

# Reconciliation Infrastructures

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In September 2021, the Government of Assam announced what are to be India's longest "wildlife friendly" flyovers (Anon. 2013). Purpose-built to mitigate the adverse effects of traffic on animal movement, these elevated structures will cost a staggering US\$353.5 million. The contracts for the flyovers, designed to aid animal mobility, went to two private national engineering companies (Chakravartty 2021).

The flyovers, to be sited at nine places where a major National Highway cuts across wildlife corridors surrounding Kaziranga National Park (Government of Assam 2019), are the outcome of longstanding friction between local communities on one hand, and the state's Forest Department and conservation NGOs on the other. In 2008, a proposal to widen the existing two-lane highway to a four-lane one was cancelled after the Forest Department and various NGOs raised concerns regarding the impact that such infrastructure would have on animal movement (Anon. 2008). Indian highway authorities decided to create a bypass instead, much to the chagrin of local communities. In 2013, a public interest litigation in India's Supreme Court once again brought the highway to the state's attention. It pointed out that increasing vehicle traffic was contributing to high rates of wildlife mortality along the designated corridors, while the government had failed to act. Responding to Court directives to intervene, the Assam Government proposed making the existing highway wildlife friendly, a solution that sections of the local community were amenable to, for they viewed the highway as a "life line," creating entrepreneurial opportunities for youth and bringing "the light of civilization to the entire area" (Anon. 2009: 1).



Wildlife-friendly flyovers and underpasses, like those proposed for Kaziranga, are examples of what I call reconciliation infrastructures: structures of circulation and contact designed to accommodate, foster and modulate other-than-human life. An active field of “reconciliation ecology” (Rosenzweig 2003a) underpins their development. As a subfield of conservation biology, reconciliation ecology aims to redesign “anthropogenic habitats so that their use is compatible with use by a broad array of other species” (Rosenzweig 2003b: 194). Promoted as a means of practising conservation in the “midst of human enterprise” (Rosenzweig 2003b), reconciliation ecology emerged in the early 2000s as a vital way to resolve the longstanding tension between conservation and development. Reconciliation infrastructures have sprung up the world over (Holder 2018; White 2020), particularly in light of the pace at which road expansion is taking place across the planet (Laurance and Arrea 2017). Many conservation organizations are working actively to mainstream such designs, so that proposed transnational highways and railway lines enable animal mobility rather than thwart it (Ament et al. 2021). Such developments are beginning to herald a new paradigm of conservation centred on connectivity – a paradigm increasingly scripted in the idiom of infrastructure. Not only does it render development compatible with, rather than antithetical to, conservation, it also allows forms of capitalist expansion to continue unabated.

A crucial dimension of the design of such conduits is to generate affordances (Gibson 1986) that might be realized by other-than-humans. In other words, the architecture of flyovers and underpasses must work with how animals sense and move through a landscape, and it must strive to create situations where a creature might incorporate built elements into their own lifeworlds through habituation and use. Here, infrastructural design and assembly is not hylomorphic – the stamping of form upon inert matter – but ethico-aesthetic (Guattari 1995), where ethos implies habit and aesthesis the capacity to act and be affected (Metzger 2016: 583). Ecologists, architects and engineers coalesce

