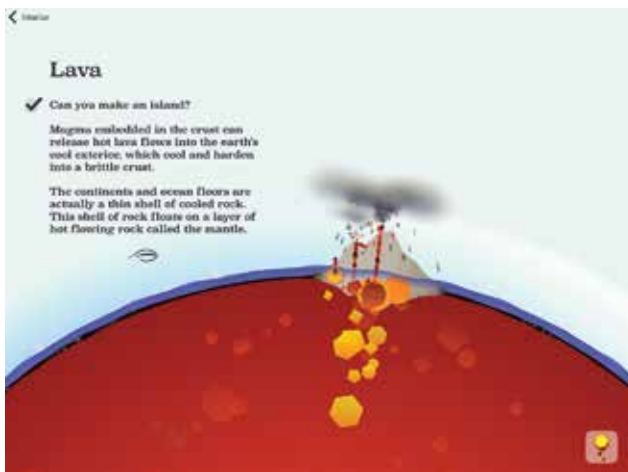


TOP
Earth Primer allows users to visualize the planet's natural systems.

BOTTOM
 The app begins with interactive lessons on the Earth's geology.



CHILD'S PLAY

A NEW APP ALLOWS USERS TO VISUALIZE LANDSCAPE CHANGE.

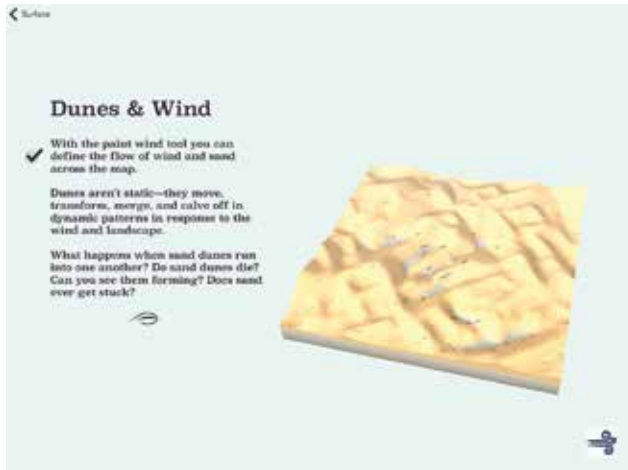
This is the brilliance of *Earth Primer*—not just that it teaches kids (and adults, like me) about the geologic processes and natural systems that shape our world, but that it's fun. Available on the iPad for \$10, the app is really an interactive book; users read several paragraphs of text before completing some sort of activity. A new “chapter” appears as you complete the one previous, its table of contents a cross between science textbook illustrations and the world maps in a video game like *The Legend of Zelda*. Readers learn about tectonics, weather, and the various factors that affect what grows where; almost every lesson is accompanied by a cross section of the Earth that a user can manipulate, forming mountains and dunes or changing the direction of the wind.

Perhaps most important, as evidenced by my draconian terraforming, the app very clearly illustrates the effects of climate change. The message isn't overt; in fact, climate change is mentioned maybe once in the entire book. Rather, its interactivity allows the user not only to visualize a world with more water but also to play an active role in making it. “There's a quality of knowing about the world as a systemic process that makes this project of the moment, when people are thinking about cli-

mate change,” Gingold says. “It gives you an experience of being an agent in these processes that are bigger than you, like in the forming and melting of glaciers.”

Gingold, who previously worked with one of the creators of *SimCity* on the critically acclaimed computer game *Spore*, says he hopes this project can inspire a fascination with natural systems the way *SimCity* swelled public interest in urban planning. So I decided to show the app to Jennifer Current, a Milwaukee-based landscape architect who teaches at the University of Wisconsin–Madison and at the Illinois Institute of Technology (IIT). We met at Mies van der Rohe's Crown Hall on the IIT campus, and Current made her own way through the book.

One of the first lessons is on volcanoes. Current swipes from the center of the Earth toward the crust, causing magma to flow upward and erupt in a cartoonlike explosion of red and yellow and gray. “It's interesting just to see how things are formed,” she says. “Like we can say there were volcanoes under the ocean, and they were spewing up whatever, and then there's Hawaii, but you don't really think about it coming from the middle of the Earth. But now I see that I'm the volcano. I'm making Hawaii.”



TOP TO BOTTOM

After completing lessons on wind and water, users unlock the Sandbox, where they can create custom landscapes.

She builds a mountain range and watches the rain shadow create a desert on the other side. She says the app is especially good at demonstrating effects. “Seeing an effect is much more interesting than reading about an effect,” she says, “and not just for visual people, and not just because our kids are raised on technology in a way that we weren’t, or the generations before us weren’t.”

As she talks, half paying attention, she lowers the sea level and causes mass desertification. “Whoa, that’s crazy,” she says. “I dried it out completely.” She pulls it back up, just a smidge, and the forest slowly comes back. This causes her to marvel at the way the map has just illustrated saturation and seepage. “But I don’t know if a kid would understand that,” she says. “But I guess it would raise some curiosity. Like, why? Why are the trees growing when we don’t actually have water? And then it’s the idea that the water is under the ground in the water table.”

Current also sees professional applications in the book’s manipulatable scenarios. With a little more sophistication and more precise data, she says, this type of tool could be immensely effective when presenting to the public. “It’s also interesting if you think about it like a microclimate, because sometimes as landscape ar-

chitects that’s how we work, at these really small scales. So maybe your intervention is just some small earthworks, like that have to do with directing stormwater, but you could still see at a microclimatic scale how the water is affected, how the wind is affected. This isn’t necessarily the Himalayan Mountains. It could be something quite small. It’s kind of scaleless.”

Although the possibilities are endless—adding more gamelike elements, for instance, or introducing the built environment into the equation—Gingold is content with the version that launched this past February. His goal, he says, was to emulate the way *SimCity* created a “representation of a complex system that’s bigger than us, that’s hard for us to get our heads around, and makes it into this visceral, tangible, appealing toy that you can play with and learn through.

“For me, that would be a great outcome,” Gingold says, “if people have that same experience, of being able to appreciate how geologic systems work, being able to feel that they’re part of these systems, and having a sense that they are systemic and amazing and beautiful.” ●

Earth Primer was released February 3, 2015. It is available for the iPad and iPhone and can be purchased for \$9.99 in the iTunes App Store.