DUTCH SCIENCE

On a Slippery Slope to Mediocrity?

If Nobel Prizes and journal citations are gold standards, Dutch science is on a high. But critics warn that the scientific community has already begun to lose its edge

UTRECHT, THE NETHERLANDS—When two physicists here bagged the Nobel Prize in physics last year, their achievement was hailed as an example of the strong Dutch track record in physics—and proof that even a small country can make cutting-edge discoveries. But as some Dutch researchers like to point out, the mathematical model for "electroweak interactions" that led to the prize was developed almost 3 decades ago, and the country's commitment to science has faltered ever since. During the past 2 decades, the Netherlands has stopped being a top science spender, scientific careers have gone out of fashion, and women's participation in science remains appallingly low—a situation that some experts predict will soon lead to a steep shortage of researchers.

The country's new budget, unveiled on 19 September, does little to reverse the trend, science administrators say. For some time now, they have argued that unless government spending on R&D—about $2.4 billion in 2000—rises dramatically, the Netherlands will become a second-rate player in science. Recent initiatives by education and science minister Loek Hermans have had about as much impact as "a few drops in the ocean," says Utrecht University president Jan Veldhuis.

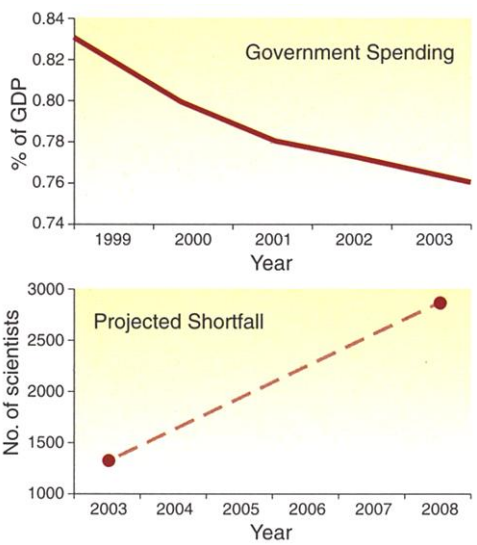
Judging by scientific output, there would appear to be little reason for alarm. Several recent analyses rated the Netherlands among the world's leaders, per capita: For instance, a study 3 years ago ranked the country sixth worldwide in number of papers published as well as in number of citations (*Science*, 7 February 1997, p. 793).

But science advocates say such numbers reflect investments made decades ago. Trying to rein in an unruly budget deficit, almost every Dutch Cabinet for over 20 years has cut university budgets; together, public and private science spending have fallen to just over 2% of gross domestic product—well below that of Japan and the United States, which spend between 2.5% and 3%, and also behind comparably sized countries such as Sweden, Switzerland, and Finland. Earlier this year, the main granting agency, NWO, warned of an impending brain drain. "Eventually, our scientific culture will become less eminent," predicts physicist Gerard 't Hooft of Utrecht University, one of last year's Nobel laureates.

Another threat to the country's scientific vigor is a looming shortfall in the research workforce, according to a study ordered by the Dutch parliament and released this summer. Based on a model by the Netherlands Bureau for Economic Policy Analysis, the survey predicts that universities and research organizations will face a shortage of almost 1300 scientists as early as 2003, rising to nearly 3000 in 2008, if nothing is done.

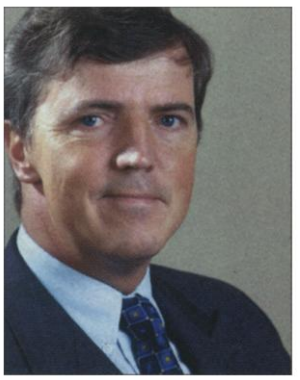
The problem stems from a string of factors, says the study's author, former Utrecht University administrator Lieteke van Vucht Tijssen, ranging from an imminent retirement wave among senior scientists to paltry pay for young researchers and the pull of the business world. "It's more and more difficult to find good people," concurs 't Hooft. "What the university pays them simply pales compared to the princely salaries they can make in business or management." In addition, immigration is a long and bureaucratic process, making it "terribly complicated," says 't Hooft, to recruit scientists from Eastern Europe or Asia.

One particularly vexing problem is that very few Dutch women choose to pursue science careers. Although 54% of graduating university students are female, women occupy only 7% of full professorships. "It's really terrible," says Van Vucht Tijssen. In one United Nations Development Program study, she says, Holland came in second to last among all U.N. member countries, beating out only Botswana.



Trouble ahead. Projections in science funding and a looming labor shortage bode ill for the Dutch scientific community.

The Dutch government is taking steps to try to avoid becoming a scientific has-been. This year, for instance, Hermans launched Innovation Impulse, an initiative to retain young, bright, "adventurous" scientists who might otherwise pursue a career overseas or forsake science altogether. The first 40 grantees, to be announced next month, will each get $120,000 a year for 5 years to start a research group. The fund is slated to grow to some $60 million in 5 years, enough for 500 candidates. But there's a catch: The universities and NWO each have agreed to supply one-third of the money out of their own budgets. So the plan does little to boost overall science funding.



Too little, too late? Science minister Hermans.

Nor does the science budget presented this week, which, except for Innovation Impulse, doesn't contain an increase in science spending for 2001. Science supporters are giving the only other news, a $20 million addition to the 2000 budget, a lukewarm reception. "We take it as a positive sign," says NWO president Reinder van Duinen. "Of course it's not nearly enough"—especially considering that earlier this year, his agency had called on the government to boost its $300 million budget by some $200 million. Also calling for a major cash infusion is Van Vucht Tijssen, who in her report advocates a 10-year, $560 million plan to avert the exodus of young scientists. The money would be spent on such items as boosting salaries, creating a career path similar to the U.S. tenure track, and outfitting scientists with better equipment. Veldhuis thinks even more is needed: To face international competition, he says, universities would need about $400 million a year more in the long run.

Such drastic remedies, Veldhuis says, are unlikely unless an underlying ill is cured: Dutch politicians don't appear to be clued in to how important science is to long-term economic health. "We're really slipping away," he says. Yet, the slide into mediocrity may be gradual enough to be hardly noticeable. "We have to take action now," Veldhuis says, "if we still want to win Nobel Prizes 20 or 30 years from now."

–MARTIN ENSERINK

CREDITS: (TOP TO BOTTOM) OCW; OCW AND CPB