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Tiger tales

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I grew up with tigers. I built tiger pens. And the tiger grotto at the privatized San Francisco Zoo was a disaster waiting to happen

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When I first heard about the attack at the San Francisco Zoo, I felt strangely vindicated to learn that a Siberian tiger had been involved. I am irrationally prejudiced when it comes to big cats: I don't like Siberians. Of all the tigers, lions, jaguars, and other exotic animals I have known in my day — and I grew up on a wild animal farm, so I have known quite a few — the only ones that truly frightened me were a chimpanzee named Lolita and a pair of Siberians (they're known as Amurs now) that lived in an old shed about 100 feet from my front door.

When I read in March that two chimps from a California primate sanctuary had attacked a 62-year-old man, biting off much of his face, tearing off his foot, and mutilating his genitals, I thought of Mike's thumb. And when I heard that Tatiana had attacked three young men, killing one of them, I immediately thought of his ear.

Mike Bleyman was a biologist who built a research and breeding compound outside Pittsboro, NC, and like many exotic-animal fanatics he had a tendency to lose body parts. Fortunately, the surgeons in Chapel Hill were skilled at sewing them back on.

Mike was also my stepfather. My parents divorced when I was in junior high, and when my mother moved in with Mike on "the farm," I went with her.

I was present when Lolita bit Mike's thumb right through the bone, almost severing it completely. I was away at college when the tiger got him.

Mike had arranged a trade with the Albuquerque Zoo in New Mexico — two Siberians and a Himalayan black bear for a young Sumatran tiger. Mike hit both tigers with tranquilizer

darts. But ketamine, the drug of choice for sedating big cats, takes several minutes to work, and being an impatient man who didn't play by the rules, Mike entered the cage before the recommended time had passed. When he approached the male, the female roused herself. She slashed Mike across the back, dislocated his elbow, and removed his ear.

The fact that Mike was able to extract himself from the cage alive is testament to the fact that the ketamine had at least begun to have an impact. Siberian tigers are not creatures you want to mess with.

Our other tigers, all Bengals, were sociable and playful. As I walked by they would chuffle their hellos. I would chuffle back and reach through the fence to scratch their necks or rub their noses. The Siberians, however, had a flat affect, rarely vocalized, and menacingly tracked passing humans.

I know it's not fair to judge an entire subspecies by two individuals, and these cats had every reason to be sullen. They had evolved to preside as alpha predators over rugged territories of hundreds of square miles, and they were being forced to live sedentary lives in a gloomy shed probably no bigger than 200 square feet. But fair or not, they freaked me out.

I have been thinking a lot about those cats in the past couple of weeks as I have read the news stories coming from San Francisco. As someone who has bottle-fed several cubs, built my share of tiger cages, and shoveled more than my share of tiger shit, I know more than a little about *Felis tigris*.

I have been equally fascinated, if not more so, by the behavior of the other species that populates this tragic tale, the one known as *Homo sapiens*. In addition to being a former tiger farmer, I am also a journalist who once covered San Francisco politics. I still work occasionally as a communications consultant to nonprofits, and in my day job I am a manager of a small state agency and work regularly with elected officials. So when I look at this story through the lens of a behaviorist, I think about the traits of various human subspecies — politicians, bureaucrats, managers, spin doctors, journalists, self-proclaimed experts, and supposed guardians of health and safety. Frankly, I am not impressed.

Tatiana was killed for being a tiger. Tigers have only one self. They are what they are; end of story. Humans are a different order of being: we are capable of self-deception. We can lie to ourselves, we can deny what is right in front of us, we can try to shift blame, and we can avoid the things we know we should face.

And thereon hangs this tiger tale.

TARZAN AND TIGER ISLAND

People have often asked me over the years why my stepfather had all of his animals. I like to tell them it was because he thought he was Tarzan. It's not the absolute truth, but it is as valid as any other answer.

It started in the 1970s, when he just drove down to Florida one day and came back with a tiger cub.

For her first several months there, Gretchen had the run of the farm. I remember one weekend when Mike was teaching us to shoot: my sister Gwenn was lying in the bed of a battered red Toyota pickup, one eye closed and the other sighting down a rifle barrel at a paper bull's-eye. She never saw the tiger stalking her from behind. As soon as Gretchen was near enough, she closed in a sudden burst, easily cleared the side of the bed, and landed squarely on Gwenn's back. Gwenn just huffed, "Gretchen, get off," and calmly squeezed the trigger.

