Come explore with us! These giant robots might be better suited for construction work than fighting crime The piloted robot Archax, in Japan, is one of several real-life mechas. This 4.5-meter (14.8-foot) tall machine weighs a whopping 3.5 tons. Tomohiro Ohsumi/Stringer/Getty Images By Aaron Tremper March 27, 2024 at 6:30 am Optimus Prime from The Transformers rearranges his body parts to become a semitrailer truck. In the Gundam series, pilots battle in space using massive mobile suits. Power Rangers fuse smaller machines together to fight crime as a humanoid robot, Megazord. Called mechas, these larger-than-life robots have what it takes to save the day. But would these giants hold up in real life? If you travel to Yokohama, Japan, you can find a real-life Gundam. Sort of. Standing at 18 meters (59 feet) tall, this huge robot can’t fly in space or wield laser beam sabers. But it can bend down on one knee and move its fingers.  It currently holds the Guinness World Record for the largest mobile humanoid robot. (Editor’s note: The Yokohama Gundam was removed from display in April 2024.) Certain giant robots are more realistic than others, says Sangbae Kim. He’s the director of the Biomimetics Robotics Laboratory at the Massachusetts Institute of Technology in Cambridge. Engineering a Transformer that morphs in mere seconds would be trickier than crafting a Gundam mobile suit that keeps its shape, he says. There aren’t too many technological barriers to making a rearranging robot, says Robert Siddall. At the University of Surrey in England, this engineer studies how animal movements can help people build better robots. Matching the speed of a Transformer rearranging itself mid-jump, though, would require extreme accelerators on all of its interchanging parts. Some Transformers also shapeshift into vehicles that would need to use physics in opposing ways. Take Seaspray. This mecha can fly above the water as a hovercraft and swim in the ocean. “Flying submarines are tricky because you’ve got quite a big change,” says Siddall. Flight requires “really big, lightweight structures.” But a robot swimming underwater would need to be as dense and hydrodynamic as possible. Weekly updates to help you use Science News Explores in the learning environment Thank you for signing up! There was a problem signing you up. Roboticists have already built simple mechas. The Japanese company Suidobashi Heavy Industry unveiled its rideable mecha, Kuratas, in 2012. This 4-meter (13-foot) tall robot sports four wheels and a pair of massive arms. And in 2017, Amazon founder Jeff Bezos rode in the Method-2, a 4.1-meter (13.5-foot) tall walking mecha built by South Korean roboticists from Hankook Mirae Technology. But unlike their film counterparts, these smaller mechas move very slowly, says Siddall. “They don’t move in that dynamic way that you sort of hope to see in the movies.”