

Elephants as Prospecting Infrastructure

Jacob Shell

Introduction

Transportation by way of trained Asian elephants lingers on in the Hukawng Valley region of Kachin State, northern Myanmar (Burma), for three interrelated reasons. One, monsoon-season flooding and mudflows here are especially severe, rendering all but the best engineered roads intermittently unusable by motor vehicles between early July and October. Asian elephants, in contrast to wheeled vehicles, are mobile across the muddy monsoon landscape, offering *vadological mobility* (Shell 2021): transport via fording and mud-climbing skills across geomorphologically transient features.

Two, the ongoing conflict between the Kachin Independence Army (KIA) and the Burmese Myanmar Armed Forces (Tatmadaw) has given the former an incentive to maintain an off-road, clandestine mobility system. The KIA operates elephant transport convoys worked by some fifty to sixty elephants; these convoys move cargo via pathways hidden by the forest canopy and which are difficult to follow for those who lack elephants of their own.¹ This demand for *evasive* or *subversive mobility* (Shell 2015) thus contributes an added incentive for local civilian Kachin and Hkamti elephant riders to continue their practice of capturing and training forest elephants to become working animals.

¹ For reasons why the Tatmadaw does not have its own elephant convoys, see Shell 2019.



Finally, elephants are valuable for prospecting, retrieving and hauling the forest-drawn natural resources with which the Kachin forest is rich: timber, bamboo and mined gems. Because these natural resources are somewhat unpredictable in where they appear, the usual advantages of spatially fixed road networks are negated in favor of transport that is flexible across the sylvan expanse. Off-road prospecting, to identify remote seams of newly discovered gemstones, is at a spatial advantage relative to prospecting that is road-bound. Trained transport elephants thus provide a means of *prospecting mobility*. Like Afghan camels used in the prospecting of the Australian Outback during the nineteenth and early twentieth centuries (Shell 2015), the elephant-human working relationship in Kachin State realizes a kind of prospecting infrastructure.

In this article, I focus on this third orientation of elephant-reliant mobility, in particular with regard to amber prospecting and extraction. However, the figure of the sylvan prospector on elephant-back is always potentially other kinds of figures as well: the rebel, a porter holding together a distinct social geography, a rescuer of people stranded during monsoon flooding, and so forth.

Elephants assist in transportation of people and cargo to Internally Displaced Persons Camps in Tanai and Myitkyina.
Photo: Jerome Palawng
Awng Lat, 2018.

