



Chapter 2

POWERS OF TRUNK AND MIND

LET US RETURN TO THE SCENE OF THAT HUGE ELEPHANT-catching stockade of the Ayutthaya king in the seventeenth century. The stockade was the size of a geoglyph, and within its wide opening, which was many miles across, stood a particularly steep mountain. This mountain had no stockade wall. Nor was it secured by any of the royal elephant hunters carrying torches and drums. The Jesuit priest visiting this royal Siamese kheddah asked his hosts why the escape path had been left exposed. Because, he was told, the mountain's slopes were so steep that they were insurmountable even for the elephants. The mountain was a natural barrier aiding the king's titanic stockade.

Soon the mass capture began. The long front line proceeded toward the kheddah's narrowest point, carrying torches and drums and lighting firecrackers. But as many wild elephants in the forest retreated farther into the trap, the Jesuit priest kept his eyes on the steep mountain. He made note of what he saw:

Ten or twelve of them escaped that way, and for that purpose made use of a very surprising expedient; fastening themselves by their trunks to one of the trees that were upon the side of that very steep mountain, they made a skip to the root of the

next, and in the same manner clambered from tree to tree with incredible efforts, until they got to the top of the mountain, from whence they saved themselves in the woods.¹

Some twenty elephant generations later, in the teak-logging area of central Burma, I witnessed something that reminded me of the Jesuit's extraordinary account. An elephant had been asked by her mahout to retrieve a log at the pinnacle of a steep hill. The log was an awkwardly shaped piece. Instead of going to the timber company's main depot, it would likely become construction material for the mahout's own family hut a mile down the stream from this prominence.

At the top of the hill, the mahout strapped a chain to the end of the log. He fastened the other end of the chain to an X-shaped wooden apparatus resting on two cushions along the sides of the elephant's spine. The duo dragged the slightly contorted piece of red timber along the crest of the hill, until they reached a spot where the bluff below them had no trees in the way. The mahout climbed down from the elephant and unfastened the chain. The elephant, without being prompted, kicked the log into place, so that its narrow point now faced the bluff. "*Tih!*" cried the mahout, and with a great heave of her forehead, the young elephant pushed the log over the precipice. Down it went! But the slope was so choked with vines that the log became caught about halfway down.

Having watched this process from the top of the bluff, then from the base having scurried down, I thought the log was irretrievable. It dangled in the middle of the cliff, ensnared by roots and vines. But the elephant proceeded to walk, headfirst, down a nearly vertical decline. She kept her hind legs at a crawl and her forelegs fully and muscularly extended at an angle against the bluff face. While the rear of her body slithered along very close to the bluff's surface, her head was hoisted away from it and leaned at a purposeful

angle to create counterweight. As they proceeded, the mahout on her neck leaned farther back to add ballast. But it was really the elephant's trunk that permitted this extraordinary assemblage to make progress down the cliff.

An elephant's trunk, or proboscis, is a sublimely powerful, precise, and versatile instrument. It contains nearly 150,000 muscle subunits, or fascicles, which are linked by several long proboscidean nerves that swoop down from the elephant's dome and face, making their way in sensitive twists and turns to ultimately bifurcate across a series of tactile bristles, or feelers, at the trunk's tip.² These bristles are covered in dermal flaps that can perform surgically sensitive actions like cracking open a nut or retrieving a bill from a wallet. At the same time, the trunk can lift objects weighing many hundreds of pounds or break a person's spine in a few seconds. For millions of years, the trunk was the *Elephantidae* family's evolutionary analog, or retort, to *Hominidae*'s digits. An elephant "gathers in" much of its perceptual world, and makes sense of that world's possibilities, through the interface of the trunk. This elephant before me, along the cliff of the central Burmese teak hill, was using her trunk as a buttress, brake, steering mechanism, and feeler all at once.

At last the elephant-mahout pair came upon the log, and the elephant used an impeccably timed step forward with her left foreleg to give the upper end of it a swift kick. The log shot forward and crashed down the bluff, landing on the dirt path at the bottom with a tidy thud. Elephant and mahout followed downward, her trunk at times seeming to support their entire combined weight, like a metal spring. At last they reached the bottom. I was stunned by the display, but they were unfazed, apparently having done this many times before.

