Tigers at the Philadelphia Zoo can satisfy their instinct to patrol their territory in this network of walkways called Big Cat Crossing.

New discoveries about the emotional lives of animals are raising difficult questions about keeping wild things in captivity.

By Justin Worland
For a mother escorting her kids through the Philadelphia Zoo, it was a close encounter of the ferocious kind. Directly in front of her as she strolled down the zoo’s main walkway was a Siberian tiger, a 400-plus-lb. carnivore capable of tearing apart a wild antelope.

But rather than panic, the family laughed. The tiger was out of its lair, but its pathway was at a safe, meshed-in distance from onlookers, and after a few moments of looking around, the tiger moved on.

The tiger’s trail, dubbed Big Cat Crossing, is part of a bigger initiative called Zoo360 that has changed the way humans and animals experience the nation’s oldest zoo. There’s no question the experience is compelling for the humans. On a recent visit, I watched children drop their lunches in awe of white-faced saki monkeys hanging out in the trees. I witnessed one couple stop midconversation when a gorilla lumbered overhead, and saw more than a few families startled by the appearance of a large cat that seemed eerily close to them. But the bigger impact of Zoo360, says its chief operating officer, Andrew Baker, may be its effort to transform the experience of animals in captivity.

At a time when scientists know more than they ever have before about the inner lives of animals—and when concerns about animal rights loom large—many experts think that zoos need a major overhaul if they’re going to last.

To some leaders in the field, the Philadelphia Zoo is the best model out there, but on the other side of the country, a different vision of the future is playing out. At Seattle’s Woodland Park Zoo, the elephant exhibit, where countless children have watched pachyderms play, now sits empty. The zoo, long recognized as a world leader in innovative design, built a $3 million state-of-the-art facility for the species in the 1980s. But in recent years, animal-rights advocates had criticized the exhibit as inhumane for being too small and not reflective of the elephants’ natural habitat. Under pressure from activists following the death of an elephant in 2014, and thanks to new guidelines from the nation’s main zoo organization, Woodland Park officials decided to close one of its most popular exhibits and place the elephants elsewhere.

“I am cautiously optimistic we’ll be able to overcome this, but I’m not sure,” says David Towne, who once oversaw the Woodland Park Zoo. “The animals—rights people have imposed their will on the elephants. I’m not sure that they aren’t going to move on to gorillas, then other primates, and then what?”

Nearly two centuries after the first modern zoo opened in London’s Regent’s Park, the very concept of a place where families can visit and observe animals is being questioned like never before. Across the U.S. and around the world, zoos are finding that balancing the demands of entertainment, education and conservation is increasingly difficult.

Ethical concerns have been coupled with safety fears—both for people and for critters—following an incident in May when officials at the Cincinnati Zoo shot and killed a 17-year-old gorilla named Harambe to protect a child who’d fallen into the exhibit. More broadly, there’s a greater sensitivity to the environmental implications of zoos.

Ask a dozen zoo directors why these places should exist today and you’ll get a different answer every time. Education, conservation and science all come up. But the most common answer—fostering empathy for animals—is becoming harder to do while providing humane care to these animals.

Study after study has shown that many animal species are far smarter and more feeling than previously understood, giving new insights into how they may suffer from anxiety and depression when they are removed from nature. That has forced a difficult existential question: If we acknowledge that creatures suffer when they’re confined, should they be held in captivity? Not even those who have advanced the cause for more-humane exhibits have an answer. “Even the best zoos today are based on captivity and coercion,” says Jon Coe, the legendary zoo designer who invented the Zoo360 concept for Philadelphia. “To me, that’s the fundamental flaw.”

“THAT MOMENT AT A ZOO, when a person sees a gorilla look them back in the eye, helps them grasp their role...
in a greater natural world,” says Mike Clifford who works with zoos at GLMV Architecture. Clifford’s job title is curator of innovation, but colleagues consider him the firm’s chief philosopher: he’s charged with contemplating the difficult questions about the future of zoos. He thinks the answer lies in fostering human-animal connections—and making sure those experiences also help sell tickets. That’s what GLMV has tried to do in Wichita, Kans., where visitors to the Sedgwick County Zoo can now ride in a boat to see the elephants in a 5-acre exhibit. The boat ride breaks down the barrier between animals and people while giving the elephants room to roam freely.

In Philadelphia, officials hope Zoo360 will provide those moments of connection, but they have also invested in other unusual ways of structuring their exhibits. Pigeons, rats and cockroaches may not qualify as exotic fauna, for instance, but they do occupy prime real estate. While I was there, children gathered around a zookeeper putting a rat through tests designed to show its intelligence.

Zoo designers are also well aware of the need to address growing public skepticism of animal captivity, which means more zoos are working not only to make their exhibits better suited for the animals—but also to be able to demonstrate that to their visitors.

