Population: The View From Cairo

Next month, an international congress will be held in Egypt's capital to debate a plan to slow world population growth. The plan has broad political support, but experts dispute how effective it will be

To get a sense of the next century's population picture, take a look at what is happening in Cairo today. Home to about 9.5 million people, this mega-city is growing by 200,000 people per year. Three million Cairenes lack sewers, half a million live in rooftop huts, and another half-million dwell among the tombs of the "City of the Dead" in Cairo's eastern section. The city's older districts hold as many as 62,000 residents per square kilometer—a population density twice Manhattan's.

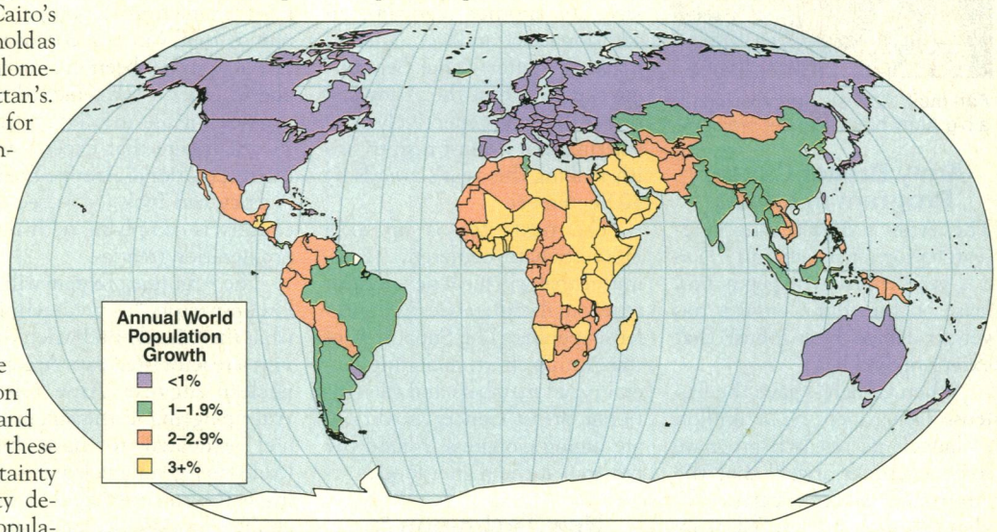
For delegates crowding into Cairo for the United Nations International Conference on Population and Development on 5 to 13 September, the stakes in the world effort to stem rapid population growth could hardly be more visible. By the year 2000, UN demographers project, there will be 21 cities of 10 million or more, all but four in developing countries. By 2050 the world's current population of 5.6 billion will have grown to between 7.8 billion and 12.5 billion. The range of variation in these UN projections—a reflection of uncertainty over the most likely pace of fertility decline—is as large as the world's total population in 1984, the date of the last UN world population conference in Mexico City.

"The rapid pace of population growth is everybody's urgent business," says Timothy Wirth, U.S. undersecretary of state for global affairs and chief U.S. negotiator at Cairo. The sense of urgency is shared by members of most of the world's scientific establishments: Last October 60 science academies, led by the U.S. National Academy of Sciences and Britain's Royal Society, held an unprecedented joint meeting on world population that ended with a statement proclaiming that "Humanity is approaching a crisis point with respect to the interlocking issues of population, environment, and development." And a draft Programme of Action, developed by the UN Population Fund and expected to be approved at the Cairo conference, warns: "The decisions that the international community takes over the next several years, whether leading to action or inaction, will have profound implications for the quality of life for all people, including generations not yet born, and perhaps for the planet itself."

The Cairo document—drafted at a series of preparatory meetings held over the past 2 years with extensive input from women's groups and other nongovernmental organizations—sets out a plan for donor countries and developing countries themselves to invest at least 20% of public expenditures in the social sector. Special emphasis is placed on a range of population, health, and education programs that would improve the status and health of women. It also calls for donor spending on population assistance, currently running at about $1 billion a year, to increase from 1.4% percent of official development assistance to 4%. These measures, the document states, "would result in world population growth at levels close to the United Nations low [projection]" of a global population of 7.8 billion by the year 2050.

