Roads are one of the most salient symbols of development and modernity for rural citizens of Papua New Guinea (PNG). Multinational corporations, members of parliament, and villagers frequently point to roads as a key to development. However, while roads routinely improve the incomes of those connected, many of their effects are far less scrubtable. Here we examine the economic and social consequences of two roads, the Wau-Bulolo Highway and Highlands Highway, for two villages in PNG’s Morobe Province, and consider the processes that make their outcomes so different. Tracing the history of the two highways and considering a contrasting pair of case-studies, we explore how roads simultaneously bolster income and drive inter-regional economic divergence. We demonstrate how the spatial and historical contexts the Highways run through, coupled with the relationships of patronage and dependence they rely on, produce contingent social outcomes and shape local ambivalence towards the outcomes of roads.

Citation: This article was published in Oceania. Please cite it as Beer, Bettina and Willem Church (2019): Roads to Inequality: Infrastructure and Historically Grown Regional Differences in the Markham Valley, Papua New Guinea. Oceania, 89(1), pp.2–19. http://doi.org/10.1002/ocea.5210.
1. Introduction

Linking the unreached after 40 years. Nau yet. Nau yet— Huon Gulf MP Ross Seymour’s 2017 campaign slogan

All Wampar villages except Mare (see Figure 1) are adjacent to a Papua New Guinea (PNG) highway. Wampar are a language group of some fifteen thousand persons occupying the middle Markham Valley, close to the city of Lae. Compared to many villagers in PNG, Wampar are relatively wealthy. Northern villages adjacent to the Highlands Highway, the arterial road of New Guinea Island, have bustling markets serving the constant traffic from the densely populated Highlands. Wamped and Gabantsidzi, two villages south of the Markham River, sit next to the Wau-Bulolo Highway and have routine access to the port city of Lae via daily Public Motor Vehicles (PMVs). They too have markets lining the road, but they serve fewer travellers than those of their northern counterparts.

Figure 1: Wampar area and a map of the Markham Valley showing Wampar villages, mining sites and the two highways. The Highlands Highway connects Lae with Nadzab and the four Wampar villages north of the Markham. The Wau-Bulolo Highway leads south of the Markham to Wau, Bulolo, and Hidden Valley.

But in Mare, there is a distinct sense of missing out and comparative isolation. An elderly Mare man said, “All the other villages have services, have roads. We do not. We are the last Wampar”. This is not entirely accurate. Mare has a road, a potholed, frequent flooded, dirt road wide enough for a single PMV to bounce along, which is more than many PNG villages can boast. Nevertheless,
compared to their wantoks (same language speakers) many in Mare feel as though the government has passed them by. Instead, they fund infrastructure projects themselves. In the 1990s, Mare put together enough money for a water supply, and they are currently attempting to raise funds to seal their road.

However, even if they raise the necessary funds, their main obstacle is the temperamental Wamped River, which PMVs must cross to reach the Wau-Bulolo Highway. Every morning, PMVs wrap water-vulnerable engine parts in plastic and ford the rushing waters. Many in Mare want the government to build a bridge to connect their road to the Wau-Bulolo Highway. The Huon Gulf MP, Ross Seymour, who comes from the northern Wampar village of Dzifasing, promised to do just that—so long as its residents voted for him in the upcoming election.

During a Lutheran Youth Church meeting in 2016, the role of infrastructure in elections in PNG was abundantly clear to everyone present. In the 2012 election, Gabantsidz villagers, mostly voted for their local candidate instead of Seymour. When Seymour visited the Church conference, he promised to build a bridge connecting Mare, gave out money to various church groups, but warned Gabantsidz to vote for the right person next year. “It would be a shame if you voted for the wrong person and missed out on services for the next five years”.

For most of 2016, it was unclear whether the proposed “Ering” bridge would materialise. Various problems plagued construction. The PNG government was suffering funding shortfalls because of the low price of precious minerals coupled with ExxonMobil’s Liquid Natural Gas (LNG) project providing less revenue than expected, largely due to numerous tax concessions. Local politics also threatened to undermine the planned bridge. In mid-2016, Seymour got wind of a potential Mare challenger in the upcoming election, so he sent a convoluted text message to the councillor of Mare complaining that he was “sick of playing politics” and that Mare would need “to wait until 2017 for the bridge”. Local political disputes also played their role, with some Wamped sagaseg (clans) wanting exclusive labour contracts.

The bridge was also held up because a man named Topom, from Gabantsdz, demanded compensation for the bridge. The geography of Wampar villages might make this claim seem unusual—Gabantsidz is 10 kilometres from the site of the bridge. However historically, in the period immediately before Christianisation and pacification, this area was known as Gabantsidz. According to oral histories, one sub-group of the sagaseg Mporenanon along with their leader, a sorcerer named Ngaroseya, dominated this area and terrorised other sagaseg. Mporenanon’s victims called upon allies living at Waem River, who returned to the Wamped river valley, killed Ngaroseya and expelled many of his kin to the site of modern-day Gabantsdz. Mporenan were preparing to counter-attack when the Word of God arrived, putting an end to the conflict. Or, rather, shifting it to the courts—Topom is one of Ngaroseya’s descendants.
Finally, in the months leading up to the 2017 election, while the conflict simmered, Chinese contractors began constructing Ering Bridge. Mare voted overwhelmingly for Seymour, who was re-elected, while Gabantsidz once again split its vote between Seymour and a local candidate. Six months after the election, the bridge remained unfinished and was already showing signs of wear. The bridge is complete enough to cross, but is supported by gravel cages. In early 2017, during heavy rains, the Wamped River changed course and began eating into these temporary supports and encircled the entrance ramp of the bridge. No-one is sure what happened during construction. Some people claimed the land conflict halted construction, while others say the government ran out of cash again. One of Seymour’s campaign managers attempted to explain: “[It cost] 1.2 million! Something was wrong. Someone got paid twice? I’m not sure.”