The creative dexterity of Burma and northeastern India's work elephants in facilitating movement across difficult forest terrain or

forest channels comes up again and again in their recent history. Miloswar, the elderly Moran fandi who told the story of Sokona's "possession" by a spirit-mahout, told me another story in which he and an assistant were crossing a swift mountain stream during monsoon, atop a female elephant. With them was a young calf, her offspring. The two had been caught in tandem during mela shekar, a difficult feat.

Coming to the rushing channel, the mother hoisted the baby upward with her trunk and rested him so that his legpits were carried by her lower jaw and two small tusks. The female, now carrying a smaller elephant with her trunk and two humans on her back, proceeded into the river. The current was very rough, and the fandi assistant on the elephant's back lost his footing and fell into the water. He was a poor swimmer, and Miloswar thought he would likely drown. But the mother elephant, despite being freshly caught and still "raw," grabbed the assistant with her trunk, while keeping the baby pressed against her mouth. She proceeded to complete the ford with the assistant clinging to her trunk, the calf pressed firmly between her tusks and upper jaw, and Miloswar watching from above, amazed. She was only half trained at this time; the old fandi said she was just naturally compassionate. Over the ages, such dexterity and empathy have allowed elephant men like Miloswar to build and maintain relationships with the elephants as work partners in the forest.³

I saw another display of these work elephants' incredible dexterity along a muddy trail. I was in the Manabum hill range in Arunachal Pradesh, in a logging area the local mahouts call Mithong. Here several powerful local Hkamti and Singpho tribal families held great forest tracts.⁴ To get to the area, I had ridden in a jeep for an hour past the town of Chowkham, until the road became a dirt track. This track had ended at a sawmill in the forest, and the mill workers were mostly young Adivasi men. The Adivasis had come to

this area from central India during the nineteenth century, to work in northeastern India's expanding tea plantations. Harvesting tea was still their main type of work, but some were out here in the forest frontier for the superior wages offered in the timber industry.

From the sawmill, I climbed into a flatbed truck with massive thick wheels. The truck belched diesel smoke and proceeded along a dry riverbed, the "road" nothing but terrible bumpy boulders. An elephant had set out from the mill with us, a tall mokona male (that is, a male lacking the tusker gene). Like many mokonas, this male had an especially high forehead, which sloped upward and even somewhat forward. He was ridden by a Nepali, another ethnic group associated with elephant work in this area. The mokona and Nepali were making better time along the rocky dry riverbed than the truck. As the motor vehicle bounced and jolted, I watched the elephant disappear up the path in front of us and regretted not having asked to go that way. Eventually the truck reached a muddy path, which split off from the dry riverbed and snaked its way into the forest. Here the truck stopped. I walked with a guide and several lumbermen up this path, stopping on occasion to poke the mud off the soles of my boots. The lumbermen were Hkamti, and their machete scabbards were adorned in elegant carvings. After some twenty minutes, we came upon the front end of another truck, smaller and painted green and yellow. It was tipped at a steep angle: half the vehicle had sunk into the thick black mire that was everywhere along this trail. Beyond the awkward and precarious truck was a massive log, and an elephant.

It wasn't the mokona elephant from before—that one had proceeded past this site, to a loggers' camp up the path. This elephant, though also a huge male, was squat and broad. He was a natural tusker, rather than a mokona, but his tusks had been trimmed so that they were barely noticeable. He belonged to the main Hkamti logger who'd brought me here, a long-haired young man named

Tenam. "This is Air Singh," Tenam declared with some pride. "You'll watch what he can do." The mahout on Air Singh was Gam, a teenage Singpho-Kachin. With Gam calling a few commands, Air Singh pushed the truck about ten feet with his huge forehead, so the flatbed now faced the log. The truck's engine was plainly useless for this task—if anything, spinning the axles with the diesel power would just cause the wheels to sink further. At this point I still didn't see how the elephant was going to get the huge log, from a hollow tree, onto the truck. The flatbed was four or five feet higher than the log, which was fifteen feet long and nearly four feet in diameter and must have weighed well over a thousand pounds.

Air Singh set to work. His first step was to grab a different log with his trunk—a much narrower and lighter log—and carefully lean it against the edge of the flatbed. He did the same with another narrow log, placing it nine or ten feet farther down the long side of the truck's rear platform. It was a makeshift ramp. Air Singh and Gam studied the two ramp beams' placement for a moment, and after several seconds, Gam murmured some command term I could not make out. Air Singh adjusted one of the ramp beams. The pair seemed satisfied and turned their attention to the much larger and more valuable piece of timber.