Like previous efforts to draft population policies, this one has proved controversial. Diplomatic sparring between the Vatican and other delegations over the draft document's emphasis on birth control and its support of a woman's right to safe abortion have dominated pre-Cairo publicity. But a quieter, and ultimately more significant, scientific debate has been going on over how effective the plan is likely to be in reducing fertility rates.

Researchers remain far from a consensus on the overall emphasis of the draft plan and on the benefits that can be expected from the three major mechanisms it espouses for reducing fertility—improved access to modern contraceptives, reduced infant and child mortality, and expanded school enrollment for females. One reason for the lack of consensus is that, as political scientist Steven Sinding, director of population sciences for the Rockefeller Foundation, puts it: "There are still major gaps in our understanding of fertility change and what causes it."



Uneven growth. Population growth rates are highest in sub-Saharan Africa.

SOURCE: POPULATION REFERENCE BUREAU ILLUSTRATIONS: DIANA DEFRANCESCO

The search for an acceptable policy

Nobody is arguing that it will be easy to hold population growth to the low end of the UN's projections. Although the rate of population increase peaked in the late 1960s at just over 2% per year and has since fallen to 1.6%—thanks largely to a fertility drop in the developing nations from an average of six children per woman to below four—growth rates throughout much of the developing world are still high. The population "doubling time" at current growth rates is just 24 years in Africa and 35 in Asia and Latin America, compared to 98 years in North America and 1025 in Europe. Moreover, unprecedented numbers of women will be entering their reproductive years in the next

two decades, so that even if fertility rates were miraculously reduced to the so-called "replacement level" of 2.1 children per woman by 1995, global population would still climb to about 7.7 billion in 2050, according to UN projections.

What, if any, steps should be taken to bring down these growth rates has long been a source of contention. Twenty years ago, at the first UN intergovernmental conference on population in Bucharest, representatives of developing nations argued that rapid industrialization would provide the solution to the population problem. Arguing that "development is the best contraceptive," they insisted that a massive redistribution of wealth from North to South must precede population stabilization.

Underlying this argument was the now 60-year-old theory of the demographic transition. When high-fertility, high-mortality societies first modernize, the theory holds, improvements in standards of living, public health, and medical technology bring mortality rates down while birth rates remain high. Population grows markedly, as it did in Europe during the Industrial Revolution. Eventually, however, cultural and economic changes associated with urbanization and industrialization—for example, the increasing net economic cost of raising children—bring birth rates down as well, first among upper- and middle-income classes and then among workers. This completes the transition, leaving fertility at replacement level or lower—as has happened in North America, Japan, and much of Europe.

But even before the Bucharest conference, demographers had noted some odd misfirings in the mechanism supposedly linking economic development to declining fertility. In a few industrializing nations like Brazil and Mexico, fertility remained stubbornly high, while other nations such as Colombia and Sri Lanka saw birth rates plummet without significant industrial development.

Over the past two decades demographers have also taken a closer look at fertility declines in the industrializing West and have found a hodgepodge of historical patterns. In nineteenth-century France, Germany, and Sweden, lower birth rates actually preceded mortality declines, and in Australia (as in Bangladesh and Kenya today) fertility declined across all socioeconomic classes at about the same time, rather than trickling from the wealthiest down to the poorest members of society. "The fertility transitions in Europe followed patterns in many places that were only loosely related to industrialization, and the same thing is true in much of the developing world," says Sinding.

Against the backdrop of this reassessment of demographic transition theory, the second UN population conference, held in Mexico City in 1984, put more emphasis on increasing access to modern family planning technologies. The conference was, however dominated by a rancorous dispute over the Reagan Administration's advocacy of market-oriented models of development. Chief U.S. negotiator James Buckley declared, for example, that rapid population growth is a "neutral factor" in the economic health of developing countries. And the family-planning goals were undercut by the U.S. government's announcement that it would cut off funding for international groups providing abortion counseling.

