Science Fiction Prototyping at Work

Evan Atherton, Autodesk

Though better known for its design software, Autodesk has begun using science fiction prototyping to explore the future of design, technology, and humans.

FROM THE EDITOR

It's amazing to observe more organizations adopting the science fiction prototyping process to explore possible futures. Each new project brings a fresh approach. In this month's column, Autodesk's Evan Atherton, a senior research engineer, describes how Autodesk, one of the longest practitioners of science fiction prototyping, mixes pragmatism and incredible design. —*Brian David Johnson*

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Autodesk is best known for making design software such as AutoCAD. So when people discover that we're creating tools for molecular design and human–robot collaboration, their first question is why. The answer usually involves a scientific explanation of how we're learning to control DNA much like we control computers—with As, Cs, Ts, and Gs instead of zeros and ones—and maybe an example of someone programming a seed to grow into a house. But these responses fall short of conveying technology's true effects on society.

Storytelling has played a crucial role in the development of human culture, even before we communicated through speech. Yet technologists still underutilize stories as a means of communicating new ideas.
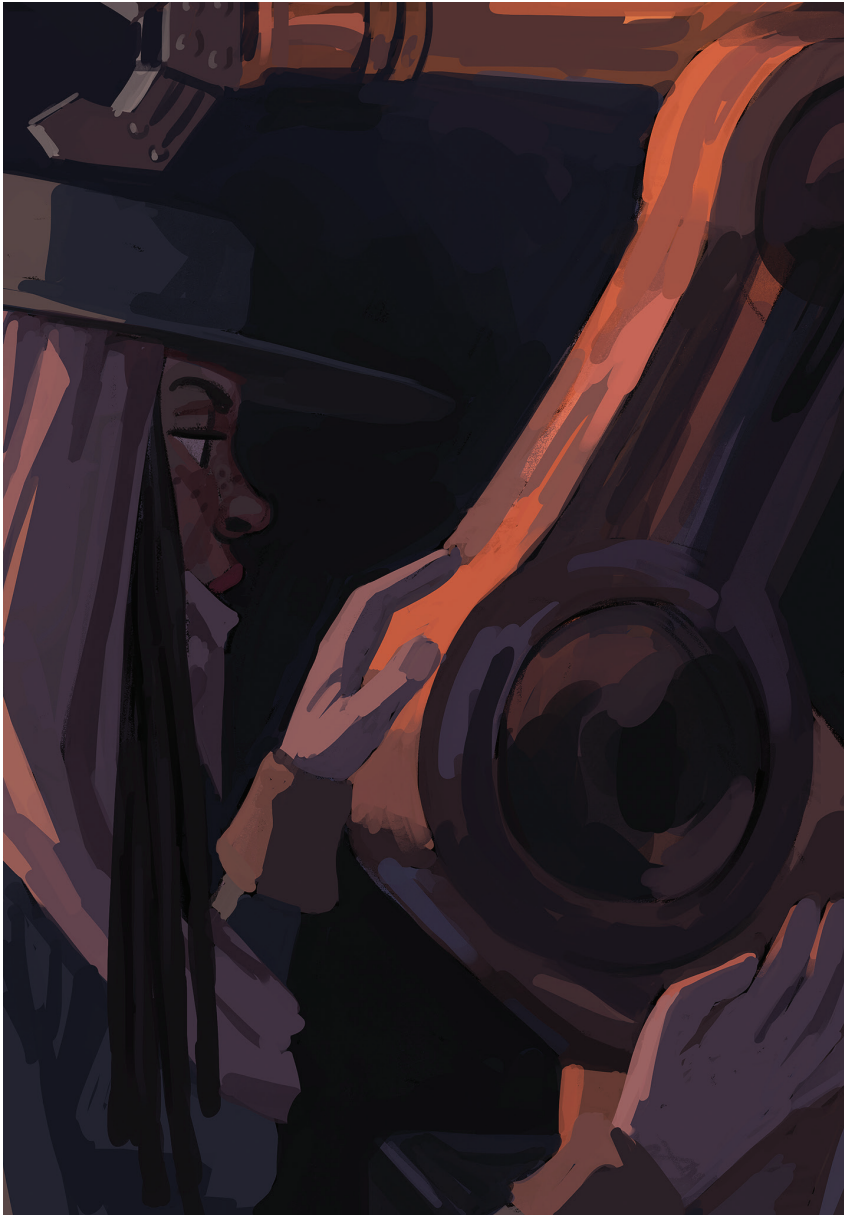
If you're an avid reader of this column, I don't have to sell you on science fiction prototyping. Rather, I hope to share how Autodesk has been using storytelling to, among other things, answer questions about future technologies in a more relatable, impactful way.