A good example is the St. Louis Zoo’s new polar bear exhibit, a $16 million facility tailored to reflect the latest research about the animal’s needs. The 40,000-sq.-ft. exhibit includes areas dedicated to each one of the polar bear’s native environments: sea, coast and tundra. Designers built it to be spacious enough to accommodate up to five bears, allowing them to have a social environment. Finally, for any visitors still not convinced that the zoo has the bears’ best interests at heart, the zoo has a 2,600-sq.-ft. animal-care facility where vets can tend to the bears’ health.

Pressure to develop state-of-the-art exhibits like this one means that most zoos will eventually need to reduce the number of animals they house. The footprint, and the cost, is simply unsustainable, several zoo experts told me.

Consider the growing challenge of providing a home to elephants. Research consensus over the past decade suggests that most current exhibits are woefully inadequate. The most recent study—a comprehensive article published in the journal *PLOS One* in July—shows how elephants thrive best when they have social connections and the challenge of having to gather their own food. When those factors aren’t present, elephants tend to have impaired mental states and do not carry out basic functions like reproduction. The study confirms what zookeepers have known for years. In fact, the Association of Zoos and Aquariums (AZA) approved rules in 2011 requiring any accredited zoo with elephants to keep at least three of the species and a full-time elephant scientist on staff, among other things.

But not every zoo has the space or budget to meet those guidelines. Some, such as the zoos in Omaha, San Diego and Houston, have doubled down with better facilities. Others—in San Francisco, Seattle and Chicago, to name a few—have given up on keeping elephants entirely. (Other zoos, known derisively as roadside zoos, might keep elephants but lack certification from the AZA and largely fall outside the scope of this story.)

Coe believes these changes are just a taste of what to expect next. He has been one of the zoo world’s foremost thinkers for four decades. His Philadelphia Zoo360 project is only the latest brainstorm in a career that has spanned innovative designs at the Bronx Zoo, Chicago’s Lincoln Park Zoo and others. When Coe looks ahead, he sees an even greater divergence between the biggest, best-funded zoos and the rest of the pack.

The top zoos, Coe believes, will evolve into something he calls the “unzoo”—turning upside down the traditional approach of bringing animals to humans for their edification. The unzoo will reverse the setup, giving animals space to roam and bringing the humans into their environment. Think Wichita’s elephant boat ride, but on a grander scale.

The hitch is that many established zoos may not be able to fund a transformation of that scope. More institutions may need to follow the lead of Seattle and others in closing down exhibits that fail to meet new standards and expectations—and the zoos that are most squeezed may be forced to close entirely as requirements from accreditors and patrons grow more taxing.
major-city zoo. Hancocks, an architect by training, had long been concerned about what he saw as zoos’ indifference to animal life. “These people aren’t designing for the animals,” he recalls thinking. “They create exhibits in which they can put animals on show.”

That, of course, was the original idea. In the 16th and 17th centuries, European explorers captured and brought home the exotic animals they encountered, giving their benefactors a glimpse of the far-off lands they had visited. Animals were housed in facilities called menageries and were often placed in the gardens of palaces.

The first true zoo, founded in London’s Regent’s Park in 1828, did seek to further scientific understanding of animals. Those scientists observed animal behavior behind closed doors at first but eventually decided to open the facility to entertain paying guests. The public loved it, and since then zoos have spread across the globe to practically every major city, from Buenos Aires to Kabul. But for decades, even the most progressive zoos were often centered on cages with bars meant to keep the animals inside—and on display.

Hancocks had something different in mind. Within a year of taking charge in Seattle, he hired Coe to rethink how zoo animals are kept in captivity. Coe had been waiting for such an assignment since graduating from design school. He proposed creating a landscape with gorillas rather than a gorilla exhibit and developed a plan that incorporated natural vegetation, room to roam and abundant light.

Zoo traditionalists greeted the idea with skepticism. Gorillas would tear up the place, they said. But Seattle moved ahead with the concept—and in the span of a few years, Coe’s reputation evolved from impractical hippie to zoo visionary. His approach—now known as immersive design—soon became a global standard for major zoos.

The timing was prescient. Within a few years, the animal-rights movement would see growing mainstream interest. Zookeepers began to understand that animal-rights activists do not like zoos. For some animals, like the polar bear, zoo life means enduring warm temperatures at odds with their evolution. Predators—like the lion—will never hunt, even though that behavior is deeply wired in their DNA.

“There are legitimate arguments for retaining some species of animals in captivity,” says Princeton University professor Peter Singer, whose landmark 1975 book Animal Liberation helped launch the animal-rights movement. “That doesn’t mean that people have to go and look at them.”

Research in just about every discipline of science relevant to zoo animals over the past few decades has bolstered the moral arguments against captivity. Neurology research has shown that mammals possess the same brain chemicals that give humans self-awareness. Behavioral studies have demonstrated that some species experience social relations previously not understood. Animal psychologists have concluded that animals experience many of the same mental-health ailments suffered by humans.