Gretchen, however, was soon too large to be treated like a funny-looking dog. Mike hired a backhoe operator to dig a moat around a knoll where an abandoned farmhouse perched. The man arrived on a day when Mike's very wild foster daughter, Dianne, had cooked brownies. The backhoe operator didn't realize they were laced with pot and ate a few. It took a long time to finish the job, in part because the guy kept nodding off, and in the end the moat had a peculiar shape.

Mike didn't mind. He just put up an acircular fence around the acircular moat and called it Tiger Island.

The fence was 12 feet tall and built of heavy-gauge chain link. A barbed-wire overhang jutted inward from the top at a 45-degree angle. A tiger might be able to leap to the top of a 12-foot fence, but the moat meant there was no solid place from which Gretchen could launch herself.

If she tried to hurdle the fence, she'd have to start at least 10 feet back. And if she crossed the moat and pulled herself onto the narrow bank, she would have to jump straight up. That would mean an encounter with the overhang. She wouldn't climb the fence because chain link is too wobbly. It was the way the moat and the fence and the overhang worked together that made the compound secure. Even when the moat ran dry in later years, a tiger would still have had to jump from the bottom of the dry moat, making the total leap on the order of 16 or 17 feet.

In other words, a stoned heavy-equipment operator and a somewhat oddball zoologist, with a few thousand dollars' worth of chain link and barbed wire, managed to make a very secure tiger pen. I have to wonder why the privatized San Francisco Zoo, with millions of dollars in bond money and a director who earns \$339,000 a year, couldn't.

THE MISSING WALL

Early reports from San Francisco described the tiger grotto as having a wall and a moat as if they were separate things and gave dimensions for both — initially 15 feet for the moat and 20 feet for the wall. When I read that, I began examining aerial photos to look for other points of egress. I studied the height and the angle of the side walls.

All tigers can climb trees. Amur habitat includes mountain ranges. They don't like steep slopes, but they're capable of scrambling over rocky faces. Perhaps Tatiana got out that way, I thought, but I soon rejected the idea.

The aerials showed me the initial reports were inaccurate. There never was a wall *and* a moat. Tatiana's compound was nothing like Gretchen's. There was only a moat, and the so-called wall was simply the far bank. The moat isn't, in zoological terms, either a physical or a psychological fail-safe. It's simply a way of recessing a wall into the earth so it doesn't block human sight lines.

A dry moat can actually be worse than a wall because the far bank gives a tiger launching points. When the jump-off point is around the same elevation as the top of the far bank, as it is at the San Francisco Zoo, the moat's depth may not matter. The question becomes not how high the tiger can jump but how far it can leap. History and a close look at pictures of the grotto suggest that is exactly the question San Francisco and zoos everywhere should be asking.

One rule of thumb is that a moat needs to be four times the average body length of the species it is suppose to contain, which for an Amur is just an inch shy of six feet. That means a moat should be at least 24 feet across. I'm skeptical of this calculation. Mean body length for a mountain lion, for example, puts the recommended moat distance at just over 13 feet, yet there are credible reports of mountain lions leaping 35 feet.

An alternative is the cat's known leaping distance plus 20 percent. The oft-reported leaping distance is 20 feet, so the minimum width would again be 24 feet. There are accounts of tigers leaping 30 to 33 feet, but I have not been able to determine whether these were documented. In China, the Yangtze River runs through Leaping Tiger Gorge, so named because a tiger leaped the river to escape a hunter, according to local lore. The river at its narrowest is about 82 feet wide. The story is a fable, but it gives you a sense of the tiger's reputation as a prodigious leaper. Based on my years of observing tigers at play, 30 feet does not seem at all out of the question.

Such calculations likely contributed to the standards of two Association of Zoos and Aquarium committees. Both the AZA Felid Technical Advisory Group and the AZA Nutrition Advisory Group recommend a minimum width of 25 feet for a tiger moat.

So imagine my reaction when Zoo director Manuel Mollinedo stated his belief that the tiger could not have escaped from the moat, while also saying that according Zoo records, the moat was 20 feet across. I have never met Mollinedo, and he didn't return my calls, but in my opinion the man has no idea what he is talking about.

Then came reports that the moat is 33 feet across. Well ... sort of, maybe, kind of. It may be 33 feet from wall to wall, but the bank on the grotto side slopes to a flat floor 20 feet across. Some clever bloke decided to make the transition look more natural by placing fake boulders atop the slope. These project out into the moat and in some cases rise above the grotto floor. A tiger that launched from the lip of one of these would have to cross far less than 30 feet.

