



Composer Dave Soldier cofounded the Thai Elephant Orchestra with conservationist Richard Lair. Beyond composing music for classical and jazz musicians including opera and symphonic works, Soldier has composed/arranged for television and film (*Sesame Street*, *I Shot Andy Warhol*), pop and jazz groups (Bo Diddley, John Cale, Guided by Voices, David Byrne) and has appeared on over fifty CDs as violinist, guitarist, or composer/arranger. He received a Ph.D in neuroscience at Columbia University, where he is a professor in the Neurology, Psychiatry, and Neuroscience departments. Many of his compositions, including two elephant music CDs, *Thai Elephant Orchestra* and *Elephonic Rhapsodies*, are available through Mulatta Records.

The Thai Elephant Orchestra

DAVE SOLDER

In the spring of 1999, I met Richard Lair, American expatriate and a co-founder of the Thai Elephant Conservation Center near Lampang in Northern Thailand. The Center is a Thai government-owned institution which was the first dedicated to the welfare and survival of the Asian Elephant.

Richard, known as “Professor Elephant” in Southeast Asia, hadn’t visited the USA in over nineteen years, and was lecturing in the States. He had recently inaugurated a painting project for elephants with the assistance of Russian New York artists Vitaly Komar and Alex Melamid, bringing in much needed funds and public awareness for the Center. Komar and Melamid’s Thai speaking guide, Linzy Emery, arranged for Richard to stay in my apartment. Richard and I both enjoy listening to music, and one evening after hours of hearing Junior Kimbrough, Aretha, Maurice Ravel, and an unaccustomed dram from Scotland’s fair shores, we naturally wondered whether elephants would learn to play music.

Richard told me that the elephant’s *mahouts* (trainers and caretakers of domesticated Asian elephants) know that elephants like to listen to music; they often sing to or play an instrument for the elephants as they walk together through the jungle, and the elephants are calmed and happier. Elephants, moreover, are social animals and might enjoy an activity like playing music together. Orchestra performances could be incorporated in the daily show for tourists at the Conservation Center and support the Center and mahouts financially.

There was, of course, no reason to suppose that this idea could work, and there were lots of problems to consider. First, do elephants have any comprehension of music? We discovered that researchers at the University of Kansas used a simple food reward experiment to demonstrate the elephant's ability to distinguish simple melodies. Elephants were also capable of distinguishing fine pitch gradations, smaller than the half-steps on the piano.

THE CENTER

The Asian elephant, both in the wild and in domestication, is in trouble. Loss of habitat and domestic work has led to a drastic drop in population, from about 100,000 in Thailand at the start of the 20th century to perhaps 5,000 now.

Domesticated for thousands of years, but genetically no different from the wild populations from which they were captured, the Asian elephant has been trained by humans in skills that in breadth, variety, and complexity certainly surpass any other animal. Formerly used in war like horses or trucks and as effective weapons, and later as loggers and commercial transport, they have been very recently trained in less arduous human arts, including painting, music, and soccer. These new roles have been invented within the past decade, and at least begin a new chapter in the long history of elephant training that appears to be safer and more pleasant.

While Richard and I both think that it would be best for even domesticated elephants to be judiciously returned to a life in the wild, the deforestation and overpopulation of Southeast Asia make this dream impossible save for a very few. For more thorough and scholarly information on the species history and potential future, I strongly recommend Richard's book *Gone Astray: The Care and Management of the Asian Elephant in Domesticity* published by the Food and Agriculture Organization (FAO) of the United Nations.

I arrived at the Center in January 2000 never having seen an elephant outside of zoos and circuses. Most of the older elephants were retired from logging, and others were their offspring or gifts from owners who could not continue to take care of their elephants properly. There are usually about sixty resident animals, and a steady stream of elephant visitors and mahouts for help in training or veterinary treatments.

I can say to the uninitiated that they are like incalculably smarter dogs and horses, generally sweet and good humored, sometimes angry and recalcitrant, typically leisurely but capable of amazing speed of movement in spurts. How much smarter was apparent immediately. I was riding one through dense brush with a mahout who told him in a couple of Thai words to clean

the path. The elephant stepped backwards, tore all the branches from the tress and brush that were over the path and sent them flying, then grabbed all of the brush already on the path, threw that away, then brushed the path smooth with his trunk, and finishing, proceeded on the trail. (If only I could train my cats to clean the kitchen.)

The elephants love bathing and being cleaned by the mahouts, who stand on their backs in the river while brushing them. It seems to be their favorite part of the day – being walked in from the jungle where they have spent the night feeding and sleeping to the river by the mahouts, often singing as they walk, for the river bath.

