is disheartening for the communities that are supposed to benefit, such works are championed as progress by multinational and national agents who support infrastructure development without pause.

I began my narrative in the Climate Pledge Theater, where global agents came together to address issues of coal. The failures to meaningfully do anything at such events matters greatly to Biangai, as communities in the Global South are at the forefront of the impacts that climatic changes have on society. Recent flooding in Pakistan, Italy, and Libya, drought and heavy rains in Papua New Guinea, forest fires in the western United States and Canada, among other occurrences, highlight the global nature of these processes. As Sherry Rehman, Pakistan's federal Minister for climate change, noted in a 2022 interview with NPR, "So this is no monsoon; it's some monstrous new phenomenon. Pakistan is no stranger to either monsoons or even the normal riverine flooding in the River Indus, right? We've had the super floods of 2010. This is epic. It was much bigger than that. It was biblical."[8] Pakistan has its own histories of roads, as well as of colonial and postcolonial extraction, creating environments that are even more susceptible to climate change. These are temporal and scalar relationships, as the materiality of climate change is embedded in local ecological relationships and infrastructures. The floods, like the slow deaths among Biangai, remold our understandings of climate change's relationship to different planetary scales. Widespread flooding makes for more than a singular event, but constitutes a product of the same infrastructures of death that facilitate harm from climate change everywhere. A planetary view renders evident this material, temporal, and multiscalar understanding. This is especially important as these tragedies also impact the nations reluctant to reduce emissions. Commodity prices, crop shortages, and closed and disrupted mineral extraction connect Biangai to the world, even as the world ignores its connection to Biangai sufferings.

Tracing the complex assemblages of gold and coffee highlights the planetary forces at work; the earthly multitudes that comingle in specific places, especially during extreme climate events, highlight "the [infra/]structures and processes of a dynamic planet" (Clark and Szerszynsik 2021, 65). These are not patchy encounters (see Tsing, Mathews, and Bubandt 2019), but condensed material intra-actions that bring together the more-than-human world and the more-than-living. If we must learn to live with such tragedies, we must think across the spatial and temporal scales alongside CO_2, SO_2, NOX, and others as they traverse local and national boundaries. Black (e.g., Chipato and Chandler 2022; Karera 2019) and Indigenous (e.g., Davis and Todd 2017; Whyte 2016, 2017, 2018) scholarship has shown that these tragedies are not novel experiences for communities that have experienced colonization, slavery, violence, and oppression, and we should take heed from their witness in responding to the Anthropocene's

dystopic future. Axelle Karera (2019) notes a failure of Anthropocene theorists in dealing with Black suffering and violence, and we might add Indigenous suffering and violence as well. The violence of climate change can be as sudden as a flood, or as slow as the gradual erosion of one's livelihood. With certainty, the impact is disproportionately felt by communities located largely outside the centers where futures are debated.

Until the material realities and histories of those living along the frontlines of climate change form part of the conversation informing the very shape of climate change, we will continue to see them as cases in a patchy framework. Both responses to and deaths from climate change reveal opportunities for reimaging how we make the world. Can we scale up placepersonhood to reimagine our climate pledges, instilling those everyday earthly encounters with political and social rights? Is it possible to see the slow death of individual plants and animals alongside extinction-level events? Thinking through climate change as a shared planetary encounter becomes a necessary and just way to understand the sacrifices made as we continue to debate pledges in Western theaters. It is the only way that we can make those pledges meaningful for local communities and their earthly multitudes.

ABSTRACT

How do we tell the stories of climate change? This essay explores the slow violence and death experienced by marginalized, racialized, indigenous bodies as climate change differentially impacts communities across the globe. Paying attention to locations beyond the spectacular events that have come to be associated with climate change, the article highlights violence and death on the margins, and the complex planetary relationships that make such violence both possible and nearly imperceptible on the global stage. By taking a planetary view of localized violence, the article traces the precarious positionality of communities such as those living in villages in rural Papua New Guinea, villages at the heart of the ethnographic account. It contributes to our theoretical understanding of climate change as a planetary process, with varied local manifestations, and in doing so highlights indigenous ideas and scholarship about the role of place in the violence of loss. [Anthropocene; climate change; slow death; Papua New Guinea; Oceania]

NOTES

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1. "COP26: Together for Our Planet." 2022, available at https://www.un.org/en/climatechange/cop26
2. Greta Thunberg, November 4, 2021, https://twitter.com/GretaThunberg/status/1456295342253740037
3. Maxine Joselow, November 3, 2021, https://twitter.com/maxinejoselow/status/1455925901263245325
4. Similar partial results could be seen in each subsequent COP, as wealthy nations held off on more robust regulations and extended funding. With a change in political leadership in the United States, and troubled leadership in France, Germany, and Canada, these global stages tend to support more theater than action.
5. "Joint Statement by the IUGS and ICS on the Vote by the ICS Subcommission on Quaternary Stratigraphy," 2024, available at https://stratigraphy.org/news/152
6. Biangai shared the details of this story with me, but asked that I only talk about it generally and avoid specific names for historical figures and places.
7. In 2001, 2011, 2014, and 2016 we counted the total number of coffee trees maintained by each household.
8. Sherry Rehman, "Could Pakistan's Flooding Be Indicative of a Permanent Climate Disaster?" Interview by Steven Inskeep, *Morning Edition*, NPR, September 1, 2022.

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