TOYS GO HIGH-TECH

3-D printing, drones, robots and virtual reality fuel future play

BY MATT ALDERTON

AIR HOGS DR1 FPV RACE DRONE
This remote-controlled flyer contains a camera that broadcasts video footage to wireless goggles. Ages 10 and up. *$99.99, available this fall at major retailers*

PROVIDED BY SPIN MASTER

With technology, big things often come in small packages. Take Cozmo. He's the size of a hamster, and cute like one, too. So cute that when you meet him, you'll want to coo, "Hey there, little guy," and scratch him under the chin as if he were a puppy.

But he's not a pet. He's a robot, and he might just be your child's new best friend.

Created by consumer robotics company Anki, Cozmo has a square head, a squat body and four wheels that roll around atop two tiny, tanklike treads. He has a mechanical lifting arm that moves precious cargo — three interactive "Power Cubes" around which his favorite games revolve — up and down like palettes in a warehouse.

His most important attribute, however, is his brain: an internal computer comprising more than 360 individual parts, including three circuit boards, three processors, an OLED screen, a camera that recognizes places and faces, a built-in speaker and accelerometers that measure movement and speed.

MEET COZMO!
He's got a one-of-a-kind personality that learns and evolves. Ages 8 and up. *$179.99, bestbuy.com*

PROVIDED BY ANKI

The sum of all these little parts is a big personality. A composite of beloved bots like *Star Wars'* R2-D2, Pixar's WALL-E and Johnny 5 from the 1986 film *Short Circuit*, Cozmo uses his expressive eyes and voice to emote as though he has human feelings. When he's bored, he whines. When he loses a game, he throws a tantrum. And when he wins a game, he gloats.

Because of sophisticated machine-learning algorithms that Anki calls his "personality engine," Cozmo learns and evolves over time in response to events that happen to him. Just like you do.

"Every single interaction he has ... changes his personality and mood, and how he's going to react in the future," says Anki co-founder and president Hanns Tappeiner. "At that point, Cozmo is no longer a machine; he's a little dude who lives in your apartment. Obviously, it's all simulated. But people really start to believe that this little guy is, essentially, alive."

Cozmo isn't just cool, however. Along with things like kid-friendly drones, 3-D printers and virtual reality (VR) games, he's also a bellwether, portending a newgeneration of high-tech toys that promise to make children's play more interactive, engaging and educational >

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than it's ever been.

BACK TO BASICS

In 1977, childhood changed forever. That's the year Atari introduced the first commercially successful home video game console: the Atari Video Computer System. Before, play was analog. After, it was digital. Over the next 40 years, kids transitioned from active play with balls, sticks and dolls to sedentary play with screens.

The next wave of high-tech toys is attempting to go back while still moving forward, according to Brian Monnin, co-founder and CEO of Play Impossible, an active gaming system whose first product — The Play Impossible Gameball, a connected, multisport ball equipped with sensors that connect wirelessly to users' smartphones for physical-digital gameplay — was expected to be released in July.

"As the quality and fidelity of digital video games has increased, so has their popularity and potency — but in our opinion, at the expense of physical play and human-to-human social interaction," he says. "Those things are missing from simulated gameplay, and we believe there's an opportunity to reintroduce them in a way that benefits from the latest technology."

America's largest toymaker, Mattel, has similar convictions, according

PLAY IMPOSSIBLE GAMEBALL links wirelessly to a mobile app for physical-digital gameplay. Ages 5 to 15. *$99, amazon.com*

PROVIDED BY PLAY IMPOSSIBLE

TOYS OF TOMORROW KIDS WILL LOVE TODAY

▶ **Simon Air** is an updated version of the classic memory game with high-tech motion sensors. Ages 8 and up. *$16.86, walmart.com*

▶ **Beasts of Balance,** an animal-themed balancing game where players stack objects that correspond in a digital world. Ages 7 and up. *$99, beastsofbalance.com*

▶ ***VR The Diner Duo***, a downloadable virtual reality game for the HTC Vive system, simulates running a restaurant. All ages. *$14.99, store.steampowered.com*

▶ **Fisher-Price Think & Learn Code-a-Pillar** teaches the building blocks of computer coding. Ages 3-6. *$36.49, target.com*