The Cairo Programme of Action takes a different tack from the ones that emerged from the Bucharest and Mexico City gatherings. It supplants population planning's old focus on contraception and industrial development with a new emphasis on the connections between population, poverty, inequality, environmental decay, and the need for "sustainable" development. The education of women, for example, is advocated both as a means of deflecting pressures for large families and as a spur to income-generating activities.

And this time around, the United States is in full support. The Clinton Administration last year restored funding for population programs that had been cut in the Reagan era and has consolidated population planning in Wirth's new State Department office. Population programs, says Wirth, are increasingly being viewed as "the basic wedge into development programs" rather than the other way around.

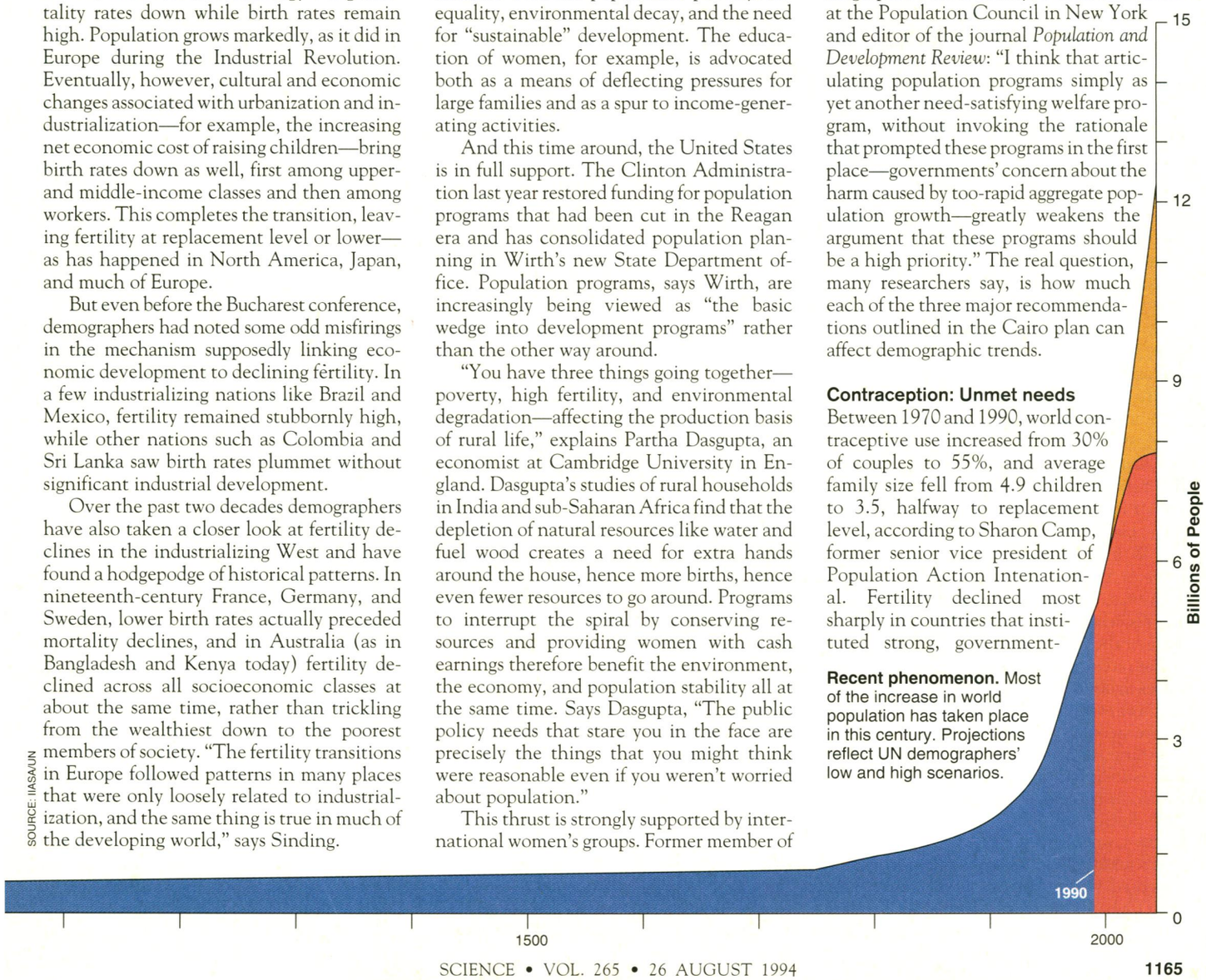
"You have three things going together—poverty, high fertility, and environmental degradation—affecting the production basis of rural life," explains Partha Dasgupta, an economist at Cambridge University in England. Dasgupta's studies of rural households in India and sub-Saharan Africa find that the depletion of natural resources like water and fuel wood creates a need for extra hands around the house, hence more births, hence even fewer resources to go around. Programs to interrupt the spiral by conserving resources and providing women with cash earnings therefore benefit the environment, the economy, and population stability all at the same time. Says Dasgupta, "The public policy needs that stare you in the face are precisely the things that you might think were reasonable even if you weren't worried about population."