Mesozoic Amber and Environmental Footprints

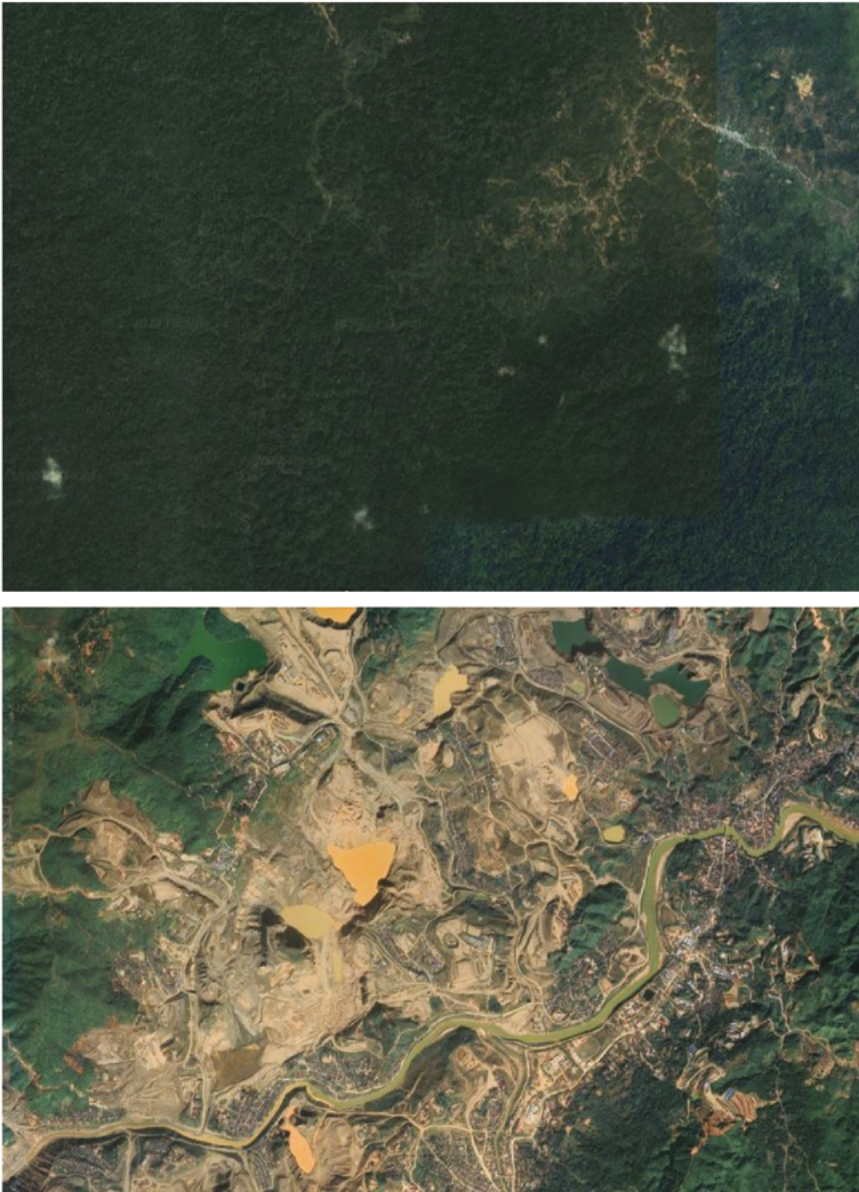
The northern Burmese deposits are the world's largest known amber concentration dating from the Mesozoic Era and containing biota (insects, dinosaur claws, feathers, bits of plant matter) from that archaic time (Grimaldi et al. 2002). The amber does not contain preserved DNA, but it is nonetheless of great importance from the vantage point of evolutionary biologists and paleontologists. This aspect sets it apart from the other two gemstone/precious metal resources of the region: jade and gold. While these are judged narrowly for their economic value, Hukawng amber, by contrast, has high epistemic value for international scientists, potentially giving Kachin State and involved economic parties wider bargaining power.

Human rights groups disagree as to the desirability of Burmese amber mining, arguing that the profits flow into the arms trade and civil warfare (Nitta 2020; Poinar and Ellenberger 2020). However, from a strictly environmental perspective, amber mining in the region has been far less ecologically destructive than jade mining or gold panning, both of whose profits also flow through the war activities. Jade deposits are spread fairly homogeneously across some twelve square miles at the headwaters of Uyu River, an area known as Hpakant. This entire region has been heavily deforested, and topographically turned inside out, via the process of industrial-scale mining with particularly bleak work conditions. Gold panning, which occurs on many sylvan river systems throughout Kachin State, tends to be environmentally destructive as well, because of the constant dredging activity (Papworth et al. 2017).

Amber deposits tend to be smaller in geographic scale. Virtually all of the Kachin amber currently comes from a single mining zone near Noiye Bum. If the environmental destruction wrought by the Hpakant jade mining is visible from space, the area of Noiye Bum is still, at least from above, a well-canopied jungle. In part, this contrast between the vastness of the Hpakant jade operations and the relatively light environmental footprint of the Noiye Bum amber mining reflects a difference in scale of economic extraction. China is the main jade customer in the world and the black-market flow of this gem to China has been estimated to be equivalent to nearly half of Myanmar's official GDP (Global Witness 2015). While the full economic scale of amber extraction remains obscure, it does not even begin to approach that of the jade. Nevertheless, even if demand for Kachin amber were to become more pronounced, it is doubtful that the intensity of environmental destruction would ever resemble what has happened at Hpakant. The spatial layout of jadeite deposits is limited by the extent of local geological subduction between continental plates, and the presence of the jadeite is also relatively dense. Amber, on the other hand, originates from primordial forest expanses. Due to the nature of this genesis, further amber deposits beyond Noiye Bum are likely to be both more regionally diffuse and less homogeneous in their expanse.