The foregoing account exemplifies some of the issues we discuss in this paper on roads: the hopes (cherished and dashed), promises (made and broken), enmities (dormant or active) and projects (finished or abandoned) in which they become entangled. Roads, in their physical spatiality, carve up social space too, which is why they count as infrastructure. Even noteworthy infrastructural achievements are embedded in inter- and intra-community histories that may subvert their original, instrumental rationales, and have consequences, at all levels of social life, no planner or engineer is likely to have anticipated. Unsurprisingly, roads play a central role in the imaginative and material politics of PNG, while they also have local and particular entanglements and outcomes. Other roads (and bridges) in the Wampar region illustrate the general and the particular characteristics of roads, through the dialectic of which their social-historical effects unfold. On the one hand, Wau-Bulolo and Highlands Highways conform markedly to both academic and local understandings of roads. Economists, members of parliament (MPs), and development agencies frequently stress the role of roads in increasing people’s economic opportunities, a perspective shared by most Wampar. At the same time, we will see how local forces condition the processes initiated by access to roads; how the particularities of pre-colonial conflicts influence the tensions that emerge around roads.

Our data result from a current research project on contemporary developments in the Markham hinterland of Lae. Recent changes in the Markham Valley involve large-scale mining, oil-palm plantations, and biomass power generation, all of which have engaged the concerns of those identifying themselves as Wampar (which is itself the outcome of a particular history). Our project aims for a fine-grained understanding of the processes involving the Wampar that tend to produce and trans-generationally entrench inequalities, by relating them to the novel inequalities in Wampar social life that result from their initial encompassment of local organisational by Christian churches, capitalist enterprises and the state.

This paper, then, aims to extend part of that project by examining the differential impact of the Highlands and Wau-Bulolo Highway on the social facts of present-day Wampar life in two
villages, Gabsongkeg and Wamped, in the Markham Valley of PNG. By exploring the historical and contemporary importance of the Highlands Highway and the Wau-Bulolo Highway, we examine how two villages that speak the same language, bear the same ethnonymic identity and share so many other characteristics, and sit a mere 15km away from one another, can yet be so different.

In recent years, infrastructure has become a topic of increasing interest for anthropologists and the literature on it has grown considerably, inspired by various contemporary currents (Harvey et al., Jensen & Morita 2017, Larkin 2013, Rogers 2015). A systematic engagement with this infrastructural turn is beyond the scope of this paper. Instead, we seek to examine how local context, coupled with the generalisable features of roads, provides the basis for an explanation of the differences between Wamped and Gabsongkeg. We start, therefore, by examining the different histories of the highways. Both are necessarily bound up with the founding of Lae city (and the gold rush that made it grow so rapidly), World War II, and the arrival of missionaries in the area. We situate this history in dialogue with research in economic geography which emphasises how historical sequences can drive economic divergence between different regions.

Subsequently, we examine the consequences of this divergence on the everyday lives of people in Wamped and Gabsongkeg by recounting to two detailed case studies drawn from the wider ethnography of the two villages. The first examines the Sande Maket in Gabsongkeg, a market that runs on the putatively "work-free day" of Sunday, and the second examines a mining-related diesel spill near Wamped. Both case-studies exemplify some of the interactions that ground the two villages' relationships to their associated roads and the contrasts between them. Using these case studies, we breakdown how the two highways interact with local history, political struggles, and the spaces roads connect, all generating elements of local sociality.

By breaking down how local geographies generate the outcomes of the two highways, we attempt to articulate how there are generalisable features of roads, and the economic processes associated with them, that enable connections across time and space, lubricate capital and generate results robust across differences in local conditions. However, precisely because the times and spaces roads compress are local and particular, so are certain outcomes of the advent and presence of roads. Thus, some results of infrastructures, congruent with local ideologies of development, are predictable and shared across both sites—the greater accessibility to markets and social services, for example. These, however, intersect and interweave with the ongoing (re)production of local social fields—like historical rivalries and landowner/non-landowner conflicts. These local factors, of course, are not themselves sealed off from regional and national flows, subject only to endogenous forces: they too are creatures of history inflected by colonial and post-colonial forces. Nevertheless, by breaking down these outcomes—showing what features drive the historicity of roads, what particular features are
salient in their production—we provide an analysis of the fan of factors and their interaction in a context which is always particular.

2. A Tale of Two Roads

There is more to infrastructure than roads, and we could have selected a range of different examples to focus on. Villages along the Wau-Bulolo Highway have access to continually shorting power lines and some Wampar villages have no access to power, despite their advantageous positioning, all while the monolithic power lines provide a more uninterrupted stream of power to Hidden Valley mine. Mobile phone towers, a critical new dimension of infrastructure in PNG (Andersen 2013, Lipset 2013), are unequally distributed across the Markham valley as well. The Wampar villages on the northern side of the Markham have a steady network, while on the southern side, villagers complain about the lack of coverage because, in 2014, dissatisfied landowners removed the solar panels from the nearby Digicel tower—another chapter in the Gabantsidz versus Wamped saga mentioned above.

These infrastructures are all important to the dynamics of life in the area. However, roads provide a particular lens for understanding how large-scale capital, state or private, materialises and produces people's lived experiences (cf Harvey and Knox 2015). A household—nowadays—can purchase solar panels if the power lines do not work, but a village simply cannot construct a highway that can take heavy trucks. Those that desire a road must inherently rely on, and in some cases explicitly court, external capital bearing institutions. Further, roads create physical links between the places they connect. Power lines transport power, and while mobile phones might allow individuals to communicate, roads enable people who cannot afford air travel to travel more easily from place to place. For these reasons, roads suit our particular questions.

In PNG, infrastructure is the primary vehicle that conflates state interests and those of multinational enterprises.

One response to this [transnational corporations taking over governmental roles] in Papua New Guinea has been the development of a tax credit scheme, whereby companies are able to deliver infrastructure and services to local communities in return for taxation credit from the national government. The company effectively does operate like a State from the community perspective. (Banks 2009: 53)

In the Markham valley, companies have taken over some governmental infrastructure projects, like health, education and water supply, but the building of roads is still primarily a state undertaking. Morobe Mining Joint Ventures (MMJV) vehicles overuse the Wau-Bulolo Highway, but the highway remains unrepaired. Building and maintenance of the Highlands Highway was initially a colonial project, then financed for a limited time by AUSAID, and today funded by a consortium of donors coordinated by the Department of Works. The upgrade of the Highlands Highway to a four-
lane road (in the vicinity of Lae) was fully funded by the government with a loan from China and carried out by China Railway International.