This thrust is strongly supported by international women's groups. Former member of Congress Bella Abzug, speaking on behalf of the Women's Environment and Development Organization—which helped shape the Programme of Action through a series of critical papers and extensive lobbying with individual governments—argues, for example, that "family planning and fertility rates cannot be seen as abstractions in themselves."

Some members of the population research establishment are, however, worried by the document's failure to address population goals more directly. Charles Westoff, a demographer at Princeton's Office of Population Research, notes that the plan of action eschews quantitative fertility targets, which are seen by Abzug and other feminists as coercive. "You search [the Cairo document] in vain for an explicit statement that in certain parts of the world, such as sub-Saharan Africa, women are having a lot more children, and want to have more children, than is commensurate with replacement fertility," Westoff complains. Adds economist and demographer Paul Demeny, a senior associate at the Population Council in New York and editor of the journal *Population and Development Review*: "I think that articulating population programs simply as yet another need-satisfying welfare program, without invoking the rationale that prompted these programs in the first place—governments' concern about the harm caused by too-rapid aggregate population growth—greatly weakens the argument that these programs should be a high priority." The real question, many researchers say, is how much each of the three major recommendations outlined in the Cairo plan can affect demographic trends.

Contraception: Unmet needs

Between 1970 and 1990, world contraceptive use increased from 30% of couples to 55%, and average family size fell from 4.9 children to 3.5, halfway to replacement level, according to Sharon Camp, former senior vice president of Population Action Intenational. Fertility declined most sharply in countries that instituted strong, government-

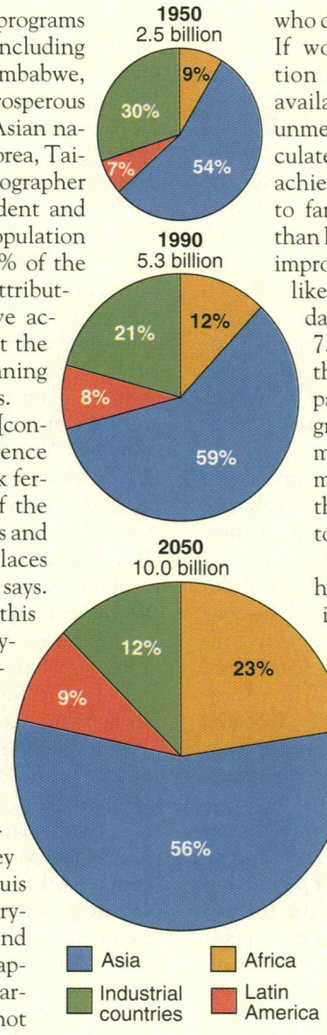


Recent phenomenon. Most of the increase in world population has taken place in this century. Projections reflect UN demographers' low and high scenarios.