They enjoy mischief, and I truly believe possess a sense of humor; Jojo would sneak water out of my glass whenever my head was turned and pretend innocence when I would turn around. Sometimes an elephant will taunt you playfully by blowing water at you from his trunk.

The elephants form life-long friendships. Sometimes the friendships sour for a while and then resume. Prtidah and Luk Kang grew up together, and if they spend time apart and then see each other again, they run to each other making cooing noises and stroking each other like teenage girls, which they now are. We recorded one of these events with instrumental accompaniment by the other elephants on the piece *Two Baht Opera on Elephonic Rhapsodies*. Moreover, Prtidah and Luk Kang are still close to both Richard and their mahout Prasob who raised them when young, and both people can get them to “sing” by whispering in their ears . Prasob sings a Hank Williams number with the Orchestra on *Elephonic Rhapsodies*.

These are just a few randomly selected memories, and they pale in comparison to many amazing stories told by those who spend their lives with elephants. As Richard has pointedly stated, some elephants are so responsible and even tempered with humans that they will responsibly baby sit our infants. There are others, however, who would kill humans whenever they have a chance. A favorite story I heard in Lampang was about a Burmese elephant who had an argument with his mahout and suddenly killed him. He dragged the body of his trainer to an island in a river, stripped him, and wouldn't let anyone else near him for three days. Everyone thought he was mourning his mahout, just as might a drunk who coldcocked his buddy at the bar. One of many sad ironies of Southeast Asia is that due in part to Burma's awful government, it has the most thriving elephant population, because the elephants still have important jobs as transport and loggers.

While it isn't hard to find many examples of aspects of personality and quirks that our species seem to share, as with animals that we are familiar

with, there are plenty of activities that are unknowable by us. For instance, although the elephants don't engage in sex frequently, there is often an ongoing play that entails trunks and sex organs. Their sense of smell and hearing is far more astute than ours. Mei Kot discovered my traveling bag and nuzzled and slobbered over it for hours. The elephants' most foreign behavior for us are those of the male during musth, when a gland above the eye secretes oil, the penis drips constantly, and even the sweetest elephant can be dangerous and unpredictable – incidentally, tourists are never allowed near any potentially dangerous elephants at the Center.

MAKING INSTRUMENTS IN THAILAND

I was joined for the initial musical attempt by several American friends, including Ken Butler, an instrument inventor, Rory Young, a sound recording engineer who set up a studio in the jungle, Don Ritter, an artist who wanted to build an elephant synthesizer, Linzy Emery, a former Thai resident who put everything together and had already worked with Komar & Melamid on elephant painting at the Center, and Kurt Ossenfort, Tamara Barton, Neil Budzinski, and Jenny Lynn McNutt, who filmed and documented our work. All pitched in to help make instruments. On later trips, I mostly worked with Sakhorn, a talented metalworker in Lampang, about thirty kilometers from the Center.

I wondered how we could make instruments for elephants. Here are the objectives I set for instrument design:

1. the instruments must be adapted to the elephant's anatomy, which means large instruments operated by the trunk;
2. the instruments must withstand the jungle, including heat and monsoons;
3. they should require negligible upkeep;
4. the instruments should sound Thai because the audience is Thai, the mahouts would enjoy the music more, and the elephants have heard Thai music throughout their lives.

Together with Neepagong, director of the woodworkers at the Conservation Center (Northern Thais generally use only a single name), and Richard we constructed giant slit drums, large scale marimba-like instruments (re-naats), a single string instrument that sounds like an electric bass (the diddley bow), and several reed instruments. We fashioned a gong from a saw blade confiscated from an illegal logging operation, and a thundersheet from scrap

metal. We bought harmonicas, mouth organs (kaen) from Issan in Northeast Thailand, small Issan bells, and appropriated a bass drum at the camp. Altogether, we tried out twenty instruments. Since then, we have introduced perhaps twenty more, most notably angalungs, tuned rattles that northern Thak kids learn to play in grade school, much as we did with autoharps in the Midwest.

Although the elephants were as sweet and interesting as one might imagine, and the well known Thai hospitality was obvious at all times, there was initially an air of slightly irritated bemusement by most of the mahouts and other workers at the Center. It was really out of respect for Richard that some mahouts joined in a project that struck most of them as stupid. Some of the more musical mahouts began to enjoy it quickly, particularly Jojo's mahout Somenuk, who is an outstanding traditional musician himself— he was the first mahout who played an instrument along with the elephants. I also recorded the local country string band, known as *salaw saw seung*, composed of mahouts and drivers who play traditional Lanna (Northern Thai) music on Thai fiddles and guitars, and made them CDs that are now played constantly on the Center's sound system, which didn't hurt my growing acceptance. Learning a couple of these tunes on my violin helped as well, as the villagers never heard a westerner try this. By the end of my last trip, the local village held an evening barbeque for me, roasting a whole pig and drinking Mei Kong whiskey sitting on the ground. The barbeque was wonderful, with the extremely peppery sauces that Northern Thais love, but they somehow knew to not to pass the cups of pig's blood. their favorite, in my direction.