These confluences of local and international forces runs deep into the highways’ histories. The first Administrator of the Huon Gulf (then part of German New Guinea), Admiral von Schleinitz, investigated the Markham as a possible route inland in 1886. He found that it was not blocked by a bar as earlier reports had stated (Sack 1976: 17, 18). Navigating the river by boat was difficult. The first explorers tried travelling up the Markham with a steam launch, with little success. It ran aground several times on the first two miles before the engine finally failed. Captain Dreger and sailors made further attempts with a canvas boat (ibid. 20, 21). Smaller canoes or rafts did not run aground so quickly but were widely visible to the local population and offered little protection against possible attacks.

A footpath near the Markham through the valley towards the interior seemed the best alternative. A road between Lae and Gabsongkeg begun as early as 1925/26: a year later the Public Works Department completed the task (Willis 1974:78). In the 1950s, the Markham Valley Road was extended to the Eastern Highlands Province and, by 1965, the Highlands Highway extended from Lae to Mt Hagen (Lucas 1972:261). Now, it is Papua New Guinea’s longest highway, and the only one that goes into the Highlands. It runs approximately 700 km from Lae, across Wampar territory and then up to the populous and relatively prosperous Hela and Enga provinces, the furthest parts of the Highlands from Lae.

The Highlands Highway continuously extended and intensified rural-urban networks (Beer 2017). Many Wampar, then, have produced for the local markets and the main market in Lae for decades. In the 1970s, traffic between Lae and the Highlands increased when the Highway in the Markham valley was upgraded to an asphalt road. Stewart and Strathern (1999) give a personal narrative of their drive down the highway to the coast emphasising the still present the dangers of hold-ups and other difficulties.

Today, all Wampar villages close to the Highlands Highway have public markets, although individual families also offer diesel, decorative flowers, wood or building materials, in addition to the usual garden products, at separate stalls along the highway. Some Wampar open trade stores, bottle shops and bars in these locations (Beer 2008). This has led to Wampar settlements stretching along the roadside. Trade led not only to regular inflows of cash but also to increased interactions with people from town and the highlands, rising rates of interethnic marriage; these, in turn, produced interethnic kinship networks with further implications for Wampar / Wampar marriages and Wampar / non-Wampar sociality (Beer 2008, 2015; Beer and Schroedter 2014). The distance of a settlement or village from the Highlands Highway and town became a crucial factor in its access to economic opportunities and the social differentiation of place and local groups.
In many ways, Gabsongkeg is intimately connected to Lae not only because it was adjacent to the mission station and school in Gabmadzung, but also because of its easy access to the highway. The economic boom of Lae and the acceleration of immigration to the Markham valley has had direct and indirect effects on the need for land, housing, transport, and food supplies along the Highlands Highway. This economic intensification will continue with the likely construction of a mining related bridge over the Markham near Dzifasing and plans to widen the Highlands Highway to a four-lane road.

On the other side of the Markham, the connection to Wau became critical after the discovery of gold at Edie Creek in 1926. This find sparked a gold rush which contributed to the development of Lae (Willis 1974: 80). Initially, it was harder to build a path up the mountains than in the valley along the Markham, so aviation services served as an alternative to the arduous walk from Salamaua or Lae up to Wau. In 1927, the first plane from Lae landed in Wau (ibid 80-81). Even heavy machinery used for treating the Bulolo and Watut River gravel was airlifted in sections. Willis writes about the decision not to build a road on the other side of the Markham:

At first Bulolo Gold Dredging Ltd and its parent company, Placer Development Ltd, had thought of building a road to the goldfields, but the length of time it would take and the high cost of construction and maintenance persuaded the companies to accept Guinea Airways’ proposition that ‘skyways are the cheapest highways’. (Willis 83, quoting Healy 1967 and Grabowsky unpublished MS.)

The Wau-Bulolo road came about in various starts and stops. In the 1930s, landing grounds dotted the area, including near contemporary Wamped and Gabantsidz (Murphy 1936/37, see Figure 2). During this period, Wampar occupied smaller villages stretching from the contemporary site of Wamped to Mare. Occupants of Bankora, a historical village to the south of Mare, were tasked to maintain a road from Wamped landing ground to Timini village further south (Murphy 1936/37). An official government track crossed the Markham from Gabmatzung towards “Old Mari”, travelled past Bankora to Wampit landing ground, before continuing south. However, Gabantsidz was not on the government track (see Figure 2).
Figure 2: Extract of Map of Northeast New Guinea in 1943, with key. Note that old Mari, Bankora to Wampit landing ground are connected via a government trail, while Gabantsidz is connected by lesser used tracks.

Army engineers built most of the current route to Wau during WWII (Sinclair 1981: 26). At that time, the road was a narrow, winding dirt surface. The wide and braiding Markham River was the main obstacle. Due to the time pressures of the war, the engineers used landing barges from the mouth of the Markham at Labu to complete the road’s link to Lae. By the end of World War II, trucks regularly travelled between Wau and Lae, using a landing barge to shuttle across the Markham every half-hour. Colonial officers, including the locally (in)famous "Baron of the Bends", recruited villagers living near or adjacent to the Highway to keep the road in good repair (Sinclair 1981:27). Increased usage of the Wau-Bulolo road led to not the first, and hardly the last, unexpected consequence of the Highway:

What is known as the “teen age” group in America, has, amongst all the people of this area [Mare, Gabantsidz, and Wamped] and of the Watut area, developed an unfortunate joy riding craze which strains the patience of truck drivers and leads to the stranding of miserable children at places as far apart as Lae and Wau...the truck drivers now inspect their vehicles after all stops to make sure that they do not have stowaways. (Downs 1945/46)

During this period, Wampar were gradually moving southward from the villages of Dugin and Bankora down to settle closer to the road where contemporary Wamped sits. This migration
was both at the prompting of patrol officers and to gain easier access to Lae where Wampar occasionally worked on the docks (Seale 1948/49). Today, Dugin is a tiny settlement of a handful of families, and Wamped has grown to some 1200 people. Meanwhile, the shift from the 1940’s government trail connecting old Mari to the post-war Wau-Buolo highway fundamentally reshaped the fates of contemporary Mare and Gabantsidz. Now, Mare is the isolated “last Wampar”, while Gabantsidz has large migrant settlements and vibrant road-side markets. According to informants in Gabantsidz and Wamped, the road adjacent to the two villages was sealed sometime in the 80s due to the profligate dust that passing trucks would kick up. The seal was extended to the entire road in the 1990s, leading several marriages in the villages as workers found local wives.