I asked the Zoo for the narrowest leap between the outside wall and these "rocks." Zoo officials didn't respond. So I went out there with my tape measure.

The tiger grotto is closed off, and Zoo officials also declined to answer my request for access to the area. But through a side window I was able to study a neighboring lion grotto with a similar design. A rock ledge stuck out into the moat more than seven feet,

leaving a gap I measured along the outer wall at about 25 feet. Using aerial photographs and online measuring tools to look at Tatiana's grotto, I repeatedly got widths of less than 24 feet.

In other words, the width of the moat most likely does not meet AZA standards, which could hardly be described as overly cautious.

NO MARGIN FOR ERROR

The world soon found out the bank of Tatiana's grotto was less than 12.5 feet high, and experts quickly agreed that a motivated tiger could have surmounted the wall. Yet Mollinedo was still expressing disbelief.

We know tigers pluck monkeys from tree branches, bound over steep rock faces, and jump on the backs of large prey. But how tall do they stand, and how much can they elevate? The best evidence I can find of an Amur's reach comes from the field studies of Anatolii Grigor'evich Yudakov. One way Amurs mark their territory is by making scratches high in the bark of trees. Yudakov measured these marks at 210 to 290 centimeters, or roughly 7 to 9.5 feet.

For an Amur standing on its hind legs to reach the top of a 12.5 foot wall, it would have to elevate another 3 to 5.5 feet. Remember Gretchen jumping effortlessly over the side rail of a small pickup? Four feet.

A major prey species for Amurs is the Manchurian red deer, which stands up to five feet at the shoulder. Though not sourced, many references report a vertical leap for tigers of six feet. Take a tiger with a reach of almost 10 feet and a vertical leap of six feet, and suddenly the industry standard of a 16-foot wall has no appreciable margin for error.

Then there are the events of May 14, 1994, when a Bengal tiger in India's Kaziranga National Park attacked a man on the back of an elephant. According to a press release from Wildlife Trust International, executive director Vivek Menon reviewed footage of the attack and exclaimed, "I could never imagine that a tiger could so effortlessly leap from the ground onto an adult elephant's head, which is at least 12 feet above the ground."

There has been much speculation about whether a captive tiger is capable of matching the jumping ability of a wild cat. Presumably a confined tiger would be sluggish, out of shape, her muscles atrophied. No one to my knowledge, though, has studied the sports physiology of tigers.

I can say from personal experience that even captive tigers are incredibly agile and powerful. We had a Bengal named Engels (the litter was born on May Day) who lived on Tiger Island. One day a female Bengal tried to snatch some food from him. He swiped at her almost casually, hitting her in the side. The force of the blow immediately stopped the young tiger's heart, and she fell over dead.

THE LONG JUMP

So what happened that day at the Zoo? So far, none of the witnesses are talking. Media accounts suggest one scenario: Tatiana may have stood on her hind legs against the wall, pushed off from the bottom of the moat, grabbed the top of the wall with her front paws, and leveraged herself up and over by digging her hind claws into the wall. That's conceivable, I guess. Tatiana may even have escaped before the attack and waited for her prey in the tall grass beside the moat.

I have a very hard time imagining that, though. For one thing, the wall curves outward at the top. For another, such methodical, incremental movement is not typical of a tiger. They stalk their prey slowly, but in a brutal burst, they close with amazing speed. I am convinced Tatiana exploded from the grotto, landed on the lip, and then powered her way up. Whether she sprang from one of the protruding rocks, the sloped bank, or the moat floor is almost immaterial, but I am inclined to believe she jumped over the moat.

Strangely, Mollinedo may have been on the right track at a Dec. 28 press conference when he said, "How she jumped that high is beyond me." She may not have jumped high at all; I suspect she just jumped long.

I base this on my observations of tigers and my study of grotto photographs, but it is supported by history. There are three known escapes from Tatiana's grotto and one near escape. In one case the escape went unwitnessed.

Keepers Jack Castor and John Alcaraz walked by the grotto one day a few years back and saw a Bengal named Jack wandering outside, Alcaraz told me by phone. They yelled at him, and he jumped back in.

David Rentz witnessed another escape in 1959, when he was a young Zoo volunteer. He's an entomologist in Australia now, and he recently wrote in his blog that the tiger "flew across the moat from his position on the other side ... and sprung back to the grotto all in one graceful movement." There had been previous reports this same tiger could jump the moat.