STORYTELLING AT AUTODESK

Although Autodesk had been using science fiction prototyping for a number of years—following the lead of such pioneers as Brian David Johnson and Alex McDowell—it

deliberately to produce an anthology of short stories, and ultimately published *FOUR: A Collection of Short Stories Exploring the Future of Design, Technology, and Us* (http://autode.sk /28SY4Yf). *FOUR* was written by Caroline Brewer and illustrated by Brewer and Marianne Khalil, who are both studying illustration at the Rhode Island School of Design.

FOUR: EXPLORING HUMAN−ROBOT COLLABORATION, CLIMATE CHANGE, AND BEYOND

FOUR, as the name suggests, consists of four stories that each explore a different future time period and focus on a different theme particularly salient for Autodesk—from synthetic biology and climate change to our relationship with robots and AI.

Our aim wasn't necessarily to predict or project the future because, let's face it, we'd probably be wrong. Instead, we tried to create worlds that allowed us to explore big ideas in an engaging way. Our third story, for instance, follows a woman named Shepherd and her pack of interconnected biomechanical robots, who travel around the Great Plains scouting the wastelands of "the ones who had failed" for resources to build new homes for their nomadic society (see Figure 1).

When Shepherd inadvertently finds herself in the ruins of an ancient factory—one you and I might recognize—she contrasts her machines, the "hepphae," with the industrial robot arms bolted to the factory floor:

> Around her, articulated in the emanating violet of the lasso's cable, the architecture emerged. Its pillared interior rose above her, columns ringed in water lines, the poured-concrete floor peeking through a heavy dusting of salt and earth. The space ran off into darkness, filled only with the echoing clip of her riding boots, a disarray of debris and rows and rows of huddled giants.

Figure 1. In the third *FOUR* story, Shepherd and her pack of interconnected biomechanical robots travel the Great Plains scouting for resources to build new homes for their nomadic society. (Artist: Marianne Khalil.)

was limited to relatively small doses during workshops and brainstorming sessions. Recognizing those exercises' value, we finally decided to establish a formal storytelling project.

In early 2014, my colleague Arthur Harsuvanakit and I pitched the idea of a summer intern project that would use science fiction prototyping to explore the future of design. We gathered a team of four talented students with a wide range of backgrounds— our own little Breakfast Club, if you will—who spent the summer researching, brainstorming, designing, and storytelling. The results were pretty rough, but we learned a lot about taking nebulous ideas and turning them into relatable narratives.

That summer's experiment helped us develop our voice and process. The following summer we set out more

Fifteen perfect lines of archaic machines stood still in the dark. Shepherd swallowed and moved in amongst them, holding up her torch for a better view. Crouched above lines of long-decayed rubber belts, the relics seemed more like monuments than anything utilitarian. But somewhere in them she recognized the hepphae. "Robots." Shepherd whispered the old word. Through the darkness, the space whispered it back at her. Robots. Shepherd took it as an affirmation.

The machines rose up on angular pillars, in freakish orientation. One arm, one hand. Eyeless. Voiceless. Worst of all, fixed to the ground. Almost nothing like her agile, curious hepphae that spent their long, electric lives of their own kinetic volition. Hepphae lived with intention, with vitality. They were built to run, climb, construct, built to graze on alloys and plastics, to forge, to create what they had collectively imagined. Above all, hepphae were built to think. They were their own minds but also the minds of each other and they learned and shared and pondered as free agents.

Although Shepherd's world might never come to pass, exploring her relationship with the hepphae allowed us to look critically at our path toward automation and to consider the tools we'll need to increase the effectiveness of human–robot collaborations and ensure humans' role in the future. As Alex McDowell writes in the book's foreword, "Stories are not frivolous, they can transform how we think about the way we do our work."

Ultimately, we at Autodesk see science fiction prototyping as a way to explore how the technology we're building now shapes the future and, conversely, how science fiction might shape the technology we build. Through the power of storytelling, we're creating a shared space with enough fidelity that technologists and consumers can collectively engage with and develop ideas. ■

EVAN ATHERTON is a senior research engineer at Autodesk. Contact him at evan.atherton@autodesk.com.