Watson out of the Human Genome Project. Now she seems to have had her way; Watson resigned last week (see page 549). But Healy will find that she has damaged herself more than she has hurt Watson. The Human Genome Project itself will be the chief victim of her impatience.

The way in which Watson has been forced out is discreditable, and is a worry for all who may in future be asked to help out at NIH. That Healy and Watson did not get on has been an open secret for some time. Healy seems to like decisions to be clear-cut, Watson tends to reflective procrastination. For example, he openly disagreed with Healy's support for the NIH plan to seek patent protection for the nucleotide sequences of human genes when nothing was known of their function, chiefly on the grounds that this activity may make a monkey of the Human Genome Project (which it will). That is an issue that NIH should have been willing to talk out with the research community. Instead, Healy has got rid of Watson by fussing about the supposed conflict of interest arising from his ownership of shares in various pharmaceutical and biotechnology companies, potential beneficiaries of the Human Genome Project.

Ends do not justify all means. The means chosen in this case, those of casting a slur on a distinguished helper, even if one chosen before her time, are likely to rebound on Healy. People will wisely think twice before acceding to future requests for help. And what if Congressman John Dingell and his eager committee aides get wind of this whiff of scandal? Neither Healy nor NIH would benefit from the full rigours of congressional control of appointments to the army of advisory committees without which its external functions would collapse. Yet much the same has already happened as a result of Healy's precipitate intervention last year in the affairs of NIH's Office of Scientific Integrity (OSI); she may have had good cause to demand that OSI's procedures should be more formally judicial, but the manner of her removal of Dr Suzanne Hadley has had the effect of transferring control of OSI to the Department of Health and Human Services — and of unjustly delaying several important decisions. Everybody will sympathize with Healy's wish to get things done, but will hope that she learns the benefits of circumspection. Quickly. □

Lost numbers game

The US National Science Foundation (NSF) should apply to its own studies the rigour it expects of grant-applicants.

NSF MADE a sorry mess of its defence last week of a poorly done forecast that the United States will be short of 675,000 scientists two decades hence (see page 553). The chief author of NSF's study, policy analyst Peter House, was obliged to admit to a congressional subcommittee that it was a theoretical exercise without bearing on reality.

To be fair, NSF's fuzzy thinking on manpower is encouraged by the inclination of elders in the research community always to advance bullish estimates of future demand, apparently indifferent to the hundreds of PhDs competing for each academic vacancy and the thousands of lay-offs of skilled people by companies in high technology. Sadly, these arguments stem more from the heart than from the head. The elders are dismayed that the brightest students no longer automatically specialize in science, mathematics and engineering. They fail to recognize their own love of learning in those who choose law or business studies and are saddened that a starting salary of $80,000 a year on Wall Street should often seem so much more desirable than a post-doctoral fellowship worth, say, $18,000. They say publicly that the United States needs talented youngsters in science to compete with economic powers such as Japan and Germany, but cannot back up their assertion with evidence.

Of course, there is no accepted yardstick for telling how many scientists a country needs, but even the simple concept of supply is fraught with danger. One reason why the NSF study ran aground was its assumption that the supply of 22-year-olds is a proxy for overall supply when, in truth, there is an untapped pool of millions of scientists in the labour force not at present working in their chosen fields. Moreover, the preferences of 22-year-olds are shaped by crises, real or imagined. For example, the rate of participation in science rose after the Soviet Union put the first satellite (Sputnik) into space in 1957; only a few years earlier, it had fallen precipitously as a result of the glut of talent generated when returning soldiers resumed college education and flowed into technical fields. If women and minorities begin to enter science in numbers closer to their representation in society, supply will rise on its own.

The other half of the labour equation, the demand for scientists, is shrouded in similar uncertainty. The health of the economy, rather than a preference or distaste for scientific talent as such, determines how many