Watching this spectacle, I still didn't understand how they were going to push the huge log up the incline. It seemed too big ever to move without a huge bulldozer or a powerful crane. Moreover, on the opposite side of the log was nothing but thick forest; Air Singh had nowhere to stand to get a head start.

Nevertheless, the elephant walked delicately into the narrow opening between the hollow log and the forest edge. As I expected, he couldn't face the log head on, but then, he didn't have to. He simply turned and leaned his head into it, gradually creating space for himself, so that eventually he could indeed face the log with his full force. By this point, the constant pivoting had jerked the two

makeshift ramp beams out of place. One in particular was now off at a worrisome angle. Several of the lumbermen jumped onto the flatbed and attempted to straighten the beam but it proved too heavy. Gam shouted at them to get out of the way.

With a few quick, skilled motions, Air Singh hoisted the huge hollow log a few inches upward with his trunk and tapped the off-kilter beam back into place with his foot. It was a bit like watching a waiter wipe down a table with one hand while balancing a tray of champagne glasses with the other. The elephant was satisfied that the ramp was ready now. So was Gam. "Agat!" Go for it! The elephant began pushing into the log with his forehead, and Gam, to keep his own balance, leaned back so far that he was nearly lying on the animal's back.

"My god," I said, as I know from the sound recording I was making.

"Jesus." My guide, Kagung, was also taken aback. He was not from an elephant area and had never seen anything quite like this.

Air Singh rolled the huge wooden mass high, high up the ramp. Near the very top, he let out an enormous breathy *whoooooooshh!* from his trunk, from the sheer exertion. And then—*boom!*—the great log finally landed onto the truck bed, the suspension coils creaking with surprise. Air Singh calmly removed the two ramp beams out of the way. Once again he and Gam studied the position of the log. Evidently it wasn't perfectly centered. The elephant gave the log one last push, this time with his trunk. Then several lumbermen strapped the log down with chains, and a driver started the ignition. Air Singh, still not finished, went behind the truck to push it out of the sinkhole. Dislodged from the mire, it gained traction and disappeared down the muddy trail with its log, leaving a large wet pit where it had been stuck. Air Singh cooled himself down by looping his trunk into his mouth and sucking on the trunk cavity's moisture—a common elephant trick.⁵

Air Singh was one of the Mithong logging area's finest work elephants, a favorite of Tenam's. Back at the sawmill, over a lunch of stewed chicken with potatoes, Tenam told me more about Air Singh's life. He was named Air Singh, which means something like "Lord of the Air," because he was born at the Tezu airfield on the other side of the Lohit Valley—a military landing strip that had been cleared by local work elephants during the 1962 border war between India and China. Air Singh's mother was called Pagli, an Indian term meaning something like "the crazy one." Pagli had been a wild elephant in the forests beyond the Tezu airfield. But unlike most wild elephants, she liked to come very close to the mahouts' camp, to help herself to the rice treats left out for the domestic elephants. She would show up during both day and night, spurning her own wild herd, and the mahouts grew accustomed to her. Eventually she mated with a domestic male and gave birth to Air Singh. When the airfield work was completed, Pagli followed the Hkamti mahouts back to their usual woodlands south of the Lohit River, by the Manabum hill range. She couldn't be trained for work tasks, but she also didn't want to follow the wild herd. She was a *pagli*. The mahouts liked her, bringing her treats through her old age. She'd paid them back by producing one of the logging area's best elephants, after all.⁶

More often than not, the best logging elephants do not have "pagli" mothers. Rather, they gain their skills during childhood by watching their domesticated mothers at work. Farther up the muddy trail from the spot where Air Singh loaded the massive hollow log lay the forest mahouts' main camp, and here a mother elephant passed by on her way to some task deeper in the hills. With her was her mahout and also her calf. This is also common at the government-owned logging areas in Burma. The mother does relatively light tasks—hauling smaller logs, carrying supplies, and so forth—and takes frequent breaks to tend to her young. The calf

observes his or her mother doing the work tasks and responding to the human command terms, and this supplements the separate training that the calf receives from human masters.

