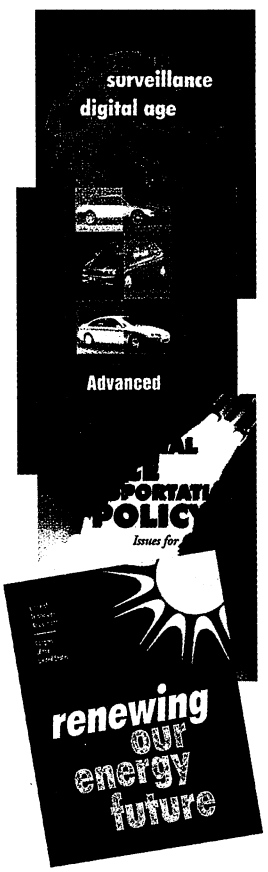
some lawmakers felt that OTA had become a bastion of Democratic bias that took too long to complete expensive studies. When Republicans won control of Congress in 1994, one of their first moves was to eliminate the $22 million office. Ever since, science community leaders have complained that lawmakers 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.

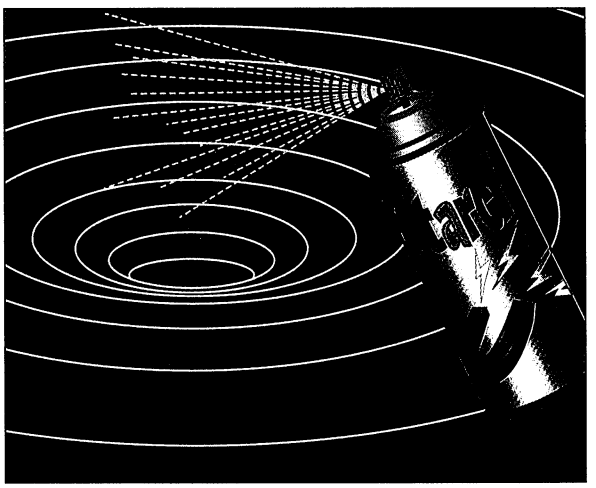
–DAVID MALAKOFF

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

The huge burst of star formation first caught astronomers' attention last year, when the Very Large Array radio telescope in New Mexico detected a glowing bubble in a dwarf galaxy known as NGC 5253 in the constellation Centaurus. "Back then, I was nervous about calling this a young globular cluster," Turner says. But infrared observations and spectra obtained with the 10-meter Keck telescopes at Mauna Kea, Hawaii, confirmed her original suspicion. By measuring Doppler changes in infrared light from hydrogen in the bubble, Turner and colleagues calculated that the bubble was being blown by stellar winds moving at 5000 kilometers per hour—far stronger than winds astronomers had seen in other bubbles. Massive, powerful young stars, they concluded, must be churning out light and gases vigorously enough to produce 25% of the energy output of the dwarf galaxy. The infrared data also enabled the team to estimate the size of the star-forming region.

The 12-million-year-old newborn could help resolve enigmas in our own galaxy. The 150-odd globular clusters in the Milky Way are billions of years old, so little is known about their origins. According to Turner, similar clusters-in-the-making probably exist in other galaxies, but most are much farther away and harder to study than the one her team found. "I won't call this a Rosetta Stone," she says, "but if astronomers are to understand the birth of these clusters, they will keep getting back to this one."

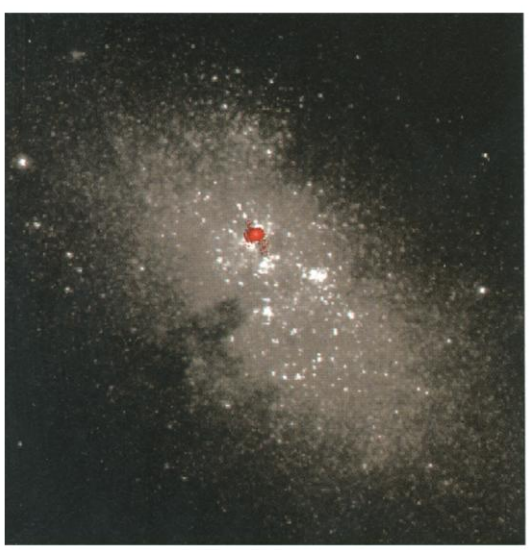
Small galaxies like NGC 5253 are proving fertile breeding grounds for new stars. At the same meeting, Armando Gil de Paz of the Infrared Processing and Analysis Center in Pasadena, California, reported evidence of another huge (though nonglobular) starburst in a dwarf galaxy known as Markarian 86. According to Gil de Paz, the 30-million-year-old burst has triggered the formation of new stars across the galaxy.