3. Roads to Development

Roads play a central role in PNG politics large and small. As the opening anecdote of this paper demonstrated, the delivery of roads is one of the primary ways both local MPS and large-scale projects like mines foster support. Ross Seymour’s campaign slogan, “reaching the unreached” is hardly a metaphor; it points directly to his promise to connect unconnected places with infrastructure. In the case of the prospective Wafi-Golpu gold mine, the route of the access road that will connect the mine to the Highlands Highway was a major source of political lobbying among local factions.

While the promised infrastructure is very much material, roads play more than a functional role in PNG. Like elsewhere in the world (Hetherington 2016) roads occupy a central position in political ideologies in their link to modernity and progress. Mare’s complaints, above, are not that they are just unlinked physically, but also politically forgotten. Colin Filer (2006) has pointed to the salience of the tok pisin rot (road) as a metaphor for different paths to modernity—rot bilong bisnis, (road of business), rot bilong kastam, (customary road) rot bilong kargo (road of cargo, alluding to cargo cults). The choice of word here is revealing, in which rot are ideological paths that, like their material counterparts, travel to a certain desired destination.

Roads also play a central role in more elite projects of development. The World Bank estimates that developing countries collectively invest some 4% of GDP on infrastructure (Gibson and Rozelle 2003: 159). Even without evoking narratives of modernisation, there are empirical reasons to believe that access to infrastructure raises the incomes of connected peoples. In their detailed study of the relationship between poverty and access to roads in PNG, John Gibson and Scott Rozelle (2003), drawing on the PNG household survey, demonstrate that reducing the distance to a road reduces both the incidence and intensity of poverty vi while also raising consumption levels. Collectively, Rozelle and Gibson’s analysis support claims that “poor areas in PNG have the least access to infrastructure, and so people in those areas may benefit the most from new investments”.

vi
Why, exactly, is still open to debate. However, the link likely because roads robustly decrease the costs of transportation\textsuperscript{vii}. This constant outcome, in turn, probably makes travel more readily available for connected communities to access markets and schooling, both of which also have demonstrably similar benefits related to poverty and incomes.

In this way roads, across a range of social settings in PNG, routinely create processes that reduce the incidence and depth of poverty, raise incomes, and lubricate the circulation of capital. Of course, roads do not all do so to the same degree. The marked economic differences between the Markham sections of the Wau-Bulolo and Highlands Highway are tightly linked to the regional history and are congruent with well-established work in economic geography (Krugman 1991, 1998). Not only do roads generally decrease the costs of transportation by making it easy to traverse a given area, but the sequencing of road construction matters because change can set off positive feedback loops. Businesses concentrate where there is a market, and the market is larger where businesses concentrate. The type and intensity of clustering will frequently be dependent on which original businesses arrive, and when they arrive, leading to different kinds of groupings. The original reasons for this clustering near Gabsongkeg—the Nadzab airport and the Highway—were based on missionary and military history coupled with the geography of the region. However, this difference has led to compounded advantages in villages on the northern side of the Markham. Inequalities in wealth derived from marketing, in this case, have a spatial dimension.

History matters here because firstly, the earlier events have larger impacts than later ones, and secondly, because change is inflexible (\textit{à la} Arthur 1994: 112-3); one cannot just make a new road in the region and expect the same results as the Highlands Highway. In technical parlance, roads start an increasing returns process that means that the economic activity adjacent to the two highways has diverged sharply over the course of the 20\textsuperscript{th} century. For the remainder of this paper, we examine the (1) consequences of the divergence, how it interacts with local history and the spaces the roads connect and (2) the impact of these differences for dreams of development and the patrons that rely on them.

4. Wampar Case Studies

4.1 The “Sande Maket”: a den of iniquity

Each Wampar village along the Highlands Highway has a named public market beside the highway where women sell garden products and cooked food (and previously sold betel nut)\textsuperscript{viii}. Nowadays, communal markets are also used by mobile vendors, delivery points for bakers in Lae or individuals who sell items from bags or hawkers’ trays (\textit{walkabout maket}). As traffic increased, markets became more prominent and a growing number of families established market stalls. As a result, Wampar
settlements are now strung out along the highway, making it a centre of economic activity and attracting yet more migrants. Dzifasing village, for example, is built on a large area stretching along both sides of the highway and has three markets specifically oriented towards drivers and passengers travelling to the Highlands.

Gabsongkeg village has the largest public market (Nadzab Maket) in the Wampar area. It is a bus stop for drivers going along the highway to the Highlands and also a waiting area for passengers and their family and friends waiting at Nadzab airport—Lae's official airport located at a walking distance from the market since 1977 (Beer 2017). Communal ‘village markets’ are controlled by respected and influential village elders, often with senior positions in the church, but this control is sometimes contested.

A market committee administers Nadzab Maket with village-appointed officers who collect market fees from sellers. They are also expected to settle conflicts at the market. According to the Lutheran tradition—which is still strongly represented in the village—the market should close on Sundays. Wampar, as well as non-Wampar (yaner), breaking this rule were criticised and detained for selling on Sundays at Nadzab Maket. In the 1990s, the public market was also closed as a sign of respect when a death occurred in the village. In Gabsongkeg, this taboo ended with the increase of Wampar population but also with the number of yaner who offer their products. Furthermore, a new market, the “Sande Maket”, has become increasingly prominent.

