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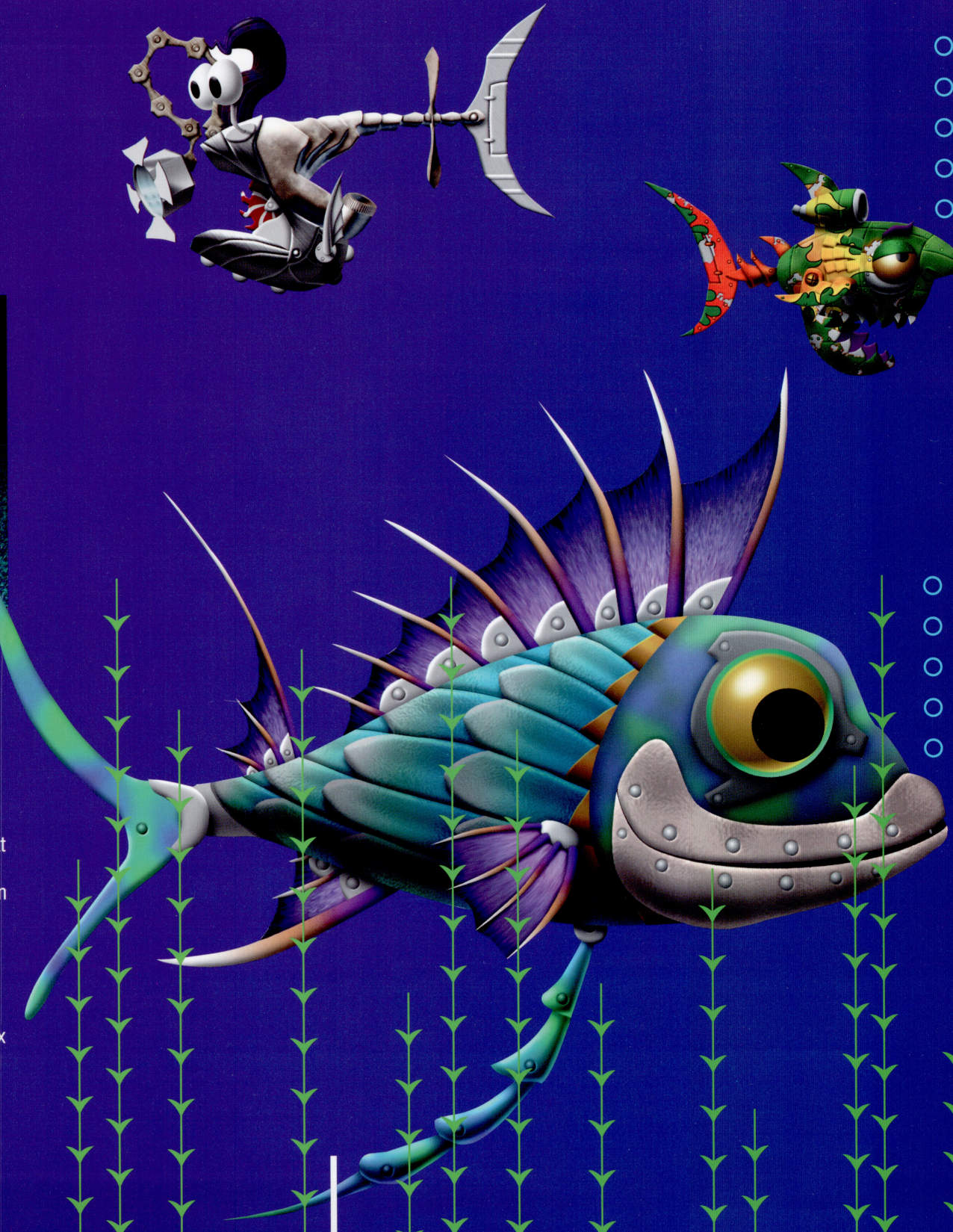
sea

VIRTUAL FISHTANK

You're standing in front of a room-sized aquarium, full of brightly colored fish. A school of fish glides through the water.

Suddenly, a small orange fish breaks away and darts toward you. You recognize it: it's the fish you created yourself, moments earlier!

It's not a real fish, of course, but part of the Virtual Fishtank, a major new museum exhibit developed by the MIT Media Lab, The Computer Museum, and Media Lab spinoff Nearlife Inc.
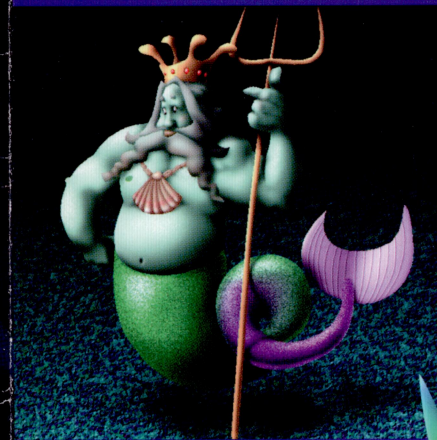
At the exhibit, opening at The Computer Museum in Boston on June 13, you can design your own artificial fish, tell it how to behave, then watch it interact with other fish in the giant fishtank. In the process, you begin to learn how complex patterns and behaviors can arise from very simple rules.

The $1-million exhibit takes advantage of the latest advances in 3-D computer modeling and animation. The spectacular underwater world is modeled and rendered on a network of 20 computers, then displayed on 12 large projection screens.

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By designing and playing with artificial creatures, people can learn ideas from the forefront of scientific thinking," says Mitchel Resnick, Fukutake Career Development Professor and co-director of the project. The Fishtank project grew out of Resnick's efforts to help children understand the workings of complex systems, described in his book *Turtles, Termites, and Traffic Jams.*

Sensors detect movements near the screen, so that you can interact directly with your virtual creations. Wave your arms, and some fish will swim towards you. You can also release artificial food into the tank and watch how the fish react.

At four schooling stations, you can control how fish interact with their neighbors, and observe the schooling patterns that arise from all of the interactions. The lesson learned: fish don't need a leader to stay together in a school.

The exhibit includes six Diving Deeper stations, where you can explore the core ideas underlying the Fishtank project. The stations show how complex patterns arise from simple rules in many different situations—in traffic jams, termite colonies, and economic markets, not just fishtanks.

The National Science Foundation provided a $600,000 grant for the exhibit. The next step is a traveling version which will be seen at science centers and aquaria around the world.