One of the great successes in incorporating the local culture was to record school children from a nearby village performing a nursery rhyme about elephants, *Chang Chang Chang*, and then arranging it into a big orchestrated piece on our second CD. In each public show at the Center, that piece is blasted over the PA system as the elephants pass through the viewing stands built in the teak forest.

It's been gratifying to see the mahouts become more and more interested in the Orchestra, teaching their elephants, inventing new instruments, and over my four music trips to date, expanding the size of the band from the original six to perhaps eighteen players in total.

To date, the Orchestra has indeed raised public awareness for the Center, particularly where it counts most, in Thailand. Sometimes the orchestra plays with human orchestras, leading to an infamous incident, also on *Elephonic Rhapsodies*, where I arranged the first movement of Beethoven's *Pastorale* Symphony for the elephants and a sixty piece school marching band from the

Galyani middle school in Lampang, conducted by Rakhorn. We were proud that a BBC simulcast of the concert was picked up by the American TV Show, Jon Stewart's *Daily Show*, as their "moment of zen."

A recent Thai sample newspaper article reads: "The Thai Elephant Orchestra, conducted by Richard Lair, had a command performance for HM Queen Sirikit of Thailand. The concert was a collaboration with the 60-strong concert band of Galayani School. The warmly received performance started with the the elephants on their own; subsequently, the children's orchestra came in, selected elephants jammed along with it to then segue into elephants only. Most of the music was Thai but there were two western songs, *I Did It My Way* (a favorite of Her Majesty) and *Oh Danny Boy*."

THE INSTRUMENTS AND THE ELEPHANTS

The most successful instrument was a metal *renaat* or xylophone, which I produced at a local metalshop out of industrial steel tubes. The *renaat* is easily learned and played by the elephants and sounds and looks "Thai." The mahouts told me the elephants especially enjoyed playing the *renaat*. The gong and thundersheet initially scared some elephants, but they soon adapted. The *kaen* worked well for sound production, but the elephants couldn't hold it and needed to use the mahouts as instrument stands. The elephants didn't seem interested in the bells, theremin, or synthesizer keyboard, but would play when asked. They disliked playing the wind instruments with a large mouthpiece (i.e., trunkpiece). A mahout told me they were afraid that a snake might jump through the wind holes into their trunks!

The harmonicas were also well adapted, and the elephants sometimes blew them into their own ears.

On our first trip, Mei Kot, then an 8,000 pound seventeen-year-old girl, was first frightened by the gong, but around the third afternoon of her performance, we couldn't get her to stop playing it. Her mahout would take the mallet out of her trunk, but she would pick it up and continue playing. This music can be heard in the delayed ending of some of the pieces.

Pattidah was originally the outstanding *renaat* player, coming up with beautiful phrases and melodies. Sometimes she would refuse to stop playing her *renaat*. It's very hard to get her to stop if she doesn't want to! About a year later, the best player on the *renaat* was Poong, a six-year-old boy, who would sometimes walk up and play of his own volition. We have a beautiful example of one of his improvisations on the second CD, and when he finished, he simply dropped the stick and walked away. It was on a cadence where it sounds to us like the song should end. He lately has become bored with playing, but

seemed to get excited again on my last visit when we did some large scale recording. After all, they are social animals, and it is often more fun when many play together in the field.

We don't reward the elephants while they are learning to play the instruments. I gave them apples and oranges after they finished performing long pieces to have them associate playing music with a good time. I don't think it's interesting to teach elephants to play prewritten human melodies. It's much more interesting to hear how they "choose to play". After teaching the elephants to play the instruments and giving some indication of how the instrument should be played for that piece, Richard or I would cue the elephant and mahout to start and stop. The mahout would encourage his animal by moving his arms in a mime of the elephant's trunk.

Except for *Chang Chang Chang*, a thirty-two note melody that the mahouts on their own taught the elephants to perform on the angalung, the notes and rhythms of the pieces are chosen completely by the elephants. One surprise is that they play variously in duple meter (straight eighth notes), triple meter (alternating quarter and eighth notes), and a dotted rhythm (dotted eighth and sixteenth). Sometimes they found motifs for a particular piece and repeated them. I cannot say why they made these choices. In these recordings outdoors in a clearing in the teak forest you can hear the mahouts encouraging the elephants, and Thai tourists who stumbled on the sessions. The Thai tourists told me that the elephants sounded as if they were performing a style of music that can be heard in the temples.