Many Wampar who have married out are members of other denominations than Lutheran. These men and women instead settle temporarily or permanently in hamlets along the highway rather than in the village (see for detailed demographic data Beer & Schroedter 2014: 19ff). Because of intermarriage, migration, diversity and economic attractiveness of the highway, new churches (e.g. Seven Day Adventist (SDA), Assembly of God (AOG), Lutheran Renewal, PNG Revival) arrived and were established at the highway. Today, people from different provinces of PNG who belong to a range of denominations live on Wampar territory. The highway offers them not only economic opportunities but also a way of life that is less controlled by influential Wampar families and church elders in the villages. Thus, the highway offered a favourable context for the emergence of the ‘Sande Maket’, a market that only operates on Sunday.

During fieldwork in 2009, Bettina Beer first took notes on an SDA non-Wampar woman, who, sometimes accompanied by her relatives, sold betel nuts to travellers and Wampar. For SDA members work on Sunday was no problem since their Sabbath does not fall on Sunday. Initially, members of non-Lutheran churches who settled along the highway, rather than in the villages, made Sunday betelnut sale more and more popular among Wampar and non-Wampar alike. Later its popularity among vendors and customers extended far beyond members of certain churches.
In 2013, the whole former small *Kona Maket* of the non-Wampar SDA members moved to the other side of the highway. The new area at the highway offered more space and gained popularity under the name ‘Sande Maket’. Here, non-Wampar and Wampar began to offer nearly all products one could buy at Nadzab Maket during the week. Many Wampar bought betel nuts and took them to the village for re-sale at their *Haus Maket* (a plastic bag hanging off the roof or a sitting platform). The Sande Maket moved, and again expanded, in 2016. Then, men and women played cards around houses behind the market, consuming illegal and powerful ‘steam’ and ‘homebrew’ (during the week also sold in the afternoons at Nadzab Maket), got very drunk over the day and—so it is said—engaged in sexual activities. This divided the space in a front and backstage area, the latter becoming highly sexualised. By then, the Sande Maket and comparatively cheap home-brewed alcohol had replaced most of the smaller, and increasingly taxed, Clubs and Bottle Shops and attracted people from Lae and travellers going to and from the highlands.

Now, it is possible to purchase everything one needs from the market, even on a Sunday. The market is attractive to many Wampar because the area presents distractions on—for many non-Church goers—a slightly boring Sundays. Drinking steam and homebrew is cheaper than beer, and people can *finisim laik*—drink without limits. Some become heavily drunk and can hardly walk. They gamble, flirt, and socialise, spending a day away from work. At the same time, under the influence of alcohol, conflicts spark easily from gambling and jealousy. Violent fights break out and many injuries are reported. They make Sande Maket even more exciting, and more dangerous. There is great ambivalence about the "entertainment" it offers. Because of fears of conflict and violence, some people avoid going there when they take a bus to Lae on Sunday. However, the Sande Maket has developed into the most frequented bus stop near Nadzab.

Markets, like in other regions of PNG, are social centres and highly gendered spaces as well (Minnegal & Dwyer 2017: 107). Women typically offer their products as customers stroll around, while Wampar men hang out near the market smoking, chatting, having a drink while observing the scene. Thus, Wampar women selling areca nuts or other products are always watched by men, who are observing the concrete dangers involved in trading, such as fights about prices and theft. There is also an element of sexual policing. Many Wampar believe that some women trade and offer not only garden products but also sex. In an everyday conversation, for example, if a young girl is sitting with her legs apart, the ethnographer heard Wampar men and women saying jokingly in Pidgin "*Lukaut, ol i ken lukim maket bilong yu!*" (Look out one can see your market!) (Beer 2008).

In contrast, at the backstage of the Sande Maket Wampar are no longer able to provide protection or control, which is one of the reasons the market has been renamed Dangerous Maket in 2017. The gendered and sexualised backstage space has instead led to a combination of excitement, moral worries, and fears at the same time. In 2016, several Wampar told stories about alcohol excesses
at the market, sexual interaction, and their destructive effects. A middle-aged Wampar woman said that a Wampar wife found her husband in one of the spaces behind the market with another woman. She did not confront them but went to buy some chilli at the Maket. Later she squeezed the chilli between her fingers and distributed the hot substance in her hands. She sneaked up behind the other women and rubbed the chilli in her eyes. Regardless of whether this narrative is based on actual events, it shows fears of uncontrolled behaviours and their destructive effects as well as the fascination this holds for many people.

4.2 The Spill: Poisoned Money

The Wau-Bulolo Highway, now known as the “Bulolo National Highway”, branches off from the Highlands Highway at “10 Mile”, about 15 km from Lae. Today, the highway connects to the former mining towns of Wau and Bulolo, Hidden Valley gold mine, and the dirt road to Wafi-Golpu base camp. Since the opening of Hidden Valley, and as Wafi-Golpu ramped up exploration, more mining trucks travel down the Bulolo National Highway loaded with fuel, heavy machinery, and cyanide. This heavy machinery has opened up the potholes so enormous that buses, PMVs and small cars meander around them at jogging speed. Approximately every month, government contractors fill them with gravel, only to have them reopen in a few days from rain and trucks. Like other mining projects around the country, MMJV takes on many quasi-governmental roles, claiming to have spent PNGK 20 million between 2010 and 2012 in “health, water and sanitation, education, agriculture/aquaculture, community infrastructure, community and LLG capacity building program and Lae and Bulolo Highway maintenance” (MMJV Hidden Valley Presentation 2012). For fuel trucks and semi-trailers servicing the mine, potholes are less of an obstacle, although they markedly shorten the lifespan of vehicles.