Then there's the near escape witnessed by Marian Roth-Cramer in 1997. In an interview in the Dec. 27 *San Francisco Chronicle*, she said, "I saw the tiger leap over the moat." This makes me wonder why so much coverage has focused on the height of the wall and not the width of the moat.

Media coverage has also focused on whether the men taunted or teased Tatiana. I find this discussion ludicrous. Zoos know animal abuse comes with the territory. They must anticipate it, prevent it, and prepare for its consequences. It's part of the job. And besides, how does one taunt a tiger?

When I think of taunting, I think of the French kibitzers and King Arthur's men in *Monty Python and the Holy Grail*, a scene reprised in *Spamalot*. I imagine some kids shouting into the grotto, "Your mother was a wild boar, and you father smelt of porcelainberries. I scent-mark in your general direction."

Teasing a confined animal means tempting it with something it can't have — a ball, say, or your throat.

Tatiana wasn't teased. She got what she wanted.

Tigers attack for limited reasons — they see you as prey, they see you as a threat to them, their cubs, or their food, or they dislike you because of something you did to them. Perhaps Tatiana saw the young men as a threat. Perhaps they pissed her off. But a simpler explanation is that their behavior got the cat's attention, and perhaps they crossed the fence and got too close to the edge, until at some point Tatiana identified Kulbir Dhaliwal as prey that had come within range. It seems significant that the attack occurred at twilight, since tigers are crepuscular, meaning they are most active then. It's their favorite time to hunt.

Naturalist and western novelist Dane Coolidge wrote in 1901 that Indians classify tigers as game killers, cattle lifters, or man killers. People have suggested tigers become human killers because they develop a taste for human flesh. I believe tigers will eat almost anything — but they're wary of taking on prey that might fight back effectively. They lose any hesitancy when they discover just how vulnerable we humans are. Tatiana proved she had no inhibitions about dining on human flesh when she attacked keeper Lori Kamejan in 2006.

Carlos Sousa Jr. apparently tried to distract Tatiana from her attempted "kill," and I use that term loosely since tigers naturally feed on prey that is still alive, and captive tigers are in-between creatures, psychologically speaking. Wild cubs learn from their mothers to dispatch prey effectively, but captive-bred tigers are never taught that skill. In terms of hardware, they may be the world's finest killers, but their software is buggier than Windows Vista.

Tigers often have to protect their prey after an attack. They are followed by wild dogs and bears that try to scavenge their kills, and herd animals will sometimes try to rescue a herdmate. Tatiana most likely fought off the threat from Sousa, slashing his throat in the process, then tracked her wounded prey to finish what she started. It wasn't a rampage, a vicious and angry outburst, as media reports have described it, just the methodical, instinctive actions of a top-of-the-line predator.

THE BIPED PROBLEM

If you look at what led up to Tatiana's escape, you follow a trail of denial and avoidance.

Consider the players, starting with Zoo management and keepers.

Zoo staffers have known for almost a half century that a tiger could jump out of that grotto. Carey Baldwin, then the Zoo director, witnessed the escape with Rentz in 1959. His solution, according to Rentz's blog, was to post instructions to keep the offending tiger indoors. Castor's solution to Jack's escape was to fill the moat with water, according to Alcaraz, but that practice ended after Jack died. Neither solution was permanent or designed to deal with the next strong-legged, strong-willed tiger to come along.

When Roth-Cramer witnessed the near escape, a passing keeper apparently laughed it off. She reportedly wrote a letter to then-Zoo director David Anderson, but there is no evidence her letter produced any response.

As far as we can tell, no one ever tried to convince the AZA or federal regulators that they needed tougher standards or tougher enforcement. No one took the story to the press or published a journal article to warn other Zoo professionals. No one posted public warnings, ordered changes to the grotto, banned tigers from the exhibit, or shut the lion house.

Mollinedo should have known about the problem if his keepers knew. But there seems to be a lot he doesn't know, and previous *Guardian* reports and a recent *Chronicle* article suggest communication has broken down between employees, particularly keepers, and Zoo management. Lower-level staff complain of not being heard, not being consulted. Morale is low. Institutional knowledge is being lost as keepers quit in frustration.

And what about the regulators? Ron Tilson, the conservation director of the Minnesota Zoo, said in a Dec. 27 *Chronicle* story that the AZA standard, which he said was seven meters (closer to 23 feet), is "very conservative." Yet this has less than a 20 percent safety margin when you consider the conventional wisdom about how far a tiger can jump, and it is far less than reported leaps of 30 feet or more.

