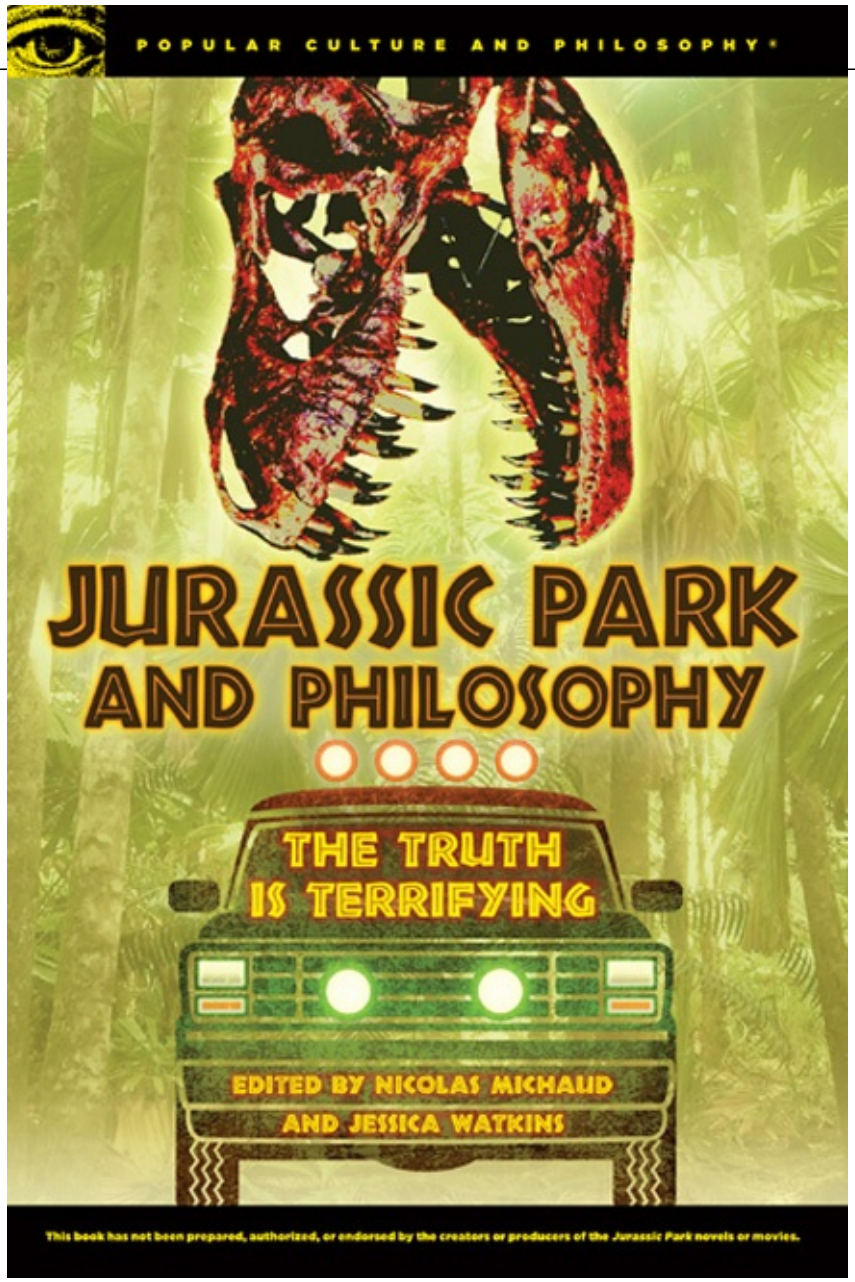
POPULAR CULTURE AND PHILOSOPHY®
JURASSIC PARK
AND PHILOSOPHY
THE TRUTH
IS TERRIFYING
EDITED BY NICOLAS MICHAUD
AND JESSICA WATKINS
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Jurassic Park and Philosophy

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Popular Culture and Philosophy®

Jurassic Park and Philosophy

The Truth Is Terrifying

Edited by
NICOLAS MICHAUD and
JESSICA WATKINS

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Thanks

The task of putting new life into old ideas (mixed in with some new ones) is monumental, Hammond's team would attest. We'd like to thank a few of the many people who helped conceive an hatch this book:

Thanks to David Ramsay Steele and George Reisch for their guidance in this work and for makin sure it's as tasty and tender to our readers as a certain hated attorney was to a certain belove *Tyrannosaurus rex*.

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Thanks to our students and colleagues, who have patiently dodged some hissing spit when o deadlines wore our patience thin, and who are likely to tranquilize us if we make so much as one mo dinosaur analogy.