These potholes inconvenience communities adjacent to the road and also increase risks of damage, along with subsequent compensation and conflict. On Monday, September 30th, 2013, a Kutubu Transport tanker truck contracted to transport diesel to Hidden Valley mine overturned roughly a fifteen-minute walk from Wamped, tipping into a swampy area of the river Waes. As the tanker lay sprawled in the mud, it began to spill over 40,000 litres of fuel into the wider river and swamp system. The Wamped community quickly held a meeting to determine what to do. They forbade people from bathing, washing, and fishing in the river until it was safe. Leaders of the community handed over a petition to the safety manager of Kutubu Transport demanding PNGK 150,000 xii in compensation for the environmental damage caused by the spill.

No reply was forthcoming. Eventually, Reuben, a university educated man from Wamped, lead a "strike" to block the road, stopping all Hidden Valley transport, or their sub-contractors, from going to or returning from the mine. Roadblocks have become something of a national institution in PNG—
it is one of the few, unignorable ways dissatisfied landowners can get the attention of companies or
the government. Reuben recounted:

They received our petition, but we never heard back from them. So we blocked the road. We put
in a large block in the middle of the road and stopped every Hidden Valley Transport car, every
business serving Hidden Valley. They came, and we turned them back. All the employees of
Hidden Valley who wanted to come back down and go on a break, we sent them back. Everyone
in Wamped stepped up.

Reuben, lineage leaders, and young men blocked the road for three days before armed police officers,
the Provincial Police Commander, and Superintendent arrived. According to Reuben, the police
officers approached him and offered 5,000 Kina, “attempted to bribe us”, to end the blockade. Reuben
rejected the offer, and after much deliberation, a party of community leaders were invited to the
contractor’s offices to discuss the dispute.

They arrived at the office with several community affairs officers, a kiap, the General Manager
of Kutubu Transport and several armed police. According to leaders who attended the meeting, the
operations manager accused Reuben of stealing diesel, threatened him with the “Traffic
Infringement Act” (potentially the Road Traffic Act 2014, although that law provides no penalty for
traffic disruption), holding him directly responsible for disrupting traffic. In turn, Reuben pointed to
the “Environmental Protection Act” (possibly the Environment Act 2000), that they had not given
money to the impacted community. Reuben reflected at the time he thought “This is it. I’m a
kalabusman [prisoner] now. I’m going to jail."

Despite the threats, Reuben did not go to prison. After a tense meeting, with the Wamped
delegation accusing the company of refusing to address the environmental damage they had done,
and the company accusing them of disrupting traffic, the group from Wamped confirmed a rumour
they had heard before blocking the road—Topom, the Gabantsidz man mentioned in the opening
account of this paper had already claimed a compensation payment. After the spill, Topom quickly
arrived at the offices brandishing a copy of a local land court decision, claiming that he owned the
land. The company promptly gave him PGK 10,000 compensation.

However, there was a problem: the court decision Topom showed them did not pertain to the
land in question. It was a case about a gravel pit several kilometres away. Topom’s continued use
and abuse of the Gravel Pit decision was so bad that a high-ranking kiap and District Officer in charge
of the Huon Gulf Districted wrote a strongly worded letter explaining that the Wamped Gravel Pit
decision related only to the Gravel Pit itself, not the surrounding areas. As it said, "Mr Topom has
been contentiously using the isolated Wamped Gravel Pit Land Court Decision to unnecessarily
interfere with other legitimate landowners". The letter explains that he had told Topom as such, and
for Topom to see him “if there are legal issues that need to be personally clarified”. Evidently, this
did not deter him since the letter is dated 2000, before the spill.
At the meeting with Hidden Valley’s contractor, Reuben realised he was in a weakened position. The company had already awarded Topom PGK 10,000, so he requested the same amount. The group signed it off as compensation for the spill. They soon regretted it. In frustration, the community leaders sent a letter to the Provincial Police Commander, complaining of Topom’s conduct. They argued that his PGK 10,000 claim had weakened their original, more substantial, claim. The police never replied. Reuben suspected the whole affair was Kutubu Transport attempting to minimise their pay-out. He reasoned that the General Manager was well aware that the land was not Topom’s. Instead they “made us fight with one another while they pay nothing. They paid Topom to divert attention”.

The Bulolo National Highway makes it easier for everyone along it to reach Lae. However, it not only reconfigures the physical space; it also opens up new opportunities for damage and confrontation. The diesel spill did not start the conflict between Gabantsidz and Wamped. It did, however, provide a new arena to play out this conflict, complete with a not insubstantial monetary reward, all for the price of 40,000 litres of diesel in a river.

5. Ambivalent Infrastructures

There is a lot to take away in these accounts. Here, we want to draw attention to some of the processes that generate the different outcomes of the roads. Section 3 emphasised how timing was crucial to downstream consequences. In addition to when roads are made, where and whom they connect can be highly consequential in the local infrastructural system. As David Harvey (1990) vividly depicted through the idea of “space-time compression”, many features of so-called “postmodernity” speeds up how quickly capital and labour flows between spaces thereby “compressing” the distance between them. Infrastructure has played a critical role in this story, including the proliferation of standardised containers for international shipping, telegrams becoming telephone wires, and the computerisation of finance. Railways, roads, and their ilk, have played a major part in compressing space and time in our world (cf Bowker 1995).

Of course, a road connecting the PNG Highlands with the Markham Valley has different consequences than the Suez Canal linking the Mediterranean and Red Seas, and PNG is not uniformly shrunk by the impersonal will of capital. Instead, there are particular commercial and political local, regional, metropolitan and international actors who differentially compress the country in specific ways. Large concentrations of capital and/or labour are important but not sufficient for these fast and dramatic social transformations—they are only achieved with the collusion of non-capitalist social forces. Therefore, it is vital to consider what spaces and times are compressed, how this occurs, and who does the compressing. We go through each in turn.
First, consider the spill. Here, the material nature of the productive processes is essential. Recently, anthropology has seen a revival analysing the materiality of things (such as Miller 2010, Hodder 2012). Rather than focusing on the symbolic and discursive aspects of life, this research calls for attention to the materiality of everyday life. In turn, infrastructure studies emphasise the materiality of different infrastructures—the fluidity of water, the hardness of rock—in creating the life-worlds around them (Anand 2011).