Nonetheless, mothers like Pagli, who show little interest in doing the work tasks, are important for understanding how these elephant-centered forest practices emerged in the first place. Pagli was abnormally friendly toward humans, as compared with the rest of her wild herd. Perhaps unsurprisingly, this unorthodox attitude on her part went hand in hand with a certain antiauthoritarian streak: she spurned the authority not only of her own wild herd but also of the mahouts who wished to train her for work. Pagli elephants are likely an important source of human-friendly traits for the population of work elephants, though they don't always produce offspring that make fine workers like Air Singh. Tenam pointed out that Air Singh has a brother who ran away from the camp years ago and who becomes belligerent whenever he sees humans approach.⁷

The dexterity of the work elephants in moving massive logs also finds expression in the water: in particular, in the clearing of river logjams. This dangerous activity has been an especially important component of the government-managed Burmese teak-logging industry, where, in some areas (but fewer and fewer after the 1990s), elephants drag logs not only to trucks but also to rivers. The logs are then floated downstream to waterside depots or mills. Since teak is naturally water resistant, being immersed does not damage the wood's quality. This method of log transport remains relatively common in Burma's upper Chindwin Valley. The flaw in the method is that oftentimes the logs get jammed at sharp turns of the river. During the monsoon season, debris, such as fallen branches with leaves, plug the spaces between the jammed logs, and the jam becomes a huge dam. This not only entraps hundreds of valuable teak logs, it also causes dangerous flooding upstream and eventu-

ally downstream too. The logjams need to be broken up to prevent danger. This job goes to the most capable elephants.⁸

U Toke Gale, a Burmese elephant official, saw an elephant perform this dangerous, dramatic work in 1939. Gale was in a northern teak forest that boasted two especially memorable elephants, both tuskers. Swai-gyo, so called because he'd broken his left tusk in an accident, was unbeatable when it came to "handling teak in difficult terrain, like those stranded high and dry on the edge of rocky cliffs, or wedged in between two large boulders." And Pegu, named for the city near Burma's coast, was a maestro at breaking up logjams in a jungle stream. Gale remembered how both displayed so much efficiency at his particular branch of work that a local mahout coined a couplet:

*On land, it is Swai-gyo,
In water, always Pe-goo.*

One day during monsoon, the logging mahouts came upon a narrow bend in the river and found there a confused tangle of logs and debris spanning the eighty-foot breadth of the stream. The jam contained hundreds of tons of floating teak. No mahout in his right mind would go into the jam, Gale noted, due "to the danger of being swept away and crushed to death between the logs" at the moment of the dam's release.

Pegu was fetched, relieved of his harness, and sent into the water. "Pegu swam cautiously towards the center of the logjam—the muddy waters surging and swirling furiously around him, sometimes submerging him altogether, leaving only his trunk above the water," Gale recalled. The tuskier placed his head against a large log, but the mahout back on shore was not satisfied that it was the "key" log that would break the jam, and he yelled at Pegu to keep looking. Finally the elephant placed his trunk on a log that the

mahout thought looked promising. "*Hti like, maung gyi! Hti like!*" shouted the elephant man above the noise of the current. "Push it over, big brother! Push it over!" The words reached the elephant's great ears "above the din of incessant rain and the roar and rumble of a river in spate. Pegu heaved, loosened, pulled, lifted the offending log between his tusks and the trunk."

When the jam broke, the pile of timber that had stood still a moment earlier "now trembled, creaked, and then moved down the stream with a tremendous force." Pegu, sensing the danger and knowing he hadn't a moment to lose, trumpeted and turned around sharply, swimming athletically toward the bank. The procession of logs shooting out from the growing breakage in the jam was catching up with him, but he brushed them aside with his legs and trunk as best he could. The bank was steep, and Pegu couldn't gain a foothold to hoist himself out. So he went on swimming, hugging the bank, as logs floated past him and hit him on the rump. Eventually he found a small upward protrusion of the river bottom, a boulder or submerged shoal, barely large enough to accommodate his four feet. He was trapped. Etched on his face was "fear, desperation, anger, as log after log raced towards him." He continued to push them away with his trunk, forelegs, or tusks. Eventually he climbed the steep muddy embankment, to escape the river, the same way the wild elephants witnessed by the Jesuit priest in the seventeenth century ascended the steep mountain slope to escape the king's khedah: he got out "using his trunk like a man his hands."

Now that Pegu was on dry land, his proud head hung low with exhaustion. He was bruised and bloodied on his knees and his trunk. The mahout waited for many minutes for Pegu to grow tranquil, knowing that the elephant, still furious and excited from the river, might charge anyone who dared approach. Eventually he softly encouraged Pegu to come with him, promising boiled paddy and salt back at the camp.'

