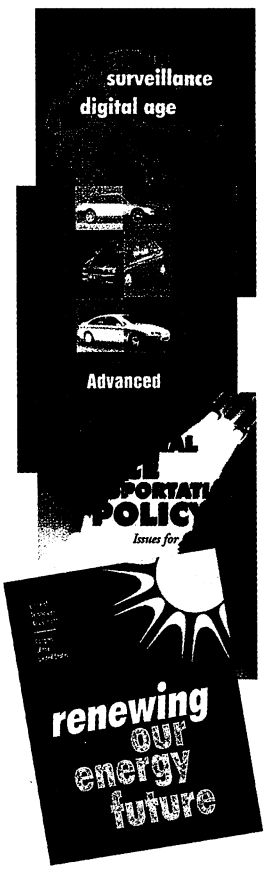
some lawmakers felt that OTA had become a bastion of Democratic bias that took too long to complete expensive studies. When Republicans won control of Congress in 1994, one of their first moves was to eliminate the $22 million office. Ever since, science community leaders have complained that lawmakers lack a trustworthy, neutral source of expertise on emerging issues such as stem cell research and nanotechnology.

To fill the gap, workshop organizer M. Granger Morgan of Carnegie Mellon University in Pittsburgh, Pennsylvania, asked 10 academics and science advice veterans to explore five potential models. The ideas ranged from a small body that would contract out studies to a neo-OTA housed at an existing nonprofit or university. However, none of the plans escaped criticism from workshop participants, who included a number of former OTA staffers.



Packaged advice. OTA reports covered the world of science.

One plan, which would require Congress to decide ahead of time on a list of "well-established" nonprofits approved to conduct studies, is "the most hopelessly impractical thing I've ever seen," said Bruce Smith of Columbia University in New York City. Others pronounced a bill to resurrect OTA in its original form, H.R. 2148, recently introduced by Representative Rush Holt (D–NJ), as dead on arrival. "Congress at this point does not seem ready to invest in a new staff-heavy organization," said Bill Bonvillian, a senior aide to Senator Joe Lieberman (D–CT). Any such proposal also faces a steep learning curve: Holt confessed that some of his colleagues "didn't even know that OTA had been abolished."

Despite the darts, Morgan said that the workshop achieved its intended goal of "getting a national conversation started." For skeptics, however, the meeting demonstrated that convincing Congress it needs a new OTA will be about as easy as cloning a dinosaur.

–DAVID MALAKOFF

COSMOLOGY

Math Trick May Cause Tension Headache

Albert Einstein's rubber sheets may be due for a dose of starch. The reason, says Christos Tsagas, a physicist at Portsmouth University in the United Kingdom, is magnetism. By reanalyzing the basic equation of general relativity—which treats space and time as a stretchy membrane—Tsagas discovered that magnetic fields tend to flatten and stiffen the fabric of space-time. The discovery might force cosmologists and astronomers to reexamine how magnetic fields have shaped the evolution of the cosmos.

"The normal assumption is to neglect magnetic fields in the early universe, mostly for simplicity," says Bernard Carr, a physicist at Queen Mary's College in London. "But magnetic fields could have an interesting cosmological effect. It might not be satisfactory to neglect it."

Starched sheets. A new look at Einstein's theory shows that the fabric of space-time may be stiffer than physicists thought.

Einstein's general theory of relativity is essentially a description of the geometry of space and time. According to Einstein, a hunk of matter such as a star bends space-time like a bowling ball perched upon a rubber sheet. The result, described in relativistic terms, is gravity. That much has been known for the better part of a century. But Tsagas looked at the equation in an unusual way, switching the roles of space and time—a swap that makes no mathematical difference but changes the form of the equation. "You see effects that are a bit difficult to see in a more traditional form," Tsagas says. As a result, Tsagas spotted something no one had seen before: A term in the equation showed that magnetic fields transfer their properties to the very fabric of space-time itself.

Like very elastic rubber bands under tension, magnetic field lines try to remain as straight as possible. Magnetic fields transmit that tension to space-time, Tsagas realized, making nearby space like a rubber sheet that has been stretched a little bit tighter. According to Tsagas, such a region becomes stiffer and flattens out somewhat. "This effect can be crucial," he says.

If the big bang created a primordial magnetic field, then the extra stiffness of space-time would have resisted the rapid inflation that many physicists think occurred in the first split second of the universe. It also would have ironed out the entire universe. "It tends to make the background cosmology more like a flat cosmological model," Carr says. That might help explain why the cosmos doesn't appear to have any curvature, a role physicists have traditionally assigned to inflation. Stiffer space-time might also damp gravitational waves, Carr says, making them harder to detect than physicists at observatories such as LIGO and TAMA have been counting on.

Magnetic stiffening of the early universe probably won't win instant acceptance; inflation is so useful to physicists that any challenger is going to be tested very sternly. But if it pans out, cosmologists will have to rethink the role of magnetic fields in shaping the cosmos. And black hole theorists—who deal with sharply curved space near strong magnetic fields—might need to revise some pet notions as well. Astrophysicists in general, it's safe to say, could lose a little sleep over stiff sheets.

–CHARLES SEIFE

ASTRONOMY

Cluster Watchers View A Hot, Violent Birth

In a dwarf galaxy 12 million light-years from Earth, astronomers may be witnessing the birth of a globular cluster. The cluster, the youngest so far detected, could shed light on how similar balls of stars formed in our own galaxy billions of years earlier.

According to Jean Turner of the University of California, Los Angeles, the new cluster may contain up to a million stars in a region only 10 light-years across. "It's the best, closest, and probably youngest example of a super–star cluster," says Turner, who presented her team's findings at the 198th meeting of the American Astronomical Society in Pasadena.*

* 3–7 June, Pasadena, California.

CREDITS: (TOP TO BOTTOM) ILLUSTRATION: A. STONEBRAKER; COURTESY OF OTA