Thanks to our readers for holding hope in human triumph over ourselves, and for enjoying th flawed experiment so much that you want to learn more about it. You make Jurassic Park a rea possibility.

Thanks to all of our teachers who ever made us gape in wonder at the universe around us and ach to know more. Thanks, also, to the ancient and contemporary philosophical and scientific heroes fro Democritus to Neil deGrasse Tyson, who remind us that life without wonder is no life at all.

We Spared No Expense

Michael Crichton changed the world. Monsters that had once been reserved for B-horror flicks ar low-budget cult movie classics came charging to life in *Jurassic Park*. There's a good chance yo remember the theater where you first heard the seat-rattling roar of Spielberg's *Tyrannosaurus re* and all of us—and we do mean *all* of us—got just a little misty when we looked up in awe with D Sattler at the majestic arching neck of our first live brachiosaurus.

Crichton's books, and the movies that came from them, didn't just become a pop-cultu phenomenon; they inspired generations of thinkers to dream of what was once impossible. Crichto and Spielberg did more than give us a thrill-riddled roller coaster ride of a movie to lose ourselves while we shovel popcorn and candy into our mouths . . . they gave us *hope* (along with the cavities Crichton didn't just imagine these terrific monsters, and Spielberg didn't just put them on the b screen; they showed us how it might be done—how it *could* be done.

It's true; we are a long way away from bringing back dinosaurs. It may turn out to be impossibl Current scientific thinking suggests that, sadly, it is not going to be feasible in the precise wa described by Crichton. But the inspirations of science, the dreams of ingenuity, the passions that driv progress, are not held back by little things like "reality."

It was thousands of years after the first philosopher dreamed up the idea of an atom before v discovered them—and our atomic reality bears little resemblance to his ancient dreams. So, it may l a thousand years before we can bring back dinosaurs, and, maybe, the way we do it will have little common with Crichton's vision. But that still puts Crichton in pretty good company. Crichto imagined a possibility, and then he didn't just put it down on paper. . . . He poked, and prodded at i he tried to *understand* the range of possibilities. He had no way to test his idea; he could only imagi it. He wasn't doing science—he was doing *philosophy*.

And that's where this book starts. Crichton wanted us to do more than just enjoy the book, or gorg ourselves on tasty theater treats. He wanted us to *think*. And he had good reason to do so. Wheth inspired by his work or not, scientists are trying to bring dead species back from extinction, whi humanity itself seems to enjoy consistently teetering on the brink of oblivion.

It may well be that in the near future we will look up in wonder as the Passenger Pigeon, broug back from extinction, blackens out our skies again (and again coats thousands of acres of land with a inch-thick layer of droppings), and immediately afterward we evaporate ourselves with som impressive, but unfortunately effective, doomsday weapon. *Jurassic Park* goes far beyond whe science—mad or otherwise—can go . . . it goes into the worlds of ethics and metaphysics; it makes u ask what we *should* do with science. Because what we *can* do and what we *should* do are two ve different things.

So, this is where we explore what *Jurassic Park* reveals to us about God, creation, moralit science, language, reality, and our bright or *bleak* future. We spared no expense—it's all up fo questioning, because when Ian Malcolm asks us whether we should bring these tyrant lizards bac

from the dead, that question isn't the end. . . . It's just the beginning.

Crichton's message seems pretty clear—he wanted us to think because, when we don't, people *di* *Jurassic Park* does something even the scariest of our horror movies can't do; it reaches not *awa* from reality but *towards* it to remind us that we are very, *very* edible. No ghosts, no goblins, no mag —just *nature*.

We like to think, like John Hammond, that we have control, but we don't. In the end, we would b little more than bloody smears on the teeth of a *T. rex*, or disemboweled and paltry playthings for young velociraptor.

The ground is shaking, the future is coming, and our little worlds tremble before the tremendou possibilities confronting us. Will we survive it? Probably not. This may well be the last book you rea before the unimaginable and unpredictable future arrives.

So call your mom. Tell her you love her. And then sit back, relax, and let us take you on a tour o something surprisingly real and deadly dangerous. . . . Welcome to *Jurassic Park and Philosophy*.

I

Present at the Creation

1

Damn You, Michael Crichton!

NICOLAS MICHAUD AND JESSICA WATKINS

That's right. We said it! Well, we *wrote it*, and that's almost worse. We're unhappy with Micha Crichton, writer of numerous bestsellers, visionary behind *Jurassic Park*, and hero to millions. . Why? Actually, for a very good reason! Crichton's work, though profound, beautiful, engaging, ar brilliant, is also scary (and a bit addicting). After all, if his world weren't so engaging, you wouldn have spent money on this book, would you?