SOURCE: IIASA/UN

sponsored family planning programs in the 1960s and '70s, including China, Botswana, Kenya, Zimbabwe, Morocco, and the now-prosperous Eastern and Southeastern Asian nations of Singapore, South Korea, Taiwan, and Thailand. Demographer John Bongaarts, vice president and director of research at the Population Council, estimates that 40% of the world's fertility decline is attributable to better contraceptive access. "There's no doubt that the investment in family planning has paid off," Bongaarts says.

Sinding agrees: "Clearly [contraception] made the difference between the century it took fertility to decline in some of the now-industrialized countries and the 15 years it's taken in places like Taiwan and Korea," he says. With a confidence bred of this apparent success, family-planning advocates like Sinding argue that substantial further progress can be made toward replacement-level fertility by meeting the remaining "unmet need" for reliable birth-control methods. A 1991 survey conducted by Westoff and Luis Hernando Ochoa for the Maryland-based Demographic and Health Surveys found that approximately 120 million married women worldwide do not wish to have any more children but are not currently using any modern contraceptive method. The Cairo plan calls for the elimination of this unmet need by the year 2015.



Shifting balance. World population by region.

A study published in the March issue of *Population and Development Review*, however, has touched off a spirited dispute over the actual extent of unmet need for contraception. Lant Pritchett, a senior economist at the World Bank, compared actual fertility rates in 53 developing nations with various measures of people's desired family sizes. His regression analyses found that approximately 90% of the differences in actual fertility between countries was attributable to differences in desired fertility and that the number of unwanted births is no lower in regions where people have greater access to family planning services. High fertility in regions like sub-Saharan Africa, Pritchett concludes, is explained almost completely by a high desire for children, not by any shortage of low-cost contraceptives.

Pritchett also challenges the most widely accepted version of unmet need. Westoff and Ochoa, he says, "decide who needs contraception and then argue that anyone who does not use it has unmet need." If women who avoid contraception for reasons other than cost or availability are removed from the unmet need category, Pritchett calculates, then the fertility reduction achievable through expanded access to family planning adds up to less than half a birth per woman—a small improvement in African countries like Niger, Côte d'Ivoire, or Uganda, where the average woman has 7.4 children. Pritchett insists that he is not opposed to the expansion of family-planning programs, which he says provide many benefits for women. "The main point of my paper is that the demographic impact is likely to be small."

Westoff acknowledges that his measures of "unmet need" include women who say they intentionally avoid using contraceptives, but he argues that any woman who says she wants no more children should be counted as having a real need. He agrees with Pritchett, however, that access is often not the issue. "Meeting unmet need is more complex than simply providing contraceptive methods. The obstacles tend to be things like lack of information, concern about side effects, religious or other fatalistic attitudes, women concerned about how their husbands feel, and those kinds of things. These require education and information."

Whatever the actual number of couples who want contraceptives but lack money or easy access, says Wirth, the next leap toward replacement-level fertility will probably be more difficult than the last. "The easy part of the unmet need has been done" through family-planning programs focused on urban areas and lower-middle-class and middle-class individuals, Wirth says. "The much tougher part of unmet need is ahead. That's the very poor in cities, and that's the very rural."

Reducing childhood mortality

Although mortality rates among infants and young children have been significantly reduced everywhere since World War II, a child's chances of surviving past the age of 4 are still much better if he or she is born in an industrialized nation (97% in the United States, compared to 71% in Ethiopia, 76% in India, and 80% in Kenya). Many researchers believe—and the Cairo plan reiterates—that reducing fertility rates will be impossible without further reductions in infant and child mortality, because only parents who are confident that their children will grow to support them in old age can attain their desired family size without "overshooting." As Julius Nyrere, the former president of Tanzania, has said, "The most powerful contraceptive is the knowledge that your children will survive."