These considerations are important. The nature of the productive processes at the end of the Wau-Bulolo highway are essential dimensions of outcomes near the road. Large-scale mining is necessarily a capital-intensive process. One cannot remove the top of a mountain without the rigorous application of machinery. Likewise, separating gold from ore requires specific chemical processes. The combination of these attributes drives material entanglements (Hodder 2012:17). The particular material properties of gold narrow the space of possible social configurations—while many options are possible, fuel, in this case, diesel, and separating chemicals, like cyanide, must reach the mining site in order for production to continue.

These material dependencies interact with local ethnohistorical context. The spill and the road do not determine these conditions. If the diesel spill occurred several hundred metres down the road, it would have been on undisputed Wamped land and would have missed the river. Consider the brief cast of relevant characters forming the spill above: Topom’s willingness to use an invalid court-case, a university educated man organising a road-block, the police not shooting people at the roadblock, and the transport company's negotiators. Alter these factors, and we have potentially different consequences.

Contrast these outcomes with the Sande Market. Once again, the spaces roads connect are fundamental to the outcomes we recounted. Here, consider the demographic weight of the Highlands, which makes up nearly 40% of PNG’s total population (PNG Census 2011), against the ability of Wampar and their associated institutions of churchly and customary control to absorb and incorporate them. The wealth inequalities between urban and remote regions of PNG is one of the primary drivers of migration and change in the country, driving internal rural-urban migration (May 1977). Wampar are economically well-positioned compared to many Papua New Guineans. They are also connected to those areas that are not. The consequences are that Wampar struggle to cope with spaces like the Sande Market as large amounts of migrants from poorer areas travel to Wampar land. This couples with the particularities of church work—that SDA migrants work on Sundays, thus creating a space for non-church goers to congregate.

These migrations underwrite much of the anxieties Wampar express when they talk about new opportunities and dangers involved in social change and new infrastructures. Many welcome the upgrade of the highway to a four-lane road up to Nadzab. At the same time, Wampar narratives about
life near the highways reflect risks and uncertainty. These cases demonstrate the growing diversity of social positions and ways of life which cross-cut social categories of Wampar and *vaner*, gender and age. Infrastructure impacts these groups in different ways. Wampar in Gabsongkeg perpetually complain about declining public standards and the need to restrain anti-social behaviour. *Haus boi*, houses that unmarried men live in, have now been given up in Gabsongkeg, despite still being a common sight in Wamped, due to their associations with lawlessness and the corrupting influence of *vaner*.

These spatially driven differences occur in a wider context of the patronly production of infrastructure. In certain respects, roads are new tools for agents to pursue long-standing local rivalries. At the same time, they are not mere instruments. Social scientists, going at least as far back as Henri Lefebvre (1991 [1974]), have noted the connection between the production of space and class struggle. In this case, it is not a struggle between labour and capital to inscribe themselves in space. Instead, control and distribution of the benefits and burdens of roads constitute one of the dimensions of emerging economic inequality between different groups in PNG, as both political patrons benefit from syphoning off funds and bolstering their support base while their clients gain access to roads themselves. These entanglements are not unrelated to international interests, with Chinese capital, for example, lubricating this interchange. Roads, in this way, change the stakes and form of social competition. Political patrons and business entities, such as Ross Seymour and Kutubu Transport, local political actors, like Topom, Reuben and market committees, and uninvolved locals are each differently positioned to benefit from and wield roads. Thus, we also see ambivalence among Wampar about the role of political elites and infrastructure funding. As one commenter complained on social media in late 2016:

I don’t think my village is going the right way.

We can’t be continuously denied like this.

Our eyes will not lie.

Over our land, there’s Wampar LLG [local level government] Chamber, Wampar Health Centre, Huon District Office, Wampar Circuit station, Nadzab airport, Highlands Highway cuts through, even the pylons that supplies Lae with electricity.

More is yet to come, [Mining] Township, 4 lane [highway] etc. But [I’m just thinking out loud here, for so long our land caters for all these facilities for benefits of everyone (national interest), what about our own interests[?]]

Come on our good leaders. Gabsongkeg deserves better than just taking pride in all this development infrastructure on our land.

[The village] Access Feeder road—completely messed up. [We have] no power, no water supply. [The] sore part: these kinds of basic services our leaders won’t build. How could you have done great when such can’t be achieved over years? I’m sick of the lying.
And as a self-described environmentalist from Wamped declared upon learning that the mining access road would by-pass them: “Good! It will not be here to destroy [bagerapim] our bush, rivers and village.” That said, even though many frequently complain about elite corruption, local factions are immersed in networks of dependency with politicians (Allan and Hasnain 2010, Ketan 2004, Kurer 2007). Wampar in Wamped and Mare complain about Ross Seymour but everyone was certain that if their candidate had not been re-elected, they would not even have a half-finished bridge. At the end of the day, he was “our child” (pikinini bilong yumi) and therefore would reward the votes they gave to him. These features of the Highways—the histories they connect, the spaces they link, and the politics that produce them—drive much of the contingency of roads and the conflicting perspectives Wampar have about them.

6. Conclusion: Infrastructure and regional differences

When we first returned to the field in 2016, the most apparent change upon leaving Nadzab airport was the presence of a 9 mile stretch of four-lane highway near Lae. Like many expensive and political projects in PNG, exact facts about the road upgrade are murky. In 2012, Prime Minister (PM) Peter O’Neill and Minister of Works Francis Awesa announced that they had confirmed a 30-year, PGK six-billion loan from China’s Export Import (Exim) Bank (see Smith 2015 where much of this account is drawn from). Later photos between the PNG PM and the vice president of Exim banking seemed to verify this story. However, the sheer size of the claim strained credulity—China’s 2006 loan facility to the whole Pacific was just US $492 million.

The size and extent of the loan remained unclear in subsequent years, which by late 2012 began to include urbanisation in Lae and Port Moresby and a hydropower scheme. Regardless, in September 2013, China Railway International announced that it had secured the engineering, procurement, and construction contract for the first stage of the Lae-Nadzab road. It was still not clear who or what was financing this US$132 million upgrade. Eventually, the PGK six-billion loan faded into the background, replaced by US$1 billion for the South Pacific, which is linked explicitly to upgrading the Lae Nadzab section.