You're probably thinking, "Well, what's so bad about all that? He's created a beloved saga tha has continued to live on beyond him. He should be well respected and acknowledged for his brilliand not harassed by some shaggy-looking, ill-tempered philosophers!" Fair enough, but hear us out. Wh if Crichton has actually done us some harm? What if, by creating a world that enraptures us, l created a picture for us that makes us just a little *too* afraid? And when we say afraid, we don't ju mean of dinosaurs (though, yes—if you run into an actual cloned *Tyrannosaurus rex*, . . . RUN!), v mean, maybe he's made us just a little too afraid of *science*.

In this book, you see a lot of very bright work from some brilliant philosophers. Most of them, you've noticed, give a grateful nod to the warnings of *Jurassic Park*. . . . "Don't get cocky," "Don play God," "Don't screw with nature," "Don't bite off more than you can chew," . . . yada yada yad We seem pretty comfortable thanking Crichton for this advice. After all, *Jurassic Park* isn't just monster movie; it's a story that warns us about how dangerous our technologies can be, and how ver delicate we are when we're in the jaws of a *T. rex*.

But that's just our point! We're *delicate*. Dr. Ian Malcolm reminds us constantly that "life finds way." . . . Sure, *other* life. Dinosaurs go extinct and suddenly a bunch of small, furry, smelly mamma take their place. But those dinosaurs are D-E-A-D, *DEAD*. And that wasn't even the worst cataclys to hit the Earth. There've been bigger extinctions; the one that killed the dinosaurs is just our favori one!

What we mean to say is, some life (in fact *most* life) *doesn't* find a way, even if life as a who succeeds; life forms, species, and ecosystems are pretty darned vulnerable. We see that vulnerabili all through *Jurassic Park*. We're vulnerable, our society is vulnerable (our economy is *real* vulnerable—and not just to those deadly beasts). Humans developed science and technolog specifically to deal with that vulnerability. And now, thanks to Mr. Crichton and his Dr. Malcol (who, as you can hear echoing throughout this book, believes scientists should be more concerned wi whether we *should* act than if they we're *able* to act), we're all just a little more timid about using th one thing that helps us stay a step ahead of all the stuff out there trying to kill and eat us!

BOOM

Let's face it. The sun's gonna explode. —And we're not scientists, but we're pretty willing to gues that at that point life on Earth will cease to exist. This, of course, doesn't mean that all life everywhe will cease to exist, but when the Earth is enveloped in the unimaginably hot plasma of the sun supernova, life on Earth will disappear—along with the Earth itself!

Life is vulnerable. That's one of the terrifying realizations of science, and we think it's part of wh we often want to reject scientific thought. Before it became predominant, humans were pret comfortable with the idea that we were the center of the universe and pretty comfortable with the id that everything revolved around us. In other words, we believed that we were special, and that v mattered. But science really challenges that idea.

We tend to think that science makes us arrogant. It seems that Crichton certainly thinks so; h paints a picture of science where corporate jerks and blind scientists run amok, resurrecting the dea in all kinds of really suicidal ways. But this is a pretty terrible picture of scientists. Scientists a actually generally really careful, and spend their whole lifetimes focusing on developing or hypothesis to the best of their abilities.

Rather than making us arrogant, science actually humbles us. Unlike previous pictures of th world where humans beings are basically beamed down from heaven, placed in charge of all of th "inferior" animals, and are the center of the universe, science paints a picture in which we owe o ancestry to the same muck and mire inhabited by the simplest bacteria, are closely related to apes, ar are clinging by our fingernails to a small and unimportant rock whizzing around the sun at ninetee miles per second. So, we think Crichton is pretty wrong here, as is Dr. Malcolm. Science isn't wh lets us play God. It's what reminds us that we *are not* gods and that we are just another part of creatio —a very vulnerable part of creation.

So we realize that if (as science teaches us) we aren't really all that special in the universe, the we could suffer the same fate as everything else in it. In other words, just like a whole lot of oth species who've kicked the bucket, we may, maybe even through no fault of our own, find ourselv also very, very dead. The Permian extinction took out ninety percent of life on the planet. And wit regularity we hear about some just-discovered meteor that is about to whiz past us. Why aren't v busy building a super-sophisticated anti-meteor program around the globe? We're glad to hear th UN talks are *finally* starting on this subject, but we suspect it might be worth our while to hedge o bets by putting Bruce Willis out there with a hammer, or some dynamite, or something.