But "we don't really know as much as the [Cairo] document pretends we know about infant and child mortality," says Sinding. "The Cairo document says that among a wide menu of social policies one might invest in, this is a particularly important one because of the effect on fertility. I would like to believe that, but the evidence is not strong." A recent World Bank study of the neighboring West African countries of Côte d'Ivoire and Ghana, for example, found no statistically significant link between child mortality and fertility within individual households. The study did find a link at the community level; in Ghana, one fewer child is born for every five who escape an early death, an effect similar to that found in some Asian and Latin American countries. But the study pointed to "conceptual and statistical problems" that make it difficult to prove that low levels of child mortality actually slow population growth.

Paul Schultz, an economist at Yale University's Center for Economic Growth and one author of the World Bank study, says he believes "there's nowhere in the world where you get fertility coming down until you get child mortality under some greater degree of control." But he adds that it is very difficult to sort out the confounding factors in the relationship between the two. "Child mortality is heavily shaped by women's education and resources in the family. It's very hard to infer whether [the link between child mortality and fertility] is causal or whether additional factors are influencing both. If you're a scientist you have to say the linkage is there but we can't prove it, and that's frustrating."

Women's education

George Moffett, a diplomatic correspondent for the *Christian Science Monitor*, writes in his new book *Critical Masses: The Global Population Challenge* that "countries in which education is least accessible to girls have the highest fertility rates in the world, while those that provide the greatest access have the lowest." In India's Kerala state, for example, an 87% literacy rate among women is widely credited with helping to push the fertility rate down to 2.3 children per woman, among the lowest in the developing world. And almost no one disputes the finding that increases in school enrollment ratios among females have a greater negative effect on fertility than do equivalent increases among males. "The link between greater education and fertility is very clear and powerful and invariant," says Sinding. "It is as good a bet

SOURCE: UN MEDIUM PROJECTION

for public policy as social science is generally able to provide."

But just as with child mortality, the mechanisms linking education to changes in desired and actual fertility are uncertain. Educated women may want to have smaller families in order to stretch the resources available for their own children's schooling, or their education may give them profitable alternative uses for their own time so that the cost of motherhood goes up. They may marry and begin bearing children later and have fewer children as a result, or they may be more effective users of family-planning methods and better protectors of their children's health. "People have not really tried to test which of those pathways is the main pathway, and there is some debate about which programs are the most effective," says Elizabeth King, a senior World Bank economist.

Indeed, high levels of female education do not always result in lower fertility. Martha Ainsworth, another World Bank economist who has recently completed a study of education, contraceptive use, and fertility in 14 countries in sub-Saharan Africa, found that although 60% of women in Ghana are educated—half of them at the secondary level—the effect on fertility there is no greater than in Senegal, Togo, Mali, Niger, and other countries where women have much less schooling. It is often difficult to measure any effect in regions where so few women overall have schooling, Ainsworth says. "Sometimes I can't disentangle how much of what I'm measuring is the effect of selectivity," that is, the fact that females who seek education are more likely ahead of time to want smaller families and to use contraception, she says.

In spite of these uncertainties, most population researchers believe that if the Cairo plan is implemented, it may gradually shift desired family size downward. "Cairo is a good thing even if it's not being guided by the scientific evidence," concludes Yale's Schultz. "This is merely a linking of various lobby groups that have an interest and a confluence of logic. It's not necessarily empirically documented, but it's plausible in certain parts of the world."

Michael Teitelbaum, a demographer at the Alfred P. Sloan Foundation, adds that he has "never run into a single policy issue that has unanimous scientific support." The important point, he says, is that U.S. policymakers have "re-established a leadership position" on population issues and that, through Wirth's new Global Affairs office at the State Department, they are "trying their best to make the connections" between foreign policy and demographic trends.

As the delegates gather in Cairo next week they would do well to bear in mind one fact: During the 9 days they will spend debating the plan of action, the world's population will grow by some 2.1 million.