— Matt Alderton

PROVIDED BY MATTEL

BARBIE HELLO DREAMHOUSE is a "smart home" dollhouse that kids control with voice commands and a mobile app. Ages 6 and up. *$239.99, walmart.com*

to Michael Shore, Mattel's vice president and head of global consumer insights and foresights. The best toys, he says, plant seeds in kids that will grow into the skills they need as adults. Used well, technology can be a fertilizer. Mattel's Fisher-Price Think & Learn Code-a-Pillar, for example, is a programmable robot that teaches preschoolers the sequencing skills needed for computer coding. Its Barbie Hello Dreamhouse, meanwhile, uses speech recognition to catalyze imaginative play that develops children's creativity.

"We're really trying to approach technology from a purposeful perspective ... so that technology is in service of (learning and development) versus being an outcome in and of itself," Shore says.

Indeed, many new high-tech toys have developmental benefits baked into them. Robots like Cozmo, for instance, help kids develop social and emotional intelligence, and many come with software development kits (SDKs) that help kids learn computer programming. In June, for example, Anki introduced a kid-friendly SDK for Cozmo that uses Scratch, an approachable coding language designed especially for tweens and teens.

Another technology that's ripe with educational potential is 3-D printing. New Matter Inc., for instance, manufactures an at-home 3-D printer, the MOD-t, that kids can use with adult supervision. Kids and parents can download digital models from the Internet or create their own using 3-D modeling software like Tinkercad. Using the MOD-t, they can turn those >

models into physical objects, including their own custom toys, such as action figures, ping-pong ball launchers and the toy that's invading classrooms everywhere, fidget spinners.

"Kids have a really good time without even realizing that they're learning things like the engineering process," says New Matter co-founder and CEO Steve Schell, a former mechanical engineer.

Drones are another toy category on the rise — literally. Toymaker Spin Master's latest model coming out this fall, the Air Hogs DR1 FPV Race Drone, is designed for high-speed aerial racing around homemade obstacle courses. It has a remote control and a camera that provides streaming first-person video to the pilot via wireless goggles, allowing kids to develop hand-eye coordination and fine motor skills while exploring the world around them.

"Drones ... offer kids an incredible freedom to explore the world in a way they couldn't otherwise," says Kate Keller, global business unit lead in charge of Spin Master's remote control line.

VR offers the same freedom, albeit in digital instead of physical worlds. One popular game, for example, is *VR The Diner Duo*. Created by Swedish game maker Whirlybird Games, it's designed for two players who must collaborate to successfully manage a hectic virtual restaurant.

"The VR technology makes it possible to let people improve their body coordination, unlike similar traditional games, and it gives the players a more engaging experience," explains Whirlybird Games CEO Kevin Lövgren.

MOD-T 3-D PRINTER can be operated from a smartphone, computer or tablet. Ages 7 and up. *$299, newmatter.com*

ACHIEVING BALANCE

Although toymakers are quick to promote the benefits of high-tech play, skeptics worry that even the best-intentioned technology could hinder children's development more than help it.

"I really love technology, and I can't imagine living without it. What concerns me is that all these exciting new electronic toys will become an imagination substitution," says tech wellness advocate August Brice, founder of the website Safertech. "I'd like to see kids playing more with a combination of classic toys and new high-tech toys. It's all about balance."

To strike that balance, parents should look for toys that promote active instead of passive play, says Steve Pasierb, president and CEO of the Toy Association.

Pasierb also recommends toys that promote unstructured instead of structured play.

"Scientists have followed kids and discovered that kids who engage in unstructured play experience significant developmental benefits compared to kids who don't.

"If your kids play soccer and baseball, that's great, but there's a right way to play soccer and a right way to play baseball, whereas there's no right way to play tag or space monsters."

That's why next-gen toys are so exciting: Kids can program their robots to do anything, fly their drones in any direction and 3-D print whatever their mind's eye imagines. And they can have genuine fun doing it. ■

FISHER-PRICE THINK & LEARN SMART CYCLE The more kids pedal, the more they learn letters, spelling and reading. Ages 3-6. *$149.99, amazon.com*

PROVIDED BY THE COMPANIES