Being Eaten Sucks

Look, we're not saying that Crichton got it *all* wrong. In a lot of ways his book is about how we' very, very vulnerable. While Malcolm is "finding a way," dinosaurs that find humans crunchy an darned easy to catch are picking everyone else off. In fact, isn't Crichton warning us that we cou bring about our own extinction through our stupidity? It's bad enough that there is—somewhere o there—a meteor with our name on it, but we seem to be trying pretty hard to do ourselves in.

Humans are very short-sighted. We've forgotten that being eaten *sucks*. Maybe that's wh Crichton was trying to get at: that we have become so comfortable in the world that we've creat with science that we have forgotten what it was like to be hiding in the tall grass while somethin large, toothy, and hungry hunts us down. The fact is, though (as Crichton reminds us), we're still qui edible.

But that idea isn't contrary to science; it's *proclaimed by science*! Many people avoid this fe
because they have a belief in a soul. Now, the idea of a soul is pretty unscientific. —That isn't to sa
that the soul doesn't exist, but that it isn't something that science has a whole lot of evidence for. Isn
a soul really a kind of "being eaten insurance?" Wouldn't having a soul basically make dying not s
bad, because after you die you still get some sort of existence somewhere else?

Science flies in the face of that way of thinking. Our realizations through our investigations of th
world grab us, shake us, and scream, "Seriously! You are really fragile . . . cancer, heart disease
velociraptors! There are, like, a zillion things that could kill you, just in your neighborhood!" Scienc
is our way of acknowledging—rather than ignoring—danger, and then, trying to confront that danger

Why Being in the Restroom when *T. rex* Eats You Is a Good Idea

Okay, so let's look at it like this. Maybe Crichton's criticism of science is that it makes us think w
have control. And that's why we keep coming back to the "god" analogy. We gain so much unearne
personal power through science that we forget we don't have the control we think we do. So w
become arrogant, and then start doing stupid stuff.

Fine, but is a rejection of science really going to change human arrogance? Let's think abou
someone like Jean-Jacques Rousseau. This guy was pretty anti-Enlightenment; he thought that th
whole push towards science was a bad idea, moving us away from the natural world and our place
it. He thought we should go back to nature, accept our place in it, and be happy.

Honestly, we see absolutely no reason to believe that giving up science-mindedness woul
suddenly make us *more* humble. For example, there are plenty of people who believe that their abili
to pray gives them some control of the world. They believe, without a doubt, that because they hav
the right connection to God, they have nothing to worry about. Suicide bombers have to be pretty su
that they chose the right god, the right belief, and the right ideology to blow themselves up to ki
other people. We—as a species—are very good at misusing all sorts of ideas in order to defend ou
own arrogance.

Sure, science can be something that some nuts allow to go to their heads, but it's actually pret
hard to perpetrate those atrocities when our discoveries keep reminding us how small and un-speci
we are. To a *T. rex*, we're just another tasty treat. And in the history of the Earth, we're just a blip o
the map.

Which is really the more arrogant perspective: the idea that Earth is 13.72 billion years old, an
we have barely been around for any of it, or the idea that Earth was created in six days and we we
the final and grandest creation? The fact is, you don't see a whole lot of people going to war over the
belief in something scientific, because science *always allows for the possibility that we're wrong*
Science isn't what we should fear.

You see, Hammond was a *very bad* scientist. He was so sure that he couldn't be wrong that h
actions verged on the extreme beliefs of a suicide bomber. He had no doubt that his plan would wor
and in fact, he was so sure that he was willing to test the thing out on his grandkids. Not man
scientists would do that. (Can you imagine it? "Come here Suzie, this cure for cancer totally work
we haven't tested it yet, but what could go wrong?")

What Is a *T. rex*?

Science isn't a thing that we need to be careful of; it's a way of viewing the world. Think of a *T. re*

for example. There are a few ways we could view Hammond's creation:

---

1. an atrocious monster that is a spit in the eye of God,

2. a grand achievement of human intellect over nature, or

3. a dangerous animal that we barely understand and want to study very carefully in order to avo being eaten by it.

The third option is pretty clearly the most scientific one. In fact, scientists are pretty brave, thoug not full of bravado. They would not run away from the *T. rex*—nor would they act like they *know* the can control it; they would seek to understand it so they could better live with it.

What really bothers us most is the knowledge that people treat science like it takes all of th wonder out of the world. The going rationale is, "Well, if you can create a *T. rex*, haven't you take the *magic* out of it?" When we learn that Santa isn't real, the Easter Bunny is a sham, and the Toot Fairy is just a con, we learn that scientific reality just destroys dreams and hopes. Humans want believe that the world is magical, amazing, and if we just wish hard enough, maybe we could mak something miraculous happen. Damn science. It takes all of that away. No magic, no fun, no fantas Just blunt, hungry reality, constantly trying to eat us. Shouldn't we, like Rousseau, reject science s that we can return to a wonder of nature, and the universe? Wouldn't that be true humility?