The clearing of logjams obviously places elephants in tremendous danger. And for anyone concerned for the individual elephant's immediate welfare, it's hard to defend the practice. Perhaps the only positive thing one can say is that it keeps the elephants at work sites in the forest rather than in zoos.

In the tribal areas of the Trans-Patkai region, most logging occurs during the dry season, when river levels are low, so mahouts rarely ask their elephants to clear logjams. During the wet season, the elephants are needed to transport goods to places that have become isolated by the monsoon inundation of roads. In Burma's government-run logging industry, by contrast, most of the heavy-duty logging occurs during the wettest months, when the animals are most in their element and can work the hardest. The dry months, officially, are a "rest" period for the elephants, though in reality during this time the mahouts have the elephants retrieve forest materials (mostly bamboo and ironwood) for the use of the mahouts' own families. The contrast reveals the different priorities in the two situations. Whereas the Trans-Patkai mahouts would rather use the elephants' best work months for transporting passengers and everyday goods, the Burmese government's timber enterprise prefers to use that period for dragging its major commodity, teak.

THE SKILLS DISPLAYED by mighty logjam-clearing elephants like Pegu, or cliff-descending elephants like the one I saw in central Burma, or timber-handling elephants like Air Singh, are in large part the same as the skills of river-fording "ferry" elephants like Burmay-Moti, the elephant we met in the Introduction, who carries passengers and goods across the Sissiri River during monsoon. Pegu's tale gives us a good sense of these elephants' ability to yank, hoist, and sweep aside huge midriver obstacles. Burmay-Moti is

frequently asked to perform comparable but less dangerous maneuvers while fording the Sissiri, where floating logs or tangles of forest debris can impede the crossing.¹⁰

During my travels, Burmay-Moti was the only elephant I saw use her trunk to assist passengers in climbing onto her back. Usually the method of mounting an elephant is an awkward but reliable procedure where the elephant kneels down and the passenger climbs up one of her rear hamstrings onto her back. Sometimes the elephant offers a helpful boost by slowly elevating the hindleg. This posterior route was the one I used to mount elephants in the forest camps of the Trans-Patkai and central Burma. Tourist parks I visited in Thailand and Sumatra offer an easier way: they've built elevated platforms at the level of the standing elephant's back. Mounting these creatures reminded me of stepping off a station platform into a metro train.

But a number of Burmay-Moti's regular passengers across the Sissiri preferred a far more graceful and acrobatic method. I was never able to do it myself, so I had to appreciate it simply as an observer. One afternoon, an ethnic Adi passenger arrived at the Sissiri crossing point by motorbike. The river conditions that day were mild, and the Adi man was able to shout across the river to a friend, who was waiting there at the opposite bank in a pickup truck. The Adi man then turned to Burmay-Moti's mahout, Pradip, who was sitting on the elephant's neck, and they began chatting in Assamese and some Adi. Pradip is not himself an ethnic Adi, but rather an Adivasi. Regardless of this ethnic difference, though, the two men seemed to have a good, friendly rapport. I later learned that Pradip, in addition to being the main mahout in the area, is also the local ringleader for afternoon river fishing, an activity in which many local Adis, Assamese, Nepalis, Adivasis, and Mishmis like to participate.

After Pradip and the Adi man finished talking, the female pachy-

derm lowered her trunk down to the ground and curled the end of it upward. The Adi stepped onto the serpentine appendage. Burmay-Moti folded her big ears inward toward him, and the man grabbed both of her ears with his hands, balancing on the trunk with his feet. At first the display perplexed me, but then Burmay-Moti gently lifted her trunk upwards, maintaining a sensitive curvature to protect the Adi man's footing, while he used her two great ears for balance. Upward he ascended, as if riding an elevator. When he reached the crown of her head, he released her ears and climbed past Pradip to the elephant's back.

The current at the Sissiri River can be powerful, and when it is, Pradip and Burmay-Moti wade across at a forty-five-degree angle against the current. The elephant seems to have greater dexterity and control pushing upstream than she would if she were allowing herself to be swept along with the current. Even at deep spots in the river, where Burmay-Moti must swim with her trunk upturned for air, she paddles at an upstream angle. One evening I was in the village of Dambuk, on the "monsoon island" side of the Sissiri, speaking with Pradip and some of his mahout friends who work the Sissiri crossing. They recalled an incident from a monsoon season some years back, when other mahouts had attempted to ford the river head-on. These other mahouts hailed from a village called Mebu on the busier, "mainland" side of the Sissiri, and they were experienced with using their elephants for logging but not for cross-river transport.