Popular culture has helped make the case. The documentary Blackfish showed the emotional damage wreaked upon orca whales at SeaWorld. (The company has since announced that it will phase out killer-whale shows.) Last year, social media was suffused with outrage following the May 28 killing of Harambe at the Cincinnati Zoo. Critics asked whether the zoo needed to kill Harambe, a member of an endangered species, to save the child who had fallen into his exhibit.

AFTER DOING SO MUCH to shape the zoos we experience today, Hancocks now spends more time thinking about what he sees as their imminent downfall. Zoos are more interested in the illusion of making visitors think animals are well cared for than in actually helping them, he argues. A modern exhibit may look better than a cage, but an animal may derive little benefit from it. Landscape details are artificial, and fake grass is electrified to keep animals in one place.

“A concrete tree is as useless as a light pole,” says Hancocks. “They give an illusion that they’re making progress, but
I think from the animal’s point of view, they’re really no better off.

Most zoo officials, unsurprisingly, don’t agree. Many have dedicated their life to working with animals and have formed deep bonds with the creatures under their care. But these days, even while they push to improve the lives of their charges, they’re also fending off protests, lawsuits and publicity stunts by animal-rights groups. Some of the zoo officials I spoke with used words like “extremist” and “zealot” and said they feared the movement would ultimately end the good they believe comes from their zoos.

Conservation—the work of protecting endangered species—is at the top of their list. The AZA strongly encourages zoos to spend at least 3% of their budgets on field conservation efforts. Foremost among those efforts are breeding programs. The AZA creates in-depth survival plans for endangered species and has saved, among others, the red wolf and the California condor. Both have been reintroduced to the wild after living on the brink of extinction.

Other endangered animals bred in captivity—particularly large animals like elephants, lions and bears—could never adapt to the wild and will inevitably live the rest of their lives in zoos. And then there are the big efforts that fail—like the case of Lonesome George, the last remaining Pinta Island giant tortoise when he died in 2012. Researchers in the Galapagos spent years trying to breed him with females of a closely related species (at one point some even considered showing him an X-rated tortoise film), but he had no interest. His species died with him.

Against that backdrop of success and failure, more zoos have broadened their definition of conservation. Instead of saving a species, some argue, they advance conservation work by educating patrons and pushing them to donate to the cause. Other zoos tell their visitors to act on climate change to protect animal habitats across the globe. “If you cannot connect every single exhibit to something in the wild, then you shouldn’t build it,” says Rick Barongi, a former Houston Zoo director. “You have to be part of the conservation story. You can’t just be writing checks.”

Not everyone buys the conservation mission. “I think this conservation quilt that zoos are wearing is quite dubious attire,” says Hancocks. “I would go so far as to say I think they are doing a disservice to conservation. They tell visitors over and over that zoos are saving wildlife, and visitors think, Oh good, the species are saved.”

Zoos are fundamentally conservative institutions. Many of the most respected ones have been around for more than a century and have built their facilities over time and devoted countless resources to breeding. The people who run them are slow to make changes and, when they do, those changes can take years to implement.

Most of the zoo officials I talked to acknowledged some concerns about the future—but many were also reluctant to embrace dramatic shifts like the unzoo.
Indeed, some in the field have already criticized Zoo360 as outlandish, calling it a lot of hype without substantially changing the exhibit. Coe has largely turned his attention to developing international zoos in developing countries like Afghanistan, where he works pro bono and can share his vision of the future of zoos.

On the human side of the equation, one thing remains clear: people still enjoy a chance to see and get close to animals. More than 170 million people visited zoos in the U.S. in 2015, according to the AZA, up 10 million from 10 years prior. And many zoos have experienced record attendance. “The business continues to change and evolve—like any business,” says David Walsh, who founded Zoo Advisors, a zoo financial-consulting firm. But, he adds, “people are still going to zoos. And they’re going in bigger numbers than they were before.”

Still, those numbers will do little to diminish the growing outrage of animal-rights activists, and if cockroaches replace elephants in the country’s top zoos, strong attendance will undoubtedly decline. “Where are we going?” asks Towne, formerly of Seattle’s Woodland Park Zoo, repeating my question. “I guess I’m worried.”

**The high-rise zoo**

**Best for:** Groups of animals that can be confined to a narrow space. These could include aquatic species along with a slice of the rain forest. Birds could use the space as a habitat while also spreading their wings in the open air.

1. Sea, cliff and forest attractions could be linked by special tubes to give visitors an underwater view of an ecosystem. Canopy walkways and tree houses could also be integrated

2. These zoos could include small and vertically oriented animal communities, such as in a rain forest

3. Nocturnal species could rotate with diurnal ones, keeping the zoo open 18 hours a day

4. These zoos could be built into existing high-rise commercial buildings with residential communities. They could include several interconnected towers with themed restaurants, shopping and hotels in addition to the animals

Some exhibits would combine species to simulate wild ecosystems

Commercial elements like restaurants and hotel space could turn zoos into luxury vacation destinations