No. The idea that the universe is more wonderful when it matches our fantasies is true arroganc Scientific inquiry forces us to try to understand the world, rather than try to make it match our dream and hopes. That's why it's so powerful! If we really learn it, we learn how to manipulate the actu world, and not just our imaginations.

—And as for wonder, scientists like Neil deGrasse Tyson, Stephen Hawking, and Albert Einstei would be horrified to hear someone suggest that science kills wonder. Whether made by God, or som random unexplained event, the universe is amazing . . . even without Santa! As Einstein said, "Th most beautiful thing we can experience is the mysterious. It is the source of all true art and a science."

When we really reflect on the world and our place in it, how can we not be in wonder of it? We ar compilations of trillions of atoms that are constantly being lost and exchanged for new ones. We'r part of a galaxy that is moving at about 185 miles *per second*, and we can't even feel it. The sun is s large that even at 93 million miles away, we can see it. And we can feel its heat even though 185,000 miles per second, its light takes eight minutes to reach us. Take time to study a leaf—to real *study* a leaf: understand how it turns light into usable energy, and then uses that light/energy to crea flowers that make *more plants. The universe is wondrous!*

Carl Sagan made a point that we think is actually very, very humbling. He realized that if we ar made up of "star stuff," then there's no difference between us and the rest of the universe. Stars an dinosaurs are made up of protons, neutrons, and electrons and *so are you*. In other words, we' arrangements of *stuff* that can think and feel! Sure, we could just shrug our shoulders and say, "O well, that's 'cause I have a soul." Or we could realize the tremendous fact that we are just luck arrangements of matter in the universe that *realize they are the universe!*

Which do you think is the more humble thought? On the one hand, you have the idea that you' separate and distinct from nature because you have a special something that nothing else does, and o the other, you're just the universe becoming conscious of itself for a brief instant before a *T. rex* ea you. The more humble thought may also be the more wondrous.

Don’t Burn Crichton’s Book . . . or This One!

When we say all of this, we don’t mean that Crichton is wrong or that we shouldn’t be humble befo the divine; we just lament that he only gave us half the story. Where are all of the scientists wh would be working to fix what Hammond and his team did so horribly wrong? All we get to see, for th most part, are scientists who are overwhelmed by corporate greed. The few other scientists who a “good” detach themselves from the park and its creations. But that really isn’t how it would wor even in Crichton’s narrative.

Think about all of the scientists who would be working day and night to protect us from tho dinosaurs. Think about the botanists working to use those plants to find cures for diseases th couldn’t be cured before. Think about the zoologists who would be studying the animals to understa aging, genetics, and physiology, which would also help us in thousands of different unpredictab ways. There would be scientists who would be working to figure out (somewhat sadly) how to ki those dinosaurs in case the hypothetical threat they pose were ever to be realized. And think about th scientists who would be working hard to figure out a way for us and the dinosaurs to live together peace.

So, really, the message we should take away from *Jurassic Park* isn’t that we should be afraid science. Nor is it that we should just do whatever we want with the power we gain from it. Maybe th lesson is that life is fragile, *we* are fragile, and science is the shield and the sword we use to he ourselves survive in a very hostile but beautiful world.

Whether we choose to use those tools to do harm is entirely up to us; in the end, if we d something stupid because we’re arrogant or greedy, let’s not blame science . . . because it was scienc that was whispering in our ears, “You really aren’t that special. Be careful! There’s a very, *very* b world out there, and almost everything in it could kill you.”

2

Let the Raptors Run!

GREG LITTMANN

You get your first look at the six-foot velociraptor as you enter a clearing. He moves like a bird, lightly, bobbing his head. Yo stare at him, and he just stares right back. And that's when the attack comes. Not from the front, but from the side—huma beings selling merchandise. Want a velociraptor hat? A bucket of edmontosaurus meat to toss to the tyrannosaurus? Or perha you would like to make a donation to save the giant orthocone? That's a thirty-foot squid that became extinct millions of yea before the first dinosaur appeared, and you can't get more endangered than that. . . .

What would you give to see a velociraptor eye to eye, separated by the bars of a steel fence, but clo enough to make out the saliva on its serrated teeth as it sizes you up as a meal? What about the chan to see a wooly mammoth stamping the ground, and to hear it trumpet its defiant return to the Eart The movie *Jurassic Park* and its sequels may be science fiction, but biologists are already planning revive extinct species and are steadily improving their ability to do so. The red-breasted passeng pigeon, the Pyrenean ibex, and even the gigantic wooly mammoth that once sent our spear-wieldi ancestors screaming in terror are just a few of the species being targeted for new life, a process oft known as "de-extinction."