Elephants, Gems and Roads

Elephant-reliant transportation is relevant to both jade mining and amber extraction. The connection of elephant-reliant transportation to the jade industry centers upon the interrelationship of clandestine and flood-season mobilities. Various Kachin elites



The Noije Bum amber mines (above) and the Hpakant jade mines (below). Both satellite images are at the same scale: roughly 5 miles across.

Source: Google Satellite Imagery, 2021.

are in control of some of the Hpakant jade mines. However, the formal road network between Hpakant and the Chinese border, where nearly all jade flows for sale, is controlled by the Myanmar Armed Forces, whom Kachin jade-traffickers often seek to avoid. Throughout the 2010s, Kachin elephants marched and swam two off-road routes from the jade-mining zone to the KIA's administrative capital of Laiza, which sits on the border with the Chinese province of Yunnan. This is not to say that most jade was getting to China on elephant-back. Rather, the animals assisted in strategic short-haul operations to take jade off-road, from one roadside depot to another, responding to reconfigurations in the surveillance geography along the road network as the central military's deployment of personnel and equipment ebbed and flowed (Shell 2019).

Monsoon season also reconfigures the local geography of usable roads. While monsoon-proofing a road is feasible in theory by elevating it, blocking mudflows or building concrete runoff channels, no roads in the Hukawng Valley have received this level of investment. The most important road across the valley is the former Ledo Road, built in the 1940s. While this road received some engineering improvements during a recent period of economic reforms, it remains extremely closure-prone during monsoon flooding. Hence, one of the ways that elephant owners and riders near Hpakant have of making seasonal cash is to ride their elephants up and down the branch road from the jade mines to the Ledo Road, looking for motor vehicles that have become trapped in the mud, and offering to dislodge them.



In amber mining, transport elephants loom large again as they carry provisions for the miners in Noiye Bum. Roads between this mining area and the main road system are little more than muddy forest tracks, so elephants are crucial also for getting the extracted gems to roadside depots for eventual motorized transport to the big amber market in Myitkyina – the capital of Kachin State. It is here, too, that the elephants shine as prospective infrastructure: by providing access to otherwise prohibitive terrain, they facilitate exploration of new seams elsewhere in the region (Xing et al. 2020).

Dislodging an automobile from the mud, along the road to Hpakant.

Photo: Hkun Lat, 2011.

The continued use of trained elephants in prospecting amber seams is possible thanks to the evolutionary adaptation of these animals to exist in a forest environment. What is also significant, from an ecological point of view, is that elephant-based exploration allows extraction patterns which leave the forest canopy largely intact. This relative

maintenance of forest integrity brings numerous benefits to the environment and to the elephants themselves: the transport elephants in the forest can live longer lives and produce more offspring, compared to those in a walled compound. This is true of both wild and trained elephants, if the latter are released into the forest on a nightly basis to eat, sleep and find mates, as is conventional practice throughout Myanmar.

Conclusion

Political peace or some kind of enforced stalemate will eventually come to Myanmar, to Kachin State and to Hukawng Valley, and when it does, certain economic and environmental questions will take on new importance. Many of Kachin State's roads need to be flood-proofed – but which ones and going where? Kachin State has one of mainland Asia's largest zones of contiguous tropical-subtropical forest – what should happen with this extraordinary environmental resource? The region also has one the last remaining concentrations of transport elephants who live between a state of pure captivity and wildness. What role will they play in a future Kachin State with monsoon-proofed roads and reduced need for secretive transport operations?

The prospecting of Mesozoic amber may contain particular promise for the future of the Hukawng district, and the elephant as means-of-prospecting would prove important for such activity. As a means of transportation, the Asian elephant only becomes obsolete once an array of geospatial relationships and conditions has disappeared. If there are no forest camps reachable only by muddy trail, no clandestine organizations with evasive or subversive mobility needs, and no prospecting frontiers with the power to intrigue, then and only then does elephant-reliant transport become a truly archaic techno-mobility form, outclassed by motorized equipment.

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Cite as:

Shell, Jacob. 2022. "Elephants as Prospecting Infrastructure." *Roadsides* 8: 72-78.
<https://doi.org/10.26034/roadsides-202200811>



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ISSN 2624-9081

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