Is This Music?

On returning to the USA, many people asked me: is this music? I propose an answer based on the Turing test, which was designed to determine if a computer possesses intelligence. Play the recording for people who don't know the identity of the performers and ask them if it's music. They may love it or beg you to stop, but I think they will say "of course it's music". I tried this once with a music critic from the New York Times, who eventually guessed "it's an Asian group." He was initially upset when I told him who the performers were, but by the next day asked to write about the Orchestra.

I'm also confident that the elephants understand the connection between many of their actions and the sounds they produce. They don't operate the instruments randomly, but aim for where the sound is best. You can watch this process occur over time on the *renaats*.

The elephants can easily keep a fairly steady beat on numerous instruments, and in the case of Luk Kop can alternate between several drums. Luk

Kop is an interesting story. As a young boy, Richard trained him to be the elephant in a Disney movie, *Operation Dumbo Drop*. He can be a very sweet elephant who loves to be fed candy and have his tongue petted, but over the past few years as an enormous adult, he is sometimes very dangerous – but only to humans, never to other elephants and never to his chief mahout. He has, however, chased other people through the forest. So Luk Kop has been retired from the orchestra and all other forms of activity where he might encounter tourists. Still, he was our most avid and talented drummer.

I suspect that at least some of the elephants enjoy playing instruments that are well tuned and have a pleasant resonance. The elephants learn to hit renaat bars on their sweet spot, where a more resonant tone is produced, rather than near the nodes, which produces a sharp percussive clank. On a renaat, I planted a dissonant note to see what would happen, and Kurt recorded Pratihah playing on videotape. For the first several minutes, she avoided the note, but later would not stop playing it. Perhaps like a punk rocker or early 20th century composer, Pratihah had discovered a pleasant dissonance. At any rate, she certainly outsmarted my test design.

On a recent trip, I was accompanied by Aniruddah Patel, a California neuroscientist who is interested in animal musicality. Ani is attempting to study elephant talents with more statistical rigor than I have – I remain more interested in making “good music” and a good time for elephants and mahouts – and his insights will be extremely valuable. At this time, his analysis shows that while the elephants can actually keep a steadier beat than most humans on the drums, they may not play in synchrony at all. I am not convinced of this finding, however, as it appears that the elephants often play in offbeat and triplet rhythms with each other, which would be counted as “out of synch.” As with Pratihah’s dissonance, we may simply not have designed the right test or analysis for such smart animals. But I don’t know for sure and would love to find out.

Which brings us to a couple of parting, troubling thoughts. Some think that studying behavior of domesticated animals at all is wrong, and that we should only study wild animals. I don’t agree, although I do think that learning all we can about the behavior of animals that may soon hardly exist in healthy groups in the wild is paramount.

Similarly, some say that it is wrong that non-human animals be trained to perform human-like activities. I agree with this belief at least for those animals that we have not selectively bred – I think domestic horses can love being ridden once they are trained, etc. - but only if a healthy wild behavior is

a genuine alternative. The Asian elephant has been domesticated and trained for human-like activities for thousands of years, and light work performing for tourists in activities that are enjoyable, like playing in the Orchestra, is preferable to using the elephants as war machines, trucks, and loggers. If opportunities arise to develop genuine wilderness to reintroduce domesticated elephants, they need to be taken, but otherwise, we need to maintain places such as the Center as a healthy environment for the animals. What's more, I think it likely that the long-term survival of the Center and likeminded camps for elephants may become extremely important for maintaining genetic diversity to avoid diseases that would possibly lead to extinction as both domestic and wild populations dwindle.

A further troubling concern from this type of animal training is the temptation to make spurious claims for human-like behavior. For instance, mahouts have trained elephants to make figurative paintings, with the implication by some that the elephants know what they are painting. In fact, the mahouts subtly manipulate the elephant to move the brush. The elephants are not themselves creating a representational painting, and the realization by the audience that they are being tricked has the danger that the more interesting domesticated behaviors, such as the ability for elephants to operate and improvise on musical instruments, could be also considered simply a trick. (Although in some cases the mahouts do tell the elephants where and when to play, in many cases they do not.) We have many questions about these new behaviors and about elephant cognition and perception. (Especially, do the elephants hear beauty in their instrumental music???) These questions are not easy to investigate. I think that attempts by Richard Lair, Ani Patel, and others who care for the animals as well as this project and want to understand it better need to be encouraged to investigate further. That is, whatever fantastic abilities humans presume that Asian elephants may have will be less amazing than the genuine abilities we learn from careful observation.

Art for all species!