Dinosaur DNA has long ago decayed past the point from which we can recover it, so we can't ju drain a mosquito preserved in amber and clone some tyrannosauruses to thrill the kids. Sti potentially being able to resurrect species from the past few tens of thousands of years is a extraordinary prospect, and advances in genetic engineering may one day allow us to recreate mo ancient species yet, even if we have to redesign them gene by gene.

Just like Hammond's geneticists in *Jurassic Park* filling in the gaps in dino genetic code with fr DNA, real scientists are likewise attempting to artificially fill in missing pieces of DNA in order recover species that have not left behind a complete genome. Geneticist George Church of Harva University suggests recreating the passenger pigeon genome by splicing manufactured genes th replicate fragments of passenger pigeon DNA into the genome of a rock pigeon. It can only be matter of time before geneticists explore replicating species as best they can without using any of th species's original DNA. It may be debatable whether a tyrannosaurus designed from scratch b geneticists without any original dinosaur DNA qualifies as a real tyrannosaurus, but that, too, may or day be in the cards.

So we stand ready to reintroduce extinct species and might even one day be able to constru reservations for the animals of prehistory, like Jurassic Park. Of course, the fact that scientists hav learned *how* to do something doesn't automatically mean that it *ought* to be done (we could put history's greatest fireworks show by detonating all the nukes at once, but let's not).

Should We Raise the Dead?

You did it. You crazy son of a bitch, you did it.

—Dr. Ian Malcolm

Why might we want to revive extinct species? The most obvious reasons are much the same as f why we should want to conserve species that are alive today. One powerful motivation is simply th we *like* to know that other species exist. Throughout recorded history, humans have delighted nature, and there is a sense of loss, at least for many of us, when a species goes out of the wor forever. We want elephants to keep existing because elephants are, to put it bluntly, very, very *cool*.

This motivation for conservation is also a motivation for the reintroduction of lost species. If th elephant is cool, then so is the mammoth, and so are the other vanished species of history an prehistory. The meteor strike and other global catastrophes of 65 million years ago that wiped out th dinosaurs allowed for the evolution of large mammals like us, but it was in some ways a terrib tragedy. Magnificent animals of the late Cretaceous, like the ferocious tyrannosaurus, the thre horned triceratops, and the mace-tailed ankylosaurus were wiped from the planet. We may be glad th their extinction allowed humanity to evolve, and even glad that they're not free to terrorize us today they once terrorized our shrew-like ancestors. Still, the awful fact that *there are no tyrannosauruse* makes the universe that much less wonderful, just as the loss of the last elephant would. We can a sympathize with the joy and awe Drs. Alan Grant and Ellie Sattler feel in *Jurassic Park* as they ga on a vista of towering brachiosaurs striding majestically through the river. As every young chil intuitively understands, dinosaurs, too, are *cool*.

In the case of species conservation, people frequently don't just want to know that the speci exists; they want to *experience* it, too. For example, people like to see elephants, and they like it eve more if they can get within close range, such as at an animal park or zoo. Similarly, in the case reintroducing extinct species, our motivation may not simply be for the species to exist, as on th isolated dinosaur reservation on the island of Isla, but for the species to be accessible to us. We migh even want to build equivalents of Jurassic Park itself, with prehistoric animals on display as we driv by in our cars.

Other motivations for species conservation are more practical. One is that having a wide variety animal and plant species available for study is incredibly valuable for the advancement of science an technology. Most obviously, every species is a unique resource for biology or botany, and all th fields that stand to benefit from their research. Not only could we learn by the study of the speci reintroduced, but also from the process of learning how to produce them. In *Jurassic Par* Hammond's scientists use frog DNA to fill in gene sequence gaps in their dinosaur DNA, learnin more about DNA and how to manipulate it along the way. In the real world, each new experiment wit life improves our understanding.

Perhaps the most popular motivation for species conservation is that humans depend on the heal of the ecosystem. The loss of any species that is part of the system threatens the stability of the syste itself, and that threatens *us*. For that reason, it would be smart to reintroduce many lost specie Reintroducing the species into their old ecosystems could have a stabilizing effect as they step into th role in the ecosystem that they used to play. Mammoths once helped to keep the steppes of Siberia grassland instead of an icy tundra, by breaking up and fertilizing the soil. It may well be th reintroducing the mammoths could help to restore the land. Genetic engineering is often condemne as unnatural, but it may be that de-extinction will prove to be an invaluable tool for healing nature

the damage we've done.

