

NEWS IDEAS INNOVATION

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PLANETS IN CHAOS

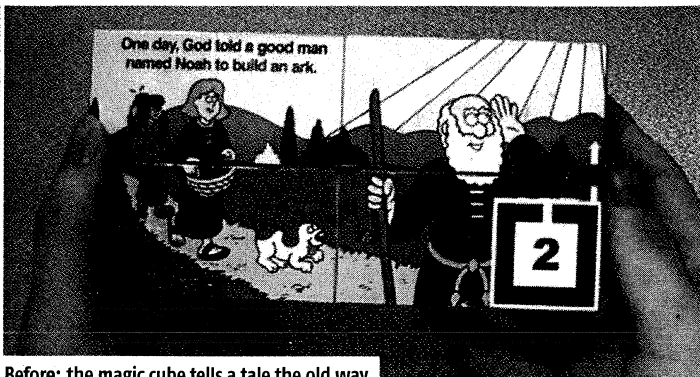
Breakdown in Newton's
clockwork universe

SPECIAL REPORT SUPER FLU

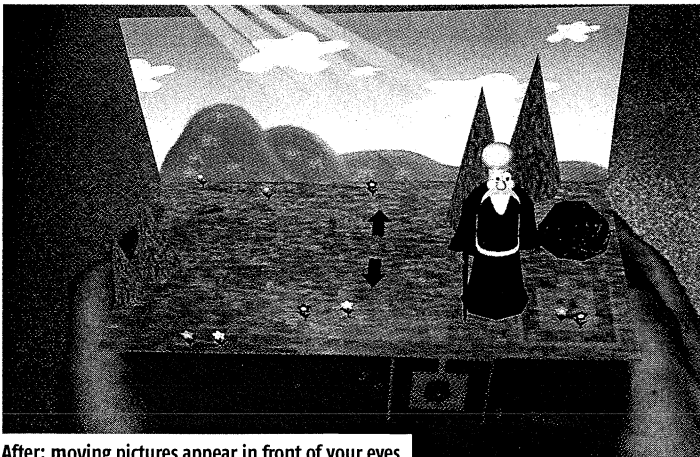
Next-generation vaccines
The trouble with drugs
Should we make a killer strain?



Magic cube conjures stories from thin air



Before: the magic cube tells a tale the old way



After: moving pictures appear in front of your eyes

A NOVEL interactive way to relate children's stories has been developed by researchers in Singapore. The Magic Story Cube uses augmented reality technology, in which computer graphics are superimposed on the real world, to overlay an animated version of a story on top of a child's traditional "magic cube".

A standard magic cube is made up of a handful of smaller wooden or plastic cubes connected at various edges. These can be unfolded in a variety of ways to reveal a sequence of puzzles or different pictures. But now Adrian Cheok and Zhou ZhiYing at the Mixed Reality Lab at the National University of Singapore (NUS) have updated the children's toy.

Their first attempt is to tell the Old Testament story of Noah's ark. To watch the story unfold, the user wears a virtual reality headset with a small camera attached to the front. Both the camera and headset are plugged into a computer running software that recognises numbers printed on different cubes. When the user unfolds the cube to reveal a particular numbered square, the computer uses this as its cue to run a segment of audio and animated three-dimensional video, which tells part of the Noah's ark story.

Arrows printed on the cubes tell the user how to unfold the cube to move to the next scene. Each numbered square that appears then pulls up the relevant video and audio clip. The size of the numbered

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square is used to determine the exact position of the cube in space relative to the camera – so the system knows where to project the images.

In early lab tests, users said they enjoyed the Magic Story Cube more than a picture book (see video at <http://mixedreality.nus.edu.sg/media/all%20videos/magicstorycube.mpg>). "You need to take account of the fact that people are physical creatures, and these cubes are a very tangible, direct way of interacting with information," Cheok says.

In addition to stories, the NUS team is planning educational cubes that involve puzzle solving, or perhaps something to educate a child about the laws of physics or chemistry.

The approach represents a new people-friendly way of displaying the information generated by interacting with computers, says Yusuf Pisan, of the University of Technology in Sydney, who this month chaired a workshop where the cube technology was revealed. "Current head-mounted displays are still bulky but they won't be like that for long. The magic cube is a prototype of how we can manipulate information and interact with people and computers in a new way," he says. Emma Young, Sydney ●

CUTTING EDGE

MIRROR, MIRROR ON THE...TV

A TV set that becomes a mirror at the flick of a switch will go on sale in the UK next month. The £2500 MiraVision system from Philips of the Netherlands is made up of a 58-centimetre wide-screen LCD that is covered with a thin semi-reflective sheet, mounted in a picture frame. When the screen is switched on, anyone standing in front of it sees only the picture. With the television switched off, the surface behaves like an ordinary mirror.

MiraVision can even be both things at once. Anyone wanting to watch TV while brushing their hair or fixing their

make-up can switch to "picture in mirror" mode, which displays a small image in the corner of the frame. The screen can also be wired to a PC and used as an outsize monitor. Philips hopes eventually to make a waterproof version for use in bathrooms.

NEURAL NET SPOTS COMFY SEATS

Car seats would be a lot more comfortable if they were designed with the help of neural network computer programs, according to Michael Kolich, an ergonomics engineer with Johnson Controls of Plymouth, Michigan.

He has trained a neural network to

sense the salient features of a proposed car seat and predict how comfortable it will be to the average person.

To train his network, Kolich used a seat cover stuffed with 2000 sensors that measured seat pressures when a dozen men and women sat on five different car seats (*International Journal of Industrial Ergonomics*, vol 33, p 285).

The network correlated major contact areas and peak pressure points with the subjective comfort rating given by each volunteer. In tests, Kolich has found that the neural network accurately predicted how comfortable various seat designs turn out to be.

PLUG IN HERE FOR WAVE POWER

A giant extension lead is to be run out from the north coast of Cornwall in the UK to allow researchers to plug in a variety of experimental wave machines to the national grid.

Regen SW, the region's development agency, is planning to lay the cable 15 kilometres out into the ocean. Experimental wave machines will be able to test their prowess in the Atlantic swell by plugging into the national grid. The Wave Hub is likely to cost up to £9 million and could be in the water by 2006. There will be 30 sockets for hire to would-be wavepower magnates.