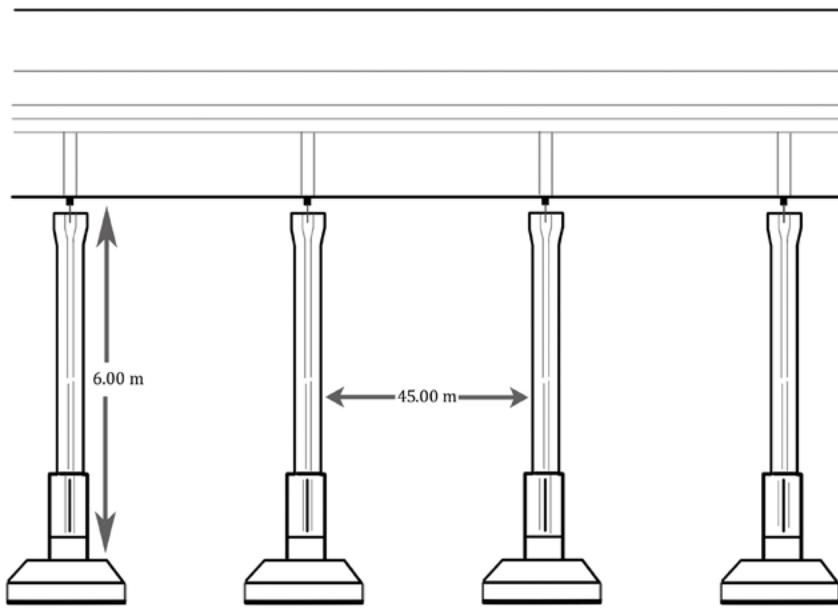
*Wildlife corridor outside Kaziranga National Park. A proposed site for the sanctioned flyovers.*  
Photo: Maan Barua, 2021.

to design structures that mimic animals' ambient environments. These structures aim to manipulate affects in order to reduce "tunnel hesitation" and to foster crossings (Andrews et al. 2015: 188).

The proposed design of the flyovers and underpasses in Kaziranga reflects some of these developments. Each flyover will be six metres high and will have a huge 45m span between pillars, as elephant movement is what these structures aim to accommodate. The height and span, exceeding what is typical for flyovers in India, have been designed to accommodate what is not only one of the world's largest land-dwelling mammals but also one that has a herd sociality and which moves in groups. The structures will also have side walls so that the glare of headlights is reduced, and trees will be planted along the flyovers' edge in order to create a sound barrier. "Elephants rely heavily on auditory signals," remarked a wildlife biologist working in the area who I interviewed in 2021, indicating why such a design is necessary. The broad-span arrangement also aims to accommodate the mobility of deer, which suffer high rates of mortality in the area due to speeding traffic. "Animals like deer tend to avoid narrow passages," the biologist explained, "as there are dangers from predators."

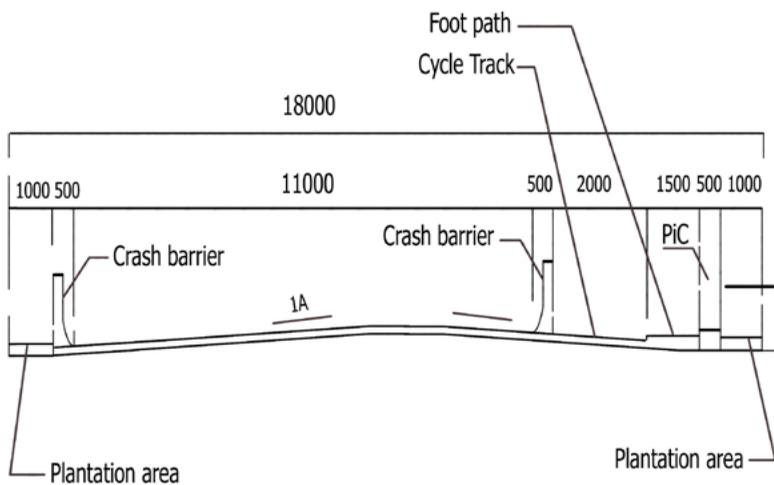
Targeting the phenomenal world of animals, flyovers seek to inculcate particular movements and behaviours. Design, however, is not fool-proof. Reconciliation infrastructures often fail to channel animal movement along the particular pathways that ecologists, engineers and the state desire. As farmers in Kaziranga point out, the proposed flyovers are in spaces designated as wildlife corridors, but animal movement itself is far more unruly. "Are your elephants so polite that they will use no other path besides the corridor?" a farmer once asked a conservation NGO during a protest against wildlife conservation (Barua 2014: 567). Many farmers believe that the designation and consolidation of corridors, harking back to the 1980s, had spill-over effects: crop-raiding by elephants and other large herbivores in their fields increased as a result. The techno-managerial nature of such projects thus not only glosses over the recalcitrance of nature, but bypasses vernacular understandings of animal mobility as well.