Beyond Ecology and into the Theme Park

> Dr. Grant, my dear Dr. Sattler, . . . Welcome to Jurassic Park.
>
> —DR. JOHN HAMMOND

However, not all de-extinction is likely to help the ecosystem, with the *Jurassic Park* films offering prime example. Even if we could bring back dinosaurs, as Hammond does, life has changed so muc in the last 65 million or more years since these species were around that the ecological roles they onc played have long ago been made obsolete. Releasing velociraptors back onto the plains of Mongol would be a disaster. In the unlikely event that the raptors survived at all in an environment they didn evolve to live in, the harm that a thriving raptor population would do to established species would l enormous (though it would make picnics *much* more exciting!).

De-extinction without ecological benefit is far more morally controversial than de-extinction wi ecological benefit. There are certainly people who sneer at attempts to protect the ecosystem, b almost always, it's because they don't believe that the ecosystem is under threat, not because the don't care if it collapses. Keeping the ecosystem working is essential according to almost every mor theory, since almost every moral theory forbids harming something on which billions of peop depend to live. Many people believe that we have moral duties that extend beyond humanity—duti to animal or even plant life—which make protecting the ecosystem even more important.

On the other hand, recreating species purely for human scientific advancement and person pleasure won't be any sort of benefit to non-humans, a fact which forces us to ask whether there anything exploitative or otherwise inappropriate about using non-human life in this way. There a clearly cases where treating non-human life as a tool for our benefit is morally okay. Growing co requires manipulating nature for our own benefit, but doesn't constitute corn abuse. On the other han there are also clearly cases in which treating non-human life as a tool for our benefit is wrong. Hammond had entertained the public by pitting his dinosaurs against each other in combat to th death, it would have been an abuse of his power (and if your sympathies don't extend to a confuse stegosaurus being gored by a raging triceratops, consider the immorality of staging fights betwe dogs or bears or monkeys).

What isn't clear is exactly what distinguishes a morally *acceptable* use of nature from a moral *unacceptable* one. How should we decide whether we're acting morally or not when dealing with no humans, especially when we bring back lost species to roam the Earth?

Equal Rights for Gigantic Carnivorous Extinct Reptiles Now!

> What's so great about discovery? It's a violent, penetrative act that scars what it explores. What you call discovery, I call the ra of the natural world.
>
> —DR. IAN MALCOLM

One straightforward way to extend our moral concerns to other species would be to value all li equally. An influential account along these lines was offered by Norwegian philosopher Arne Nae (1912–2009), who in 1973 drew a distinction between what he identified as the "shallow" and "deep ecology movements. Naess characterized the shallow ecology movement as being focused on th

"fight against pollution and resource depletion" with the central objective of "the health and affluen of people in the developed countries."[1] The deep ecology movement, on the other hand, treats th natural world as having value in itself, apart from any benefits it provides to humans.

In particular, the deep ecology movement recognizes "*the equal right to live and blossom*" of a living organisms. To limit our concerns only to humans is viewed as straightforward discriminatio against life that is unlike us. Naess's idea of the deep ecology movement evolved over time, but th notion that all life has a right to live and flourish remains an important value.

It all sounds very egalitarian, but will extending our moral concerns to non-humans in this wa help us with the issue of de-extinction? Unfortunately not. We still have no guidance on key question Do extinct species, like the tyrannosaurus, have a right to live, and if so, does this give us a moral du to revive them if we are able? Do our duties to an extinct species depend on whether the species wa driven to extinction by human beings—like the Neanderthal, the Dodo, and the Tasmanian Tiger– rather than killed off before humans arrived on the scene, like the dinosaurs? (Malcolm sure think that it makes a difference: "This isn't some species that was obliterated by deforestation, or th building of a dam. Dinosaurs had their shot, and nature selected them for extinction," he protests.) Ca a *species* even have rights, or can only *individual* organisms have them? If only individual organism can have rights, then does any consideration of rights help us determine whether to reintroduce extin species, since no *individual*, specific animal or plant is going to be brought back from the dead? Th notion of a universal right to life and flourishing doesn't give us any clear guidance.

Worse yet, in insisting on an "equal right to live and blossom," we are projecting human interest onto nature, even while we attempt to avoid the assumption that human interests are the only ones th matter. Why think that an organism has the right to "live and blossom" rather than, say, a right to "d and wither"? For humans and many other animals, it's because we have a passionate desire for life an what life has to offer. An animal like a lion may not understand what death is; but, given the effort expends on activities like hunting food and finding nice places to lie in the sun, there are clear things that a lion wants that only life provides.