The decision to cross head-on was disastrous—several elephants lost their footing and in effect "capsized." A number of people were killed, and one of the elephants disappeared completely, swept away in the current. Pradip and an older Assamese mahout named Sikya recalled that, upon hearing of this disaster, they fetched their own elephants and headed to the river to help. Far downstream from the crossing point, at a rocky bend in the river, they were able to locate the lost Mebu elephant. Her foot had become trapped in the rocks.

Burmay-Moti's mother, Sesta-Moti, was sent into service. She used her body as a natural breakwater to relieve the hapless Mebu elephant, then gave a firm shove with her head to dislodge her from the rocks. The two elephants used their trunks to climb out of the water together.

Burmay-Moti and Sesta-Moti (which translate to "Sister Diamond" and "Mother Diamond" respectively) seem to be Dambuk's two most skilled fording elephants, as of the 2010s. Until very recently a third elephant, an extremely skilled male, could even give rides across the Dibang River, a much larger watercourse on Dambuk's east side. Unfortunately, this male was killed by a hunter some years ago who mistook him for a wild elephant.¹¹

The largest rescue operation Burmay-Moti and Sesta-Moti were involved in occurred during the 2000s, when some two dozen local river fishermen became trapped on a midriver island during a monsoon storm. The water was rising rapidly and would soon overflow the island. Sister and Mother Diamond and their neck-mounted pilots carried all the humans to safety in a single crossing—meaning each elephant took about eleven or twelve humans on her back at the same time, the most I have ever heard of an elephant carrying. For more routine, lower-urgency crossings, five or six humans (or two tied-up motorcycles) would be considered a "full" load.

Mother and daughter do not see each other very frequently: Burmay is usually brought into the forest ranges south of Dambuk, while Sesta is sent to the north. Nonetheless, when they do see each other for joint operations like the rescues, or when they pass each other in a forest trail, they become excited, trumpet at each other, and touch trunks.¹²

human languages. This in turn enables a trade in elephants among forest peoples, which in turn helps circulate a single elephant through multiple zones of fragmented forest. Such circulation is significant for the elephants' health, reducing the likelihood of inbreeding within isolated forest pockets. On their own, elephants cannot easily walk across corridors of agricultural and urban development, from one forest to the next, seeking new mates—not without provoking conflicts with farmers, townspeople, drivers along highways, and so on. In southern India, wildlife parks contain many thousands of elephants, but the parklands are also highly noncontiguous. Elephant “corridors” between the reserves exist but mostly only in theory.

By contrast, when the mahouts of the Trans-Patkai move their elephants from forest to forest by selling their elephants to each other (or by embarking on long-range transport operations, or by moving forest camps in search of new work), they provide a kind of “bridge” permitting elephant genes to hop across these agricultural and urban barriers. Elephants' ability to learn multiple command systems creates more opportunities for such “bridges,” expanding the number of ethnolinguistic areas a mahout can trade with. On the Indian side of the Trans-Patkai, mahouts' terms are mostly derived from Assamese or Hkamti (the latter being a Tai language, related to Thai and Lao). Kachin mahouts on the Burmese side mainly use terms from their own language. South of here, mahouts in the Burmese government's teak forests use Burmese words. Karen mahouts have their own set of terms as well.¹³

A trade of elephants across the Patkai Mountains, between Burma's Hukawng Valley and India's Lohit and Dihing valleys, was relatively common until just a few decades ago, when border controls tightened.¹⁴ If traded from the Hukawng into India, these elephants would learn new terms with an Assamese linguistic basis. If traded in the other direction, they had to be able to learn new

terms with a Burmese or Kachin linguistic basis. In central Burma, I encountered several elephants who spent the first decades of their working lives in the upper Chindwin Valley, where the command terms had been mostly Hkamti. Later they were moved to the central hills, where the terms became mostly Burmese.¹⁵ Mong Cho, a Hkamti mahout in the southwestern Kachin Hills, explained to me that in his region the Kachin and Hkamti elephant command systems are really quite distinct, but that elephants learn them both with ease and thus can be traded easily between the two communities. He told me of elephants who mastered Kachin-dominated, Hkamti-dominated, and Burmese-dominated command systems simultaneously and were able to switch from one to the other to the next depending on their current mahout.¹⁶

