Geode

A Novel about Environmental Ethics

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Introduction

Geode is a novel intended for students in the middle grades. It deals with environmental ethics, the branch of philosophy that studies arguments concerning human responsibility for the natural world. American universities began offering environmental ethics courses in the 1980s. Since then, educators have slowly begun introducing the study to students in earlier grades.

It's not easy to teach young people about the problems facing our planet. We want them to be carefree and happy, looking forward to a wonderful life ahead, and yet we also need to be honest. Young people should know that humanity is facing serious environmental challenges. And they should also know that they can make a difference.

I took an environmental ethics course in 1990 during my undergraduate program at the University of Wisconsin, Madison. We read selections from philosophers who had thought long and hard about the fraught relationship between humanity and nature. By presenting differing perspectives, those readings invited me to develop my own point of view.

The aim of philosophy is to raise important questions and to encourage individuals to find their own answers. I wrote the novel *Geode* with that in mind. Its two main characters, Mark and Theo, know about our climate crisis, as do most kids today. They have to deal with the feelings of sadness

and frustration that this knowledge brings. But discovering environmental ethics shows them that human beings are ingenious problem solvers and that we therefore have good reason to be joyful and optimistic about the future.

Throughout the novel, Mark and Theo encounter seven great thinkers often studied in environmental ethics courses. You can read the novel and learn about these thinkers without the supplemental material contained in the "Explore More" section of this book; however, that section is a helpful guide that contains central passages from the seven thinkers' most important works. You will gain a deeper understanding of the issues by reading about them directly. Those readings, which I used as sources for the novel, are inspirational, and like all philosophy, they are open to multiple interpretations.

The "Explore More" section presents the authors in the order in which they are referenced in the novel. **I recommend reading the novel chapters first, followed by the corresponding reading in the "Explore More" section.** At the end of each reading are two discussion questions that will help you think more deeply about the author's argument. Note that, even if you don't fully understand everything in the reading, the questions contain enough explanation and context that you should be able to engage actively and thoughtfully in the discussions.

I created Mark and Theo years ago for the elementary level of Royal Fireworks's Western philosophy curriculum. It was such a pleasure for me to spend time with them again and to learn from their adventures. I hope the same for you.

Sharon Kaye

Geode

Chapter One

Mark's father was bent over the coffee machine in the kitchen when Mark blew past him on his way out the back door.

It was Saturday morning. Mark might have slept in on an ordinary Saturday, but this was no ordinary Saturday. It was the first day of spring break.

Not only was Mark finally getting a break from his first year of middle school; he was also getting a break from the rainstorms of the last month. This week the sun had come out of hiding at last. The heavy layer of ice and snow that had ruled the world all winter was finally vanquished.

"Where are you going?" Mark's dad called out to him.

"To the pond!"

Mark loaded his tackle box and fishing pole onto his bike and set out. The ride to the park at the end of his street was cold and windy, but to Mark it was exhilarating. The trees seemed to be waking up from a long sleep. Hints of bright green were scattered across the lawns. Soon fresh grass would grow, and flowers would bloom.

Mark bumped up onto the sidewalk and cut across a gravel path to reach his favorite fishing spot under a giant

willow tree. He felt a shiver of excitement run down his spine. He hadn't been there since last fall.

He leaned his bike against the tree. Before he had the chance to unload his fishing gear, however, he realized that something was wrong. It was the smell. It wasn't the smell of spring in the air; it was something different—something bad.

Mark pushed through the bushes to the edge of the pond. Then he saw it: dead fish. Hundreds of them, all belly up, silver scales glinting in the morning light. The current had pushed them together toward the south shore of the pond.

"Holy guacamole," Mark breathed.

He walked southward along the shore, pinching his nose shut. As he got closer, the smell grew worse. The fish looked fuzzy, like moldy cheese.

Mark felt a wave of nausea wash over him. He retreated from the shore, sat down on the top of a rise, and scanned the destruction in disbelief.

"Fish kill," said a voice behind him.

Mark jumped in surprise and swiveled his head around. Standing behind him was Theo Taara, whose yard abutted the park on the south side. Theo and he had been friends when they were young, but they had grown apart as they'd gotten older.