A plant, however, has no desire for anything. Lacking a brain, it also lacks thoughts, feelings, an consciousness. It's easy to interpret the way that a plant responds to its environment as striving survive—they sink roots into the soil where the water is and sprout leaves that will turn towards th sunlight and soak it up—but the mere fact that something in nature *does* something doesn't mean th it *intended* to do that thing. A raindrop doesn't desire to fall; it just falls in accordance with the law of physics. Likewise, a plant grows in a way that makes it likely to survive not because it wants survive, but just because that is how it has evolved to grow.

A Future of Scientific Wonders

> We've made living biological attractions so astounding that they'll capture the imagination of the entire planet.
>
> —JOHN HAMMOND

What we need is a theory that acknowledges responsibility to non-human organisms, but doesn project our attitudes and desires onto them. In my view, the best fundamental approach environmental ethics doesn't come from recent work but from the beginnings of the animal right movement in the nineteenth century. The English philosopher John Stuart Mill, in his boo *Utilitarianism* (1861), laid out what he thought was the ultimate moral rule. Utilitarianism is the vie that "actions are right in proportion as they tend to promote happiness; wrong as they tend to produ

the reverse of happiness." Mill recognized that animals are capable of happiness and suffering ar saw this as giving us a moral responsibility toward them. Like animal rights advocates today, Mi believed that the law should intervene to prevent animal abuse, arguing that we have the same reaso to stop abuse of animals as we have to stop the abuse of children.

Utilitarianism gives us a moral framework that allows us to interact with the natural world in way that doesn't arbitrarily limit our moral concerns to humans. At the same time, it avoids projectin our preferences onto organisms that have no preferences of their own. Utilitarianism also gives guidance regarding de-extinction. Utilitarianism recognizes no specific right to life of any organism- not even you. All that matters is that happiness is maximized and suffering kept to a minimum regardless of who (or what) is experiencing them. Under utilitarianism, it will be morally right bring a species back from extinction when doing so is likely to produce more happiness than sufferin

Since utilitarianism only values total happiness and not the distribution of happiness betwee species, it doesn't matter how many species become extinct per se or are brought back fro extinction. Having said that, humanity could benefit both scientifically and from the sheer joy sharing the world with strange and marvelous species from the past.

There will probably still be no benefit to non-humans, since restored species are unlikely to l much *happier* than presently living species. However, using other organisms for our own benefit acceptable under utilitarianism, provided that the total happiness that results outweighs the tot suffering. We must, of course, make sure that if members of a restored species can feel pleasure a suffering, we provide them with the sort of life that's satisfying for them.

A plant has no well-being on this model, since it can't suffer, and so we may treat the plant as w like. A mammoth, on the other hand, would have an ability to suffer and this would give us obligation towards it. A mammoth would likely want to roam around grazing, rather than, say, living in a cage o fighting in an arena, and if we do revive mammoths, we have to respect such desires. Tiny-braine reptiles like the dinosaurs resurrected in the *Jurassic Park* movies may well not be capable suffering in the ways that a mammoth or humans could suffer, but their mere ability to feel physic pain makes them morally important.

Not only are dinosaur fights out of the question; so is killing them just for the thrill of it—lik hunter Roland Tembo from *The Lost World: Jurassic Park*. He views the animals as mere tools make himself feel alive—as objects to which he owes no moral concern. Justifying his ambition to ki a Tyrannosaurus, he explains simply, "Somewhere on this island is the greatest predator there ev lived. The second greatest predator must take him down." Even Dr. Ellie Sattler falls into the trap o treating the well-being of the animals as irrelevant compared to the well-being of humans. Dismissi Hammond's concerns for the dinosaurs as Jurassic Park collapses into chaos, she insists: "The on thing that matters now are the people we love." If we are to resurrect an extinct animal species, the we must take a more sympathetic attitude. We may use other species for our own benefit, and eve bring them back from extinction for our own knowledge and amusement, but only if we remember be kind.

So there's nothing wrong, in principle, with Hammond's dream of a wildlife park filled wit species resurrected from the dead. With biologists already working on the reintroduction of extin species, decisions about de-extinction without ecological benefit will increasingly need to be mad including, perhaps, whether to permit reserves like Jurassic Park for allowing the public to encount exotic forms of life from the past. With the recent discovery of liquid blood in a frozen mammo corpse in Siberia, and with plans already underway by Russian and Korean scientists to attem cloning it, it may not be long before a Pleistocene Park is up and running, giving a safe and happ