The command systems usually consist of around thirty-five words, though some mahouts said very smart elephants can learn closer to one hundred terms.¹⁷ No mahout I spoke with recalled an elephant ever forgetting a command term learned earlier in life. Typically, it takes the elephants a few months to learn a new command system, as the mahouts introduce a few new words at a time. The terms range in significance from the simple—*go, stop, sit, get up*—to the remarkably complex. One command means “Clear that grass out of our way with your foot.” (The Hkamti mahouts would say, “*Thal dob! Dob, dob . . .*”)¹⁸ Another means something like “Stick your leg out so the passengers can climb down your leg.” (Here the Hkamtis would say “*Pish kuhl!*”) Mahouts can gain a more refined set of meanings by combining the terms or by adding tactile signals like tapping the elephant’s forehead or ear. A skilled Hkamti mahout might say “*Pish kuhl!*” and “*Bichu!*” (“Back!”) in succession, then touch the elephant’s right ear: “Right hind leg out! The passengers will climb down that way.”¹⁹

The elephants possess other fascinating cognitive traits. Their mnemonic and geographic cognition of the wider landscape makes

them useful as guides. One mahout recalled an episode where his elephant refused to pass in the shadow of large slope. The duo found another route. Later that day the slope collapsed into a violent landslide.²⁰

Similarly, I heard several stories of elephants carrying mahouts extraordinary distances when the mahouts were unable to direct the way. Miloswar, the old Moran fandi, told me a story about his father, who had been working for many months in a row with his elephant in a logging area in the Tirap forests, about forty miles from his family's home. He hadn't seen his family since the work season had begun. At last the season was over, the final logging day completed. But it was already late in the day; it would have been prudent to spend one more night at the work camp and begin the journey in the morning.

But Miloswar's father was so eager to get home and see his family that he decided he and his elephant would ride in the moonlight. They proceeded across the Dihing Valley. The sun went down. Almost immediately Miloswar's father fell asleep, while sitting on the elephant's neck. When he awoke, it was morning, and he was somehow at his family's farmhouse, along the New Dihing River. After months of working at the logging site in Tirap, the elephant, without having to be told or directed, intuited that Miloswar's father was trying to get home. The elephant already knew the way, forty miles in the darkness.²¹

A similar but tragic story dates from World War II, when many British and American soldiers were encamped in the Tirap Hills, building the first stretch of the Ledo Road that would be used to carry arms to the Chinese. The soldiers needed rations, especially rice. Some local agents hired Hkamti and Singpho-Kachin mahouts near Chowkham to bring the supplies. It was a huge convoy, roughly one hundred elephants with two mahouts each. But there was a terrible miscommunication. The elephant convoy came

to a river, on the other side of which was a large U.S. camp, a construction corps. The convoy crossed the river, and the lead mahout, who never received clear instructions from the go-between agent about how they should announce themselves, thought he should fire a warning shot. The Americans took this as an attack from the Japanese and immediately opened fire. Many of the elephants and mahouts were able to retreat back across the river, or hide behind boulders and trees, but several dozen mahouts and elephants were killed. While the surviving mahouts regrouped and debated what to do, some of the surviving elephants picked up their dead masters and carried them all the way back to the mahouts' families in Chowkham, some sixty miles away.²²

SINCE ONE CANNOT directly interview the elephants, it is impossible to capture their own inner cognitive relationship with the work they do. Yet in many instances, the giants' heightened situational awareness, adaptability to different human milieus, and creative dexterity in a dynamic landscape seem to point to a working consciousness that goes well beyond being merely reactive and "sensorimotor," to being solution-seeking, contemplative, and mediated through abstract thought. Work elephants can be, at times, remarkably innovative. We've already seen how they invent clever ways to extend their nocturnal roaming time, as when Gunjai doubled back on his own trail to delay the morning fetch. The elephant observed by the forest official Bruce in 1903 picked up her dragging chain with her trunk so it would leave no mark. Other elephants stuff their wooden bells full of dead leaves, so they cannot be heard at a distance. The Kachin Independence Army's elephant battalion adopts this technique too, when it requires stealth.²³ Perhaps the elephants learned the trick from the rebels, or vice versa.