These opaque dealings are part of an air of transformation in the Markham Valley. Wafi-Golpu mine has applied for a Special Mining Lease. The SML will entail a new mining access road linking the mine and upper Watut communities to the Highlands Highway. Nadzab airport is planned to become an international airport, while Japan is helping advise urban expansion all the way out to Gabsongkeg. If this happens, Lae will fully encompass three (by that point, former?) Wampar villages. Further up the highway, companies plant biomass and oil palm plantations near the Wampar villages of Dzifasing and Tararan. The accumulation of these impacts gives a sense of the contemporary forces that have affected and continued to transform, everyday life among Wampar. It is no longer World
Wars, alluvial gold miners, and a colonial government, but Chinese loans tied to Chinese contractors, courted by PNG politicians, and large-scale capital brought in by "world-class" mines, which reshape the landscape.

These changes arrive in the region on a foundation of precolonial conflict, missionaries, kiaps, and gold. By examining the history of the two highways, we have sought to make a stronger claim than "history matters". The happenstances of this period are now part of positive feedback loops that characterises the uneven "development" in the region, driving geographic inequalities that are an increasingly politically and socially salient feature of PNG. The geography of the Markham, that miners found gold down in Wau, and the historical conflicts between Gabantsdiz and Wamped interact with more generalisable processes of infrastructure to drive change.

By coupling this history with two ethnographic case studies, we have sought to depict how contemporary infrastructure “works” in people’s everyday lives. Some of the consequences of these roads are robust—lower costs of transportation, access to markets and money have led to concentrations of capital on the northern side of the Markham. However, the Sunday market and the diesel spill cases demonstrate how the consequences of roads are also based in the particularities of where and what they connect and what produces them. Each of our cases illustrates the importance of locally specific factors in determining specific outcomes. The Sunday market is entwined with the particular religious beliefs of Seventh Day Adventists, the persistent economic and access inequalities between the Markham Valley and the Highlands Highway that drives migration, and the decreasing ability of Wampar in Gabsongkeg to police the use of space. In contrast, Hidden Valley mine and the historical gold rush hardly touched down-road communities, except through potholes, court cases, and chemicals spilling into rivers. Roads and mining trucks are new, in one sense, but the rivalries they engage with have a deeper history and are fundamentally linked to the land—land that the roads inherently touch. Put crudely; roads work well in general ways, but tend to break down in particular ones, because of the particularities of the spaces and times they link. This diversity of aftereffects and the distribution of the good and the bad creates a degree of ambivalence about roads and their outcomes.
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i We transcribe all Wampar words including village and place names according to sound system and orthography used in the “English–Wampar Dictionary” (Fischer & Beer ms) as there is no homogenous “official” use of names on maps and by the administration.

ii PMVs are retrofitted vehicles that range from 15- to 25-seater buses to 2 ton trucks with seats in the back. They are privately owned and operated.

iii An earlier version did attempt to say what we found of interest in this recent literature and to register our reservations, of which there were a number. Reviewers complained that the sections in which we attempted to synthesise and criticise the infrastructural turn distracted from our central ethnographic aim and started so many large and pursuable hares that the reader was left mesmerised, irritated or both. We reluctantly conceded the point and consoled ourselves with the thought that a broader engagement would be an enticing prospect for a future but quite different paper.

iv The word is sometimes used as a mass noun and sometimes plural, which is only one of the indicators of the ambiguity of the concept.

v MMJV was a joint venture company between Harmony Gold and Newcrest. This partnership previously owned both Hidden Valley and Wafi-Golpu mines. However, in August 2016, Newcrest sold its interest in Hidden Valley, turning the company into Wafi-Golpu Joint Ventures (WGJV). This article, however, uses the name MMJV for consistency.

vi Gibson and Rozelle (2003: 161-162) measure poverty lines as against a basket of locally consumed foods providing 2200 calories per day coupled with an allowance of non-food items. Because the types of food available, and the cost of non-food items vary by region, Gibson and Rozelle's poverty line also varies from region to region as well. The incidence of poverty refers to the proportion of the population under the poverty line, the depth of poverty indicates the depth of shortfall (2003: 164).

vii We can safely ignore fringe cases where construction of a road attracts so many hold-ups it is even more difficult to travel than having no road at all as extremely rare. Merely adding, say, hold-ups or a poor quality road would not create an exception to this trend.

viii Many Wampar families still depend upon subsistence production for the bulk of their food: they maintain gardens that supply bananas, their staple, and coconuts, vegetables, corn, onions, tomatoes, pineapples, watermelons, taro, yams, sweet potatoes, and peanuts. Areca palms, the source of betelnut, which is chewed all over PNG, were planted for consumption and for the market. In 2008/09 a disease of the areca palm meant that cocoa became an important cash crop. Rice, sugar, tea, bread, biscuits, and canned goods (sardines and corned beef) that are mostly purchased from small trade stores supplement garden produce. Today, overall, the market economy is almost as important as the subsistence economy, for there are many necessities that can only be obtained with cash.

ix Bettina Beer bought betelnut for PGK 20 and pepper for PGK 5 and in the village sold it for PGK 40 after Sunday service. This is in itself a recent development, as betel usually was given and exchanged for free. Only people with very close relationships gave betelnut for free.

x Homebrew and steam is a powerful alcoholic beverage produced from locally grown fermented fruits with yeast and sugar.

xi Riggo Nanggan, the National 14.9.2010, http://www.thenational.com.pg/wau-bulolo-road-gets-new-name/

xii At the time of the spill in 2013, the PNG Kina was worth around USD 0.4. During our stay in 2016, it had dropped to 0.3, mainly due to declining commodity prices. The main purchased commodity, a 1kg bag of rice, was PGK 5 (USD 1.7), and a tin of tuna was PGK 2.5 (USD 0.8).

xiii The General Manager at the time left the company by 2017. The company declined to comment on the spill.

xiv Gravel Pit 1 Local Lands Court Decision 1991.