I started this second diagnostic foray into the health of American universities with good intentions and a list of topics—but events intervened, as events often do. For example, an alarming postscript has been added to one of the issues discussed in last week’s Editorial. The inspector general of the Department of Defense had produced a report urging contract officers to watch contract language more carefully (Science, 23 April 2004, p. 500). Two other agency inspectors general have since come out with ominously similar recommendations. It is uncertain how all this will be interpreted, but university administrators worry that the government will become more willing to attach restrictions short of classification to research awards, in the name of export control. Didn’t anyone out there hear National Security Advisor Condoleezza Rice say that National Security Decision Directive (NSDD) 189 still held, and that we therefore weren’t using halfway proxies for classification?

But another and even larger worry has also intervened. It now is becoming clear that the biggest problem in higher education in the United States is the steady erosion in the economic health of its great state-supported public universities. There was a time when these institutions dominated the sector. When William Rainey Harper became president of the University of Chicago in 1890, he described his fledgling but handsomely endowed institution as “surrounded by the great engines of public instruction.” This politically adroit, poor-me bow to the Big Ten universities echoes strangely in 2004, when the faculty of the University of Illinois would surely like to have The University of Chicago’s salary structure.

The economic decline of state budgets, of course, is largely responsible, and its sources have recently been analyzed in a 2003 Brookings Institution study by Thomas Kane and Peter Orszag. There are a variety of causes: business cycle effects influencing tax revenue and—most important—the escalation of Medicaid costs. The expected result in state appropriations for higher education is that these have dropped from about $8.50 per $1000 in personal income in 1977 to about $7.00 in 2003. The resulting changes in faculty salaries and other indicators of academic welfare, as documented in the Kane and Orszag study, are these. First, state spending per student in public institutions versus private ones fell from 70% in 1977 to 58% in 1996. Second, there has also been an adverse effect on student recruitment, as candidates in the highest categories of the usual admissions criteria have increasingly preferred private to public universities. Finally, and perhaps most troublesome, faculty satisfaction in the public universities has also dropped. Small wonder: In 1981, the ratio of public to private university professorial salaries stood right about at parity; by 2000, it had dropped to about 0.85.

The struggle for the public universities, as they labor at the low end of this tilted playing field, is increasingly desperate. Some, like the universities of Virginia and Oregon, have adopted a “privatization” strategy, upping tuition (especially for out-of-state students) to make up for shrinking state allocations—which, in many institutions, now constitute less than 15% of total revenues. The University of California has limited enrollment by requiring otherwise-qualified applicants to attend community colleges for 2 years. Research has also suffered, although formula funding for agricultural research has left the land-grant institutions in somewhat better shape than the others.

What is to be done? The academic community, especially its private sector, needs to be aware of the situation and support the public universities wherever state or national policies are being crafted. Federal policies could make a difference by reforming Medicaid—the key factor in driving out state higher education support. As for the states, they need to recognize what a powerful economic engine higher education represents, and consider the long-term costs of failing to fuel it. A final possibility, surely the most politically controversial, arises because most state institutions provide a large educational subsidy in the form of tuition charges for all students that are way below the real cost of education. Unlike other state welfare programs, this comes with no means test. If families who can afford the real cost of education had to pay something closer to it, the new revenue could be applied to financial aid for able but poor candidates—leaving something over for program improvement. It’s an unpopular idea, but in hard times it may belong on the table.

Donald Kennedy
Editor-in-Chief

Academic Health II
indicating that prolonged IL-7R expres-
sion in these animals had conferred an
overall survival disadvantage. Thus, the
survival benefit of IL-7 is spread across
the pool of naïve T cells by reducing de-
mand from those T cells that have al-
ready received their allotment: an effi-
cient means by which cells share a
scarce resource. — SJS

**ASTROPHYSICS**

**Denuded Dwarfs**

Globular clusters of stars are ubiquitous
and provide important clues about
galaxy formation. They also are large
and luminous, and hence one of the
easier kinds of sub-galactic objects to
study. They all "look" the same; that is,
they have scale radii, surface brightness,
and velocity dispersion properties that
are similar from one globular cluster to
the next, suggesting that they all formed
in the same fashion. But how do millions
of stars come together into a relatively
featureless glob?

Martini and Ho observed 14 new
globular clusters in a large ellipti-
cal galaxy, Centaurus A, and
estimate that these clus-
ters are almost as mas-
sive as dwarf galaxies.
In fact, the clusters
have properties so
similar to those of the
centers of dwarf
galaxies that the au-
thors conclude the
clusters might actually
be the naked cores of
dwarf galaxies. In other
words, these shapeless clusters
might once have been beautifully
structured galaxies that were tidally
stripped of their finery. Such a re-
classification would alter hierarchical
models of galaxy formation and
enhance the importance of near-
collisions between galaxies that lead
to tidal stripping. — LR

**ECOLOGY/EVOLUTION**

**Maintaining One’s Niche**

The concept of limiting similarity—lit-
erally, the limits to how similar two
species can be if they are to coexist in a
habitat—is an important element in the
theory of assembly rules governing
composition and diversity within eco-
logical communities. Nevertheless, rig-
orous empirical evidence for limiting
similarity has been hard to obtain.
Stubbs and Wilson, in a study of a sand
dune plant community in New Zealand,
examined whether plants with similar
functional characteristics (such as
height, leaf shape, root morphology,
nitrogen and phosphorus content of
leaves) coexisted less often than would
be expected if their distribution were
random. Plants were sampled at differ-
ent spatial scales up to 50 m². Many of
the functional characters showed less-
than-expected mean dissimilarity at the
0.5 m² scale, providing support for the
rule of limiting similarity in this
community. The effects were seen
particularly clearly in functional charac-
ters relating to nutrient uptake and the
control of leaf water. — AMS

**CELL BIOLOGY**

**Ribbons and Bows**

The Golgi complex in mammalian cells
resides in a juxtanuclear position that
depends on the centrosome and on
microtubules. How is this single Golgi
ribbon produced, and how
does it “know” to form at
the periphery of the
centrosome? Rios et
al. find that the pro-
tein GMAP-210,
peripherally associ-
ated with cis- (the
side facing the
nucleus) Golgi
membranes, binds to
microtubules and
promotes the recruit-
ment of γ-tubulin-
containing complexes to the Golgi.
Reduction of GMAP-210 levels causes
the fragmentation of the Golgi com-
plex and interferes with membrane
traffic. The ability of GMAP-210 to re-
cruit organelles to the centrosomal re-
region can be transferred—when GMAP-
210, or only its C-terminal domain,
was engineered to insert into the
mitochondrial membrane, the mito-
chondria recruited γ-tubulin
and moved toward the centrosome.
Thus, GMAP-210 appears to play an
organizing role in the generation and
maintenance of a single, central Golgi
complex. — SMH