In addition, elephants seem to have invented some original

work methods themselves—methods that impressed the attending humans, who had not thought of the solution on their own. An especially compelling case comes to us from James Howard Williams, a British elephant official in Burma during World War II. The British were overseeing the construction of a teak log bridge in the middle of the jungle, and many elephants with their Burmese mahouts were assisting in the construction. At one point an especially large tusker elephant was asked to heave a massive log onto a platform lying atop one of the bridge foundation's pylons. The log first had to be balanced on the animal's tusks, a job the mahout and elephant had done plenty of times together, the mahout shouting out his commands, the elephant knowing the process but reassured by the sound of his human partner's voice.

The elephant picked up one end of the log with his trunk and eased his tusks underneath it. Then he hoisted the log upward with his tusks, for a few seconds, to check the balance of the load. The log was too heavy on one side, so the elephant put down one corner of the beam, held the other upright with his trunk, and readjusted the position of his tusks. This process was all routine. After the elephant correctly balanced the log, he and the mahout finally approached the bridge and the audience of construction workers (Burmese and Indian) and British officers, all transfixed by the spectacle.

As the elephant approached the pylon, however, the ascent to the high platform was so steep that the log began to roll backward, away from his tusks and onto his head. What's more, it seemed likely to roll further, onto the mahout mounted on his neck. Despite impatient shouts from some other workers, the elephant refused to go forward until this danger was addressed. The onlooking humans, unaccustomed to building wartime bridges in the Burmese jungle, were at a loss as to how to proceed. But the elephant had an idea. Setting the log down, he paced around the nearby brush for a few

moments, until he found a short but sturdy club-shaped branch. Urging the mahout to let him balance the log on his tusks yet again, the elephant grabbed the branch with his trunk and pressed it diagonally between his tusks. In effect, he repurposed the branch as a safety lock. The humans, astounded, wondered why they hadn't thought of it themselves. Williams tells us the result:

This time the club-shaped bit of wood was there . . . so that the log could not roll back over his forehead onto his rider. An oath came from the Major, a murmur of admiration from the Brigadier. I could feel my heart beating, as the animal moved toward the bridge platform, carrying the balanced log. . . . It was one of the most intelligent actions I have seen an elephant perform.²⁴

This elephant's intrepid thinking raises an important question: to what extent has it been the *elephants* all along, rather than the humans, who innovated these methods, maneuvers, and tasks? One might suppose that most of the elephants' jobs were concocted by mahouts, perhaps sitting around a campfire discussing the possibilities, and then developing their ideas through trial and error with the elephants. Perhaps in many cases this has been so. But this piece of archival evidence, Williams's account of the ingenious "safety lock" elephant, has the *elephant* as the innovator. Consider, too, the sheer amount of moment-to-moment resourcefulness and improvisation we've seen in many other elephants already: Pegu finding a way out of the log-choked, rushing river, or Burmay-Moti navigating a route across a torrential river full of meandering channels and debris. Consider crazy Pagli, who liked humans well enough but preferred to think on her own rather than follow orders.

If elephants, as much as humans, are devising these tasks, or certain aspects of them, this would support the idea that for the ele-

phants, forest-based work has been a scheme of species survival. All these tasks are keeping elephants in situations where they have wild elephants' access to the forest, but they are also interwoven into working human communities that are invested in guarding them. What's more, some elephants' unique skills and abilities encourage their human partners to mobilize them across agricultural and urban barriers, which in turn allows the elephants to mate with herds in different forests and mitigate inbreeding. Such skills include the elephants' multilingual abilities and their ability to perform cross-forest and cross-mountain transportation.

Furthermore, from the standpoint of humans, the elephants' talent for "escape mobility" makes them useful for unexpected emergency situations: an impromptu bridge that has to be built in the jungle; a drowning mahout who has to be rescued; or (as we'll see in Chapter 3) humans fleeing a military invasion. Such mobilization increases the odds that elephants will enter into new forest areas with new reproductive opportunities. Who, then, is riding whom? By allying themselves with the forest mahouts, elephants are in a way "hitching a ride" across deforested areas that they wouldn't otherwise be able to traverse, thus linking fragmented herds. In the village of Dambuk during monsoon, humans are isolated like elephants who inhabit lone pockets of forest. Corridors of human development obstruct elephants as much as a swollen river restricts the mobility of humans. The two situations mirror each other, with elephant and mahout switching roles on each side.