

How many billions to go?

The peaking of the population growth rate deserves wider recognition.

Vaclav Smil

Some milestones in history are eagerly anticipated, much celebrated and repeatedly recalled: the first polio vaccine, the first landing on the Moon and the first non-stop transatlantic flight are good examples. Other milestones pass unnoticed and elicit surprisingly little comment, even when their importance eventually becomes obvious: global population milestones are among the best examples of this kind.

Some time in the first half of the seventeenth century, after millennia of stagnation or very slow annual growth amounting to small fractions of one per cent, the global population passed through the 'J-bend' of the exponential growth curve and began its still unfinished ascent. That this milestone went unnoticed is not surprising: that was the time when Galileo began observing the heavens with a telescope, when Europe was engulfed by a brutal religious war, when shoguns were consolidating their rule in Japan — and when nobody had any clear idea what the global count might be.

Curiously, modern society — obsessed with measuring everything, celebrating birthdays and giving exuberant welcomes to arbitrary dates ending in zeros — has passed two grand population milestones in a single generation, only acknowledged by a few experts. The first one was reached, virtually unnoticed, during the late 1960s, when the relative rate of global population growth peaked at just over two per cent a year. Slowly, but steadily, the rate kept falling (to about 1.7 per cent by 1990), but because of a growing base the absolute gains kept on increasing. Annual additions surpassed 80 million people during the late 1980s, and in 1991 the medium variant of the United Nations' (UN) forecast projected a gain of 100 million people a year by 1995 and more than 100 million people before the year 2000.

But, in the past few years, the UN demographers have had to cut their forecasts twice: fertilities have been falling more rapidly than anticipated, and the natural increase of the global population fell below 1.5 per cent during the early 1990s. As a result, the absolute increase peaked at 85 million people a year during the late 1980s and it was down to 80 million by 1995. The disintegration of the Soviet empire, and wars in the Gulf and the Balkans, overshadowed the second demographic milestone reached in a generation, as the absolute annual growth of humanity also began to decline.

What next? As with other species, the



Unnoticed milestone: the relative rate of world population growth peaked during the late 1960s.

exponential growth of humanity will end and the other bend of the growth curve will form, creating an S-shaped trace — but neither the onset of the S-bend nor the eventual maximum count can be predicted with great certainty. It is highly probable that we are already beyond the mid-point of the S-curve and that the current global total of six billion may not double again. The high variant of the UN's latest (1998) long-range forecast sees the global population growing to no more than 10.7 billion people by the year 2050. The low-growth scenario foresees just 7.3 billion people, and 8.9 billion might be the most likely outcome. Other projections, based on age structures, fertilities, mortalities and migration trends, support the UN's conclusion that we may not see another doubling of human numbers during the twenty-first century.

But the difference of more than three bil-

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lion people between the UN's low and high projections indicates that pinpointing the eventual value is beyond our ability, mainly because it is impossible to predict accurately the course of fertilities. Transition to low fertility has been accomplished in all affluent countries, the process is well advanced in most of Asia and Latin America, and there are clear indications that it is — finally — under way in sub-Saharan Africa, the largest remaining region of very high fertilities. The UN's medium (8.9 billion) forecast is based on the assumption that by the year 2050 total fertilities will be almost universally no higher than the replacement ratio of 2.1 children per woman, compared to the current global mean of about 2.7.

Will Ethiopia, with recent fertility close to seven, or Nigeria, Africa's most populous nation, with fertility near six, be able to change so fast? China has done so since the 1960s — but few would argue that its population controls could easily be copied in Africa. And so the world population may, after all, undergo one more doubling to 12 billion. Even so, we may be seeing the beginning of the end of the growth of our species. Children born today may be thinking about their retirement at a time when the global population count will have stabilized — or even begun to decline. □

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