The day after the attack, the AZA issued a statement that "AZA accreditation standards contain no specific dimensions for big cat enclosures." The AZA did not return calls seeking comment, but what it provides is really a set of guidelines produced by advisory committees for a voluntary association composed of the very institutions being regulated. The guidelines aren't consistently known and have never been fully implemented.

We know the AZA accredited the San Francisco Zoo despite a wall almost four feet shorter than the recommended height.

In 1974 the Philadelphia Zoo surveyed 10 other zoos about their tiger moats. It published the findings in the 1976 *International Zoo Yearbook*. San Francisco reported its moat was 13.5 feet deep. Detroit said its moat was 15.5 feet deep. Chicago's moat was only 21 feet wide, and Tulsa reported between 15 and 20 feet. Oklahoma's moat was only 17 feet wide. Half of the surveyed zoos couldn't meet AZA recommendations.

There are signs the San Francisco Zoo did not meet other AZA standards. For example, the AZA's *2008 Accreditation Standards and Related Policies* states, "A written protocol should be developed involving local police or other emergency agencies." On Jan. 3, I e-mailed 20 questions to the Zoo's public relations firm, many of which related to AZA standards. For example, I asked about the last emergency drill and about gun training. I also asked for copies of related Zoo policies. The Zoo never responded. But the next day Mollinedo announced that the Zoo is working with police at Taraval Station on a coordinated emergency response and that police and Zoo shooters will be training together.

The United States Department of Agriculture regulates zoos as exhibitors under the Animal Welfare Act. That act and the rules written to implement it are primarily meant to ensure healthy conditions for the animals. They contain specifications for the size of the fences around the outside of a zoo facility to keep unauthorized people out, not for the fences separating the animals from visitors.

And local oversight? The city owns the grounds and the animals. Zoo employees are part of the city employees union. But since 1993 the nonprofit San Francisco Zoological Society has owned the institution and operated it under a contract with the city. There were problems at the Zoo when the city ran it, but, as Sup. Tom Ammiano told me, "Nobody died."

The contract retains a role for the city through a Joint Zoo Committee of society board members and Recreation and Park Department commissioners. I have gone through the minutes of that committee going back several years, and I have to say the committee provides as much oversight as the stuffed animals in the Zoo's gift shop. As Ammiano put it, "It's all lip service."

The employee relations problems, the animal injuries and deaths (see Opinion, page 7), and other management issues at the Zoo are nothing new. Savannah Blackwell reported on these same sets of issues for the *Guardian* twice — see "The Zoo Blues" (5/19/99) and "The Zoo's Losers" (5/7/03) — and there is no indication anything has been done.

The city's contract with the Zoological Society and the Joint Zoo Committee should mean Zoo documents are public under the city's sunshine laws. But the Zoo has not been forthcoming with key documents requested by the media. Sup. Sean Elsbernd has called for hearings, and Ammiano said there will be multiple hearings. "I think the key issues are accountability and transparency," he said.

The Zoo's high-priced director has demonstrated that his knowledge of the animals under his care, the condition of his facilities, and the concerns of his staff are embarrassingly limited. In press conferences he looked befuddled, evaded questions, broke every rule of crisis communication, and speculated about the victims without clear information.

The Zoo hired Sam Singer, supposedly a crisis communication specialist, but I have attended multiple trainings in crisis communication, and I have to say he seems more like a fixer to me. And despite this, Mayor Gavin Newsom and the society's board publicly support Mollinedo.

Mollinedo and his PR people have tried to direct blame toward the victims. Perhaps they were drunk, stoned, rowdy, throwing things — but if Tatiana was killed for being a tiger, it could also be argued that Sousa was killed for being a young man.

There's a whole process of brain development that scientists are now beginning to understand. The maturation of brain cells through something called myelination starts from the back of the brain. The front of the brain, the seat of executive functions like judgment, matures last. Young people often don't make good decisions. Boys, in particular, take unnecessary risks.

In the public health world, we understand this and concentrate on policies that control risk and reduce harm. This doesn't mean we shouldn't hold the survivors accountable for anything they might have done, but it does mean the Zoo has no business shifting the blame.

So where does that leave us? It leaves us with more avoidance than a tiger has stripes.

In the end, this was a human problem. People weren't doing their jobs. They had not taken action when it was clearly needed. And in the end, the only innocent creature in this drama was the one that had no choice other than to be what she was. Her name was Tatiana.

And now she is dead, along with a young man whose parents loved and miss him very much.

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