Why do dwarf galaxies undergo superstarbursts? Turner says no one knows yet, but in the case of NGC 5253, interaction with a neighboring spiral galaxy may be pumping star-forming material into the dwarf system. "[The luminous bubble] is a short-lived phase in the life of the cluster," she says. "We are lucky that NGC 5253 is at the right place and the right time for us to detect this extraordinary windblown bubble."

–GOVERT SCHILLING

Govert Schilling is an astronomy writer in Utrecht, the Netherlands.

CREDITS: (LEFT TO RIGHT) J. TURNER, RADIO/IR IMAGE; D. CALZETTI AND THE SPACE TELESCOPE SCIENCE INSTITUTE, OPTICAL IMAGE; NOAA



Fireball. One star-filled bubble (false-color red blip) in NGC 5253 radiates 25% of the dwarf galaxy's energy.

CANCER RESEARCH

Why Some Leukemia Cells Resist STI-571

The antileukemia drug known as Gleevec or STI-571 has been heralded as the vanguard of a new generation of cancer chemotherapy agents. Most current cancer drugs were discovered by randomly screening thousands of chemicals to see if any kill cancer cells. But STI-571—which is remarkably effective in treating chronic myeloid leukemia (CML)—was deliberately designed to counteract a specific biochemical change that makes cells cancerous. Yet STI-571 shares an unfortunate characteristic with conventional cancer drugs: Patients with advanced disease often relapse; their tumor cells become resistant and eventually grow out of control. Results published online by *Science* on 21 June (www.sciencexpress.org) now explain why, and perhaps point the way to improved therapies.

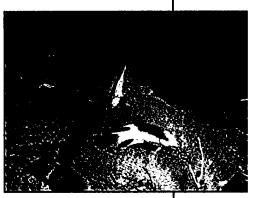
STI-571 works by inhibiting an enzyme that fuels cancer cell growth in CML—a kinase enzyme produced by the *BCR-ABL* oncogene. Almost all patients treated in the early stages of CML respond, and some have been in remission for more than 2 years. But the drug has been less effective in patients who are in an advanced phase of the disease called "blast crisis." These individuals sometimes go into remission on the drug—which almost never happens with older treatments—but 80% relapse in less than a year. "As soon as we saw that, it was obvious that the mechanism of relapse would be interesting," recalls Charles Sawyers of the University of California School of Medicine in Los Angeles, a member of the team that performed the clinical trials of STI-571 in CML patients.

To pin down that mechanism, Sawyers and his colleagues first assayed the level of Bcr-Abl kinase activity in tumor cells from 11 patients who had relapsed. They found that it came back in every patient. This was

ScienceScope

Going to Sea A prominent undersea explorer, a retired admiral, and a former top fisheries regulator are among the 16 people that President George W. Bush named last week to a new blue-ribbon Commission on Ocean Policy.

Congress established the government commission last year after lawmakers concluded that U.S. marine policy—on issues ranging from fisheries conservation to sea-lane security—needed a fresh look. They hope the new commission, whose members were chosen by Bush and the leaders of the House and Senate, will follow in the footsteps of a similar 1960s panel that catalyzed a host of marine research and legislative initiatives.



Among those chosen to serve are Robert Ballard, the undersea search wizard who has tracked down the *Titanic* and other sunken treasures; retired Admiral James Watkins, a longtime advocate of marine research; and fisheries scientist Andrew Rosenberg, a University of New Hampshire dean who until recently led the National Marine Fisheries Service. They and the other panel members are expected to meet for the first time within a couple of months, but a final report is at least 18 months away.

Swiss Stem Cells Frozen Switzerland's main researcher funder, the Schweizerische Nationalfonds (SNF), has indefinitely delayed a bid to import human embryonic stem (ES) cells for research. The SNF last week told two Geneva University researchers that—despite a favorable scientific evaluation and positive recommendations from a legal expert and two ethics panels—it will not act on their 15-month-old request until a national bioethics panel debates the issue.

The two researchers—Marisa Jaconi and Karl-Heinz Krause of the university's Louis Jeantet Laboratory for the Biology of Aging—told *Science* that they were pleased that their grant application, the nation's first to request the import of ES cells, had sparked public debate. But they worried that SNF's decision to ignore the positive reviews would "nurture irrational fears" and "unnecessarily" delay research.

SNF officials, however, said they did not want to preempt "the political discussion about this project's ethical and legal aspects." The bioethics panel is expected to take up the issue later this year.

Contributors: Robert F. Service, Charles Whipple, David Malakoff, Robert Koenig