Theo was wearing a hoodie with the hood on. Her fists were thrust deep in her pockets, pulling the hood almost over her eyes. Her shiny brown braids poked out either side.

"Excuse me?" Mark retorted. The last thing he wanted at that moment was to talk to someone from school—especially know-it-all Theo.

"It's called a fish kill," Theo explained, "when all the fish suddenly die like that. It's usually caused by some kind of pollution. We think it was pesticide runoff from the Dooleys' apple orchard." She nodded toward the north end of the pond where the Dooley family lived.

"Who's *we*?" asked Mark.

Theo shrugged. "My mom and I."

Mark turned back toward the pond, hoping that Theo would leave him alone. He knew he couldn't fish in the pond as he'd planned. His ruined morning was making him feel depressed. *How long will it take them to fix the pond?*, he wondered morosely.

Theo flopped down on the ground not far from Mark. Mark looked away, ignoring her.

But in an instant, Theo leaped up and shrieked, staring at her hand in disgust. Mark turned to look at her and scowled. Her hand was covered in some kind of slime.

"Get it off me!" she howled.

"What is that stuff?" Mark asked.

"I don't know!" Theo exclaimed. "Some kind of goo. I just put my hand in a pile of it. Right there!"

Mark scrambled over to the pile of goo that Theo was pointing toward. It looked like someone had dumped a bowlful of white Jell-O on the ground.

Theo was trying to flick the substance off her fingers.

"Are you all right?" called a voice from the parking lot.

At the sound of the voice, Mark and Theo turned. A man in a plaid flannel shirt and jeans was coming toward them. He had just stepped out of a pickup truck that said "Davis Maintenance Services" on the side in red lettering.

"She's fine," Mark replied.

But Mr. Davis, concerned about Theo's panic, stepped closer to investigate.

"She just got some of this gunk on her," Mark explained. "Look, there's another pile over there." It was on the grass behind the dumpster. Mark went over to examine it.

"Don't touch it," Theo warned.

Mark poked it with a stick.

Meanwhile, Mr. Davis was examining the first pile. "Hmm," he mused. "It looks to me like we have us here some star jelly,"

Theo frowned. "Star jelly?"

"Yep," Mr. Davis confirmed. "We get it around here from time to time."

"What the heck is it?" Theo asked.

Mr. Davis shrugged. "People call it 'star jelly' because it falls from the sky during a meteor shower."

"It falls from the sky?" Theo echoed, amazed.

"I've never seen it fall," Mr. Davis clarified, "but that's what they say." Then he waved and headed to the pavilion, where he'd left two buckets and a tarp.

Mark was intrigued. "I wonder if it's what killed the fish."

"If it's what killed the fish, then it's probably a toxic chemical," Theo grimaced. "I'm going home to wash my hands."

Mark nodded distractedly as he scanned the edge of the pond for more star jelly.

Theo paused, looking at him. "You should come with me and to the Earth Club meeting next week."

Mark frowned. "What's Earth Club?"

"You know," she prompted, "a club for people who want to help protect the environment. From pesticides and toxic chemicals and all the bad stuff people are doing."

"I'm not really into clubs," Mark demurred. He was already thinking of where else he might go fishing. There was good fishing at the lake, but that was about five miles away, and his parents didn't allow him to go so far alone on his bike. "You should come fishing with me at the lake," he volleyed.

Theo wrinkled her nose. "I only like fishing on *Big Gulp 3*. I'm almost up to two million trophies."

Mark rolled his eyes. "You care more about computer games than nature."

"Mark, the same thing that killed your fish is killing the whole planet," Theo insisted. "We have to do something about it—"

Mark had stopped listening. "Look! There's another pile of star jelly over there!" He set off for a closer look.

Theo followed him. "If you want to find out what happened to this pond, all you need to do is go to the Nature Center at the arboretum. They have a new AI chatbot that can answer any question about the environment you want to ask. My mom got a research grant to create it."

Theo's mom, Mark knew, was a professor at the university in town. She often worked at the arboretum. She had arranged a fieldtrip to it for Mark and Theo's fourth-grade class.

"But look at these bullfrogs," Mark blurted out. "If the pond was polluted, wouldn't they be dead, too?" He bent and made a quick swipe with his hand, pulling a large frog out of the water. "See?" He pushed the frog into Theo's face.