–Wade Roush

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EDUCATION

Science and Math Scores Rebound

Students in elementary and secondary schools are pulling their math and science test scores out of the slump that hit in the mid-1970s, according to a report released 2 weeks ago. The latest National Assessment of Educational Progress (NAEP) report—a biennial spot-check that gives achievement tests to thousands of students—says that average 1992 scores in science and math are just about where they were in the early 1970s, before the slide began. All the students of the ages studied—9, 13, and 17—"made gains in average proficiency between 1982 and 1992," the report says.

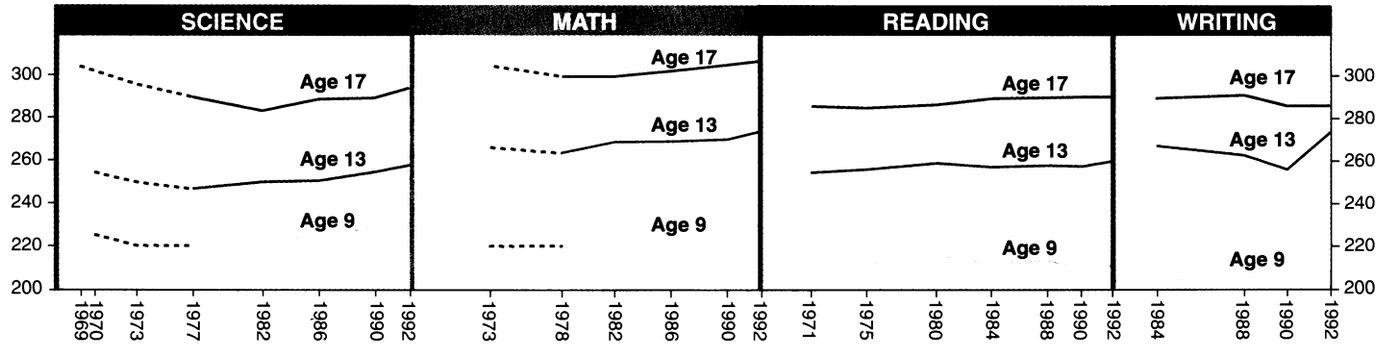
The U.S. Department of Education, which funds the NAEP, hailed the findings in a press release as a "strong step forward." But at the same time, survey officials and education specialists all acknowledged that mere recovery after a disastrous educational interval isn't enough. "We are retrieving a bit of lost ground," says education policy expert Chester Finn, an NAEP adviser and a member of The Edison Project, a privately sponsored school reform initiative based in Washington, D.C. Social scientist Bruno Manno, a senior fellow at the Hudson Institute in Washington, D.C., agrees, saying "I think the gains reported are really insignificant."

The NAEP has given students tests in selected subjects every other year since 1969 and characterizes scores according to five "proficiency levels" (see charts). The 1992 rebound effect, officials says, can be traced to an added emphasis on math and science in the schools. The percentage of 17-year-olds who had studied biology in 1992 was 92%, the NAEP found, up from 88% in 1986. The figures for physics were up from 10% to 14% and for those completing 2 years of algebra from 37% to 45%.

The good news has limits, however. For one thing, the report finds that for African American and Hispanic students, "progress in closing the gaps [relative to whites] has stalled." The black-white gap in math, for example, stopped narrowing in 1986. In science, the proficiency of black 17-year-olds was no different from the 1969 levels. In addition, students are not becoming any more literate. "With the exception of [an] improvement in writing at grade 8," the report notes, "there have been no significant improvements in reading or writing performance since 1984."

Finn believes that, ironically, this can partly be laid at the door of the renewed emphasis on science and math. The number of science courses has increased during the past decade, he points out, while the number of English courses has not. But the heart of the problem, he says, is "the fact that most people don't do much reading." The survey found, for example, that 51% of 13-year-olds—up from 39% in 1981—watched 3 to 5 hours of television a day. As NAEP director Ina Mullis says, "There's still a huge discrepancy between where we are and where we need to be."

–Constance Holden



Ups and downs. Science and math scores have come back after a dip. (Dotted lines indicate scores extrapolated from earlier NAEP surveys.)