The flyovers' design is also a point of contention among wildlife biologists. Some argue that tunnels for traffic might be a better option as they would reduce sound and provide a large land surface for animals to move across (Zaman 2021). Furthermore, the uneven effects of flyovers extend to the human realm: some are concerned that vehicular traffic will flow uninterrupted without stopping at roadside shops and *dhabas* from which people earn livelihoods. In other words, settlements would be bypassed, causing them to stagnate. Such apprehensions about stagnation run deep. During colonial times, infrastructural development in Assam primarily happened along tea plantations' transport corridors and did little for the uplift of the wider region (Guha 1977). The aggravation of a colonial pattern of poor economic development and scant industrial production in postcolonial Assam led to a reactionary backlash against the Indian state, resulting in years of secessionist militancy and political turmoil (Gohain 1996). Moreover, the social impacts of the new Kaziranga infrastructures will only be discernible later. While the flyovers will have a cycle track, enabling farmers and workers to commute, many women in the area, who do not know how to cycle and who are dependent on local rickshaws to commute, are likely to suffer. It is thus likely that unequal mobilities will emerge along gendered fault lines.



TYPICAL SPAN ARRANGEMENT

*Proposed design of flyovers for wildlife corridors in Kaziranga. The span arrangement accommodates large herbivores such as elephants and rhinos. Redrawn from designs presented during public consultations, September 2021.*



TYPICAL CROSS SECTION OF FLYOVER

*Cross-section of a flyover with a cycle path and "plantation area" to reduce the incursion of sound and light. Redrawn from designs presented during public consultations, September 2021.*

Bridges, flyovers and underpasses, however, are more than simply designs for restoring and promoting animal mobility. They are a biopolitical strategy that induces a shift from the model of conservation operating through “confinements” or the preservation of wildlife populations in enclosed areas, to one modulating mobilities and targeting flows (Deleuze 1995: 178), operating on both wildlife and people. Reconciliation infrastructures herald what Foucault termed “environmentality”: the operation of power through “a canalization” of circulations, the “coding” of reciprocal relations and the distribution of bodies in space (Foucault 2000: 361). In many postcolonial landscapes, connectivity conservation is becoming a mode of territorial expansion and control. Following a High

Court verdict, there have been evictions from land designated as corridors in Kaziranga (Saikia 2016). Inviolable corridors and passages for wildlife, aided by reconciliation infrastructures, also create uneven hierarchies of mobility across species divides: people are fixed in place while wildlife is free to roam (Bluwstein 2018).

Reconciliation infrastructures draw attention to a wider ontology of infrastructure, where infrastructures are not only apparatuses subtending human life but furnish the grounds for the reproduction of other-than-human life as well (Barua 2021). Posited as a win-win strategy (cf. Rosenzweig 2003a), reconciliation infrastructures embody normative aspirations to a form of ecological peace, a settled, frictionless order. Yet, as techno-managerial devices, they often fail to address historical conditions of dispossession and violence (Mookherjee 2022). Furthermore, carboniferous capitalism goes unaddressed. Flyovers encourage the opening up of frontiers, enabling the relentless expansion of capital to continue “without disruption” (White 2020).

As phenomena that are increasingly being mainstreamed, reconciliation infrastructures deserve greater critical and ethnographic enquiry. Once deemed antithetical to conservation, particularly to Edenic visions of nature, infrastructures are now beginning to script conservation practice (Sutter 2005). These are the new sites where the old frictions between conservation and postcolonial development are beginning to play out. While poised to foster conditions for the flourishing of other-than-human life, reconciliation infrastructures also risk becoming an engineering fix: a techno-managerial intervention for a problem created by infrastructures, colonial violence and dispossession in the first place.

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