Theo reared back and left with a huff.

Chapter Two

Mark flew home with two bullfrogs in his tackle box. He may not have gotten to fish, but at least he had some new pets.

Leaving his bike on the driveway, he took his tackle box to the window well and gently placed the frogs down inside.

Mark wanted to create a nice habitat for his new pets, so he dug in the rock garden for some worms and tossed them into the window well. He also filled a big salad bowl from the kitchen with water and set it in the window well. He used some rocks to construct a "deck" for the "pool."

When his habitat was complete, Mark stood watching his frogs. They didn't move at all. He began to wonder if they were sick with the same thing that had killed the fish in the pond. They also wouldn't eat any worms, even when he held one in front of their mouths.

Sighing, Mark went inside, curled up on the couch with his phone, and typed "fish kill" into the web browser. Dozens of sites popped up. Theo was right. Fish kill was a thing.

Mark learned that there are many possible underlying causes of a fish kill. One of them is pollution, such as pesticides from a farm, just as Theo had said. But there are natural reasons, too. For example, heavy ice and snow on a pond can prevent the underwater plants from producing

oxygen for the fish. Even though fish live underwater, they breath oxygen, just like humans. While humans breath oxygen that is dissolved in the air, fish breath oxygen that is dissolved in the water. When there isn't enough oxygen dissolved in the water, all of the fish die.

So the fish were killed either by humans or by nature itself.

Mark was content to accept this conclusion. He wasn't exactly happy about it, but at least he understood it. Hopefully someone would fix the pond soon. He set down his phone and began to consider other places where he might go fishing in the meantime.

But something was still bothering him.

At first he wasn't sure what it was. There was a sinking feeling in his belly. He closed his eyes, wondering if the smell from the dead fish had gotten to him. But as he sat with his eyes closed, he heard the sound of Theo's voice in his mind: "*Mark, the same thing that killed your fish is killing the whole planet*."

It was such a terrible thing to say. Why would she say that? It wasn't true, was it?

Mark knew that there were problems with the environment. He had learned about them at school. They had watched a video about how polar bears are dying out because global warming is melting their habitat. The video had made Mark feel sad, and he tried not to think about it. It had given him that same sinking feeling in his belly that Theo's words made him feel.

Is Earth dying?

It was a big question. Mark sensed deep down that it wasn't the kind of question that the internet could help him with. An internet search would probably bring up a whole lot of opinions on either side.

Mark wanted to know the truth. Or, if he was honest, he wanted the truth to be that Theo was wrong—that the planet was alive and well. He wanted to prove it.

He knew what he had to do. He had to consult the AI chatbot that Theo herself had recommended.

That afternoon, Mark rode his bike to the arboretum. The houses on his side of the street backed up to the tall fence around it, but he had to ride nearly a mile down Mulberry Street to the entrance gate. Although Mark had passed the gate many times, he had only gone in during his fourth-grade school fieldtrip.

He was out of breath when he arrived. Only two cars were parked in the lot, and he saw no one around. However, he spotted a sign on the door saying "OPEN," so he proceeded up the front steps of the wraparound porch.

A young woman with long brown hair tied back in a ponytail sat at the front desk. She was typing intently on a laptop. When she heard Mark approach, she reluctantly interrupted herself and turned toward him. Her nametag said "Hailey Benoit, Graduate Student Assistant, University Nature Center." "May I help you?" she prompted.

Mark's heart started beating faster. He felt like turning around and running out. After all, he was just a kid. *I shouldn't be here on my own*, he thought.

But then he remembered all those dead fish in the pond, and he summoned some courage. "Um, I just have a quick question for your AI chatbot."

Hailey raised a skeptical eyebrow. "Is this for a school project?"

"Um...kind of," Mark hedged. "I mean, does it have to be for school?"

"No," Hailey replied. "Just so you understand, our AI chatbot is for serious research. It's not a video game."

Mark nodded, annoyed by her assumption that he was up to no good. His annoyance gave him confidence. "I have a question for it," he repeated.

She nodded curtly and rose from her chair, indicating that he should follow her.

She led him past a stuffed fox, a bird-watching window, and a children's puzzle corner to a table with a computer. A young man who was working on a display about rocks looked up as they approached.

"Ryan," Hailey said flatly to the man, "we have a customer."

Ryan rose to greet Mark. He was wearing a nametag that said "Ryan Mundorf, Graduate Student Assistant, University Nature Center."

“You must have seen our sign out front.” Ryan grinned, revealing crooked teeth.

“Huh?” Mark hadn’t noticed any sign.

“I was wondering how you heard about our AI chatbot,” Ryan explained. “I put up a big sign with a picture of a geode.”

Mark shook his head. “I heard about it from a friend. What’s a geode?”

Ryan pointed to a sign on the computer table. It showed a picture of a rock that had been broken open to reveal a cavity lined with crystals.

Ryan handed Mark a rock from the table. “Geodes are formed when pockets of air are trapped in hot lava. The lava cools, but water seeps in, bringing minerals, which sparkle after the water evaporates. So in the end, a geode looks like an ordinary rock on the outside, but inside is a surprising treasure.” He handed Mark a geode that had been broken in half, showing its crystalline center.

“Cool,” Mark said, wondering what that had to do with their chatbot.

“We named our chatbot ‘ChatGEODE’ because it looks like an ordinary computer on the outside, but on the inside is a surprising treasure.”

“I see.” Mark sat down at the computer table. “Can I try it?”

Ryan nodded. “It’s a touch screen. It should be self-explanatory, so I’ll leave you to it. But the program is a bit glitchy, so let me know if you need help.” Ryan waved and went back to his rocks.

Mark touched the screen. The monitor blinked on. The screen showed a round stone. As a theme song played, small cracks formed in the stone, revealing sparking crystals within. Slowly, the cracks took the shape of a face. The eyes and mouth opened.

“Hello,” the stone said in a gravelly voice. “My name is Geode. What’s your name?”

“Mark.”

“Nice to meet you, Mark. I am an artificial intelligence chatbot. That means that I’m a computer program that simulates human conversation. Artificial intelligence is called ‘AI’ for short. Are you familiar with AI chatbots?”

Mark nodded.

“In order to help humans, we chatbots have to be programmed with a vast amount of information. Most chatbots use random internet sites, but as you may know, internet sites can be unreliable.”

Mark nodded.

“I’m different from most chatbots. My name, ‘GEODE,’ stands for ‘Great Environmentalists On Demand Electronically.’ I was programmed with the works of great environmentalists from around the world. The idea behind

my creation was to enable people like you to chat with experts."

Geode paused, waiting for Mark to show that he understood. Mark nodded, suddenly startled by the fact that Geode could see him as well as hear him. Geode was definitely more advanced than the chatbots he had tried before.

"So," Geode continued, "if you're ready to get started, tell me your question."

Mark swallowed hard.

"What is your question, Mark?" Geode prompted.

Mark took a deep breath. "Are humans killing the Earth?"

Explore More

A Guide to Thinking Deeply about the Concepts in *Geode*

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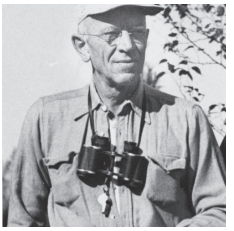
with contributions from Jennifer Ault

II. *GEODE*, CHAPTERS 4-6
ALDO LEOPOLD



Aldo Leopold (1887-1948) was an American naturalist. As one of the first environmentalists, he has been called the "Father of Wildlife Ecology." His book *A Sand County Almanac* has sold two million copies and has been translated into fifteen different languages. In the selections that follow, he argues that human beings have evolved a circle of cooperation that must now be extended to the land.

"THE LAND ETHIC"
A SAND COUNTY ALMANAC, 1949

THE ETHICAL SEQUENCE

...An ethic, ecologically, is a limitation on freedom of action in the struggle for existence. An ethic, philosophically, is a differentiation of social from anti-social conduct. These are two definitions of one thing. The thing has its origin in the tendency of interdependent individuals or groups to evolve modes of co-operation. The ecologist calls these symbioses. Politics and economics are advanced symbioses in which the original free-for-all competition has been replaced, in part, by co-operative mechanisms with an ethical content.

The complexity of co-operative mechanisms has increased with population density, and with the efficiency of tools. It was simpler, for example, to define the anti-social

uses of sticks and stones in the days of the mastodons than of bullets and billboards in the age of motors.

The first ethics dealt with the relation between individuals.... Later accretions [developments] dealt with the relation between the individual and society. The Golden Rule tries to integrate the individual to society; democracy to integrate social organization to the individual.

There is as yet no ethic dealing with man's relation to land and to the animals and plants which grow upon it. Land... is still property. The land-relation is still strictly economic, entailing privileges but not obligations.

The extension of ethics to this third element in human environment is, if I read the evidence correctly, an evolutionary possibility and an ecological necessity. It is the third step in a sequence. The first two have already been taken. Individual thinkers since the days of Ezekiel and Isaiah have asserted that the despoliation [destruction] of land is not only inexpedient but wrong. Society, however, has not yet affirmed their belief. I regard the present conservation movement as the embryo of such an affirmation.

An ethic may be regarded as a mode of guidance for meeting ecological situations so new or intricate, or involving such deferred reactions, that the path of social expediency is not discernible to the average individual. Animal instincts are modes of guidance for the individual in meeting such situations. Ethics are possibly a kind of community instinct in-the-making.

THE COMMUNITY CONCEPT

All ethics so far evolved rest upon a single premise that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for).

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.

This sounds simple: do we not already sing our love for and obligation to the land of the free and the home of the brave? Yes, but just what and whom do we love? Certainly not the soil, which we are sending helter-skelter down river. Certainly not the waters, which we assume have no function except to turn turbines, float barges, and carry off sewage. Certainly not the plants, of which we exterminate whole communities without batting an eye. Certainly not the animals, of which we have already extirpated many of the largest and most beautiful species. A land ethic of course cannot prevent the alteration, management, and use of these 'resources,' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such....

From cooperative-individualism.org/leopold-aldo_land-ethic-1949.pdf

DISCUSSION QUESTIONS

1. The overall message of this excerpt describing Aldo Leopold's land ethic can be summed up in a sentence from the last paragraph: "In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it." What we need to do, Leopold argues, is change our view of our place in the world from what Darwin called "the most dominant of all living creatures" to members of a vast, interconnected community containing the entire natural world—of which we are a part. He goes on to explain that this is a logical extension of what we have done with members of our own species already. Historically, our ethics began with our relationships with other individual humans, but gradually they grew to include how we interact with whole societies. Today we believe in treating people everywhere—not just the people we know and care about—with the same fundamental set of behavioral and moral standards. Leopold's position is that it's time to extend those standards to the Earth itself. But part of the reason that our current system of ethics works is that most of the people on Earth have agreed to apply them back to us. It is by mutual agreement that people across the globe treat one another with the same basic standards of conduct—standards that include, for example, an agreement not to kill each other. However, nature—"the land"—hasn't made this agreement with humans—nor is it going to. How can we as a species have a relationship of cooperation, as Leopold urges,

with a world that in no way guarantees that it won't kill us? Think about the Black Death that ravaged Europe in the 1300s. Millions of people died from disease carried by fleas and caused by bacteria. Or what about people who drown in the oceans or freshwater lakes and rivers? There are millions every decade. When individuals violate the ethical agreement that humans have not to kill, we punish them by putting them in prison, taking away their freedom and sometimes even their life. What do we do when it's a strain of bacteria or a body of water? And yet we do need the Earth, and in many ways, it does take care of us. It provides us with food and water, with the materials for shelter and clothing, with the things we need to create conveniences like electricity and roads and indoor plumbing, not to mention all of the items we use for comfort and enjoyment. If we decide to extend our ethic to the land and the other species on it, are we really just making a decision to take care of something we need so that we can continue to benefit from it, rather than entering an agreement of mutual cooperation with the Earth? And if so, are we still essentially acting as the "conqueror of the land-community," or does that decision shift us into a different role? Would fulfilling our part of the ethical agreement with the Earth make us a "plain member and citizen" of nature, regardless of whether nature agrees back? In other words, would our decision to act ethically toward the land be enough to make us citizens of nature instead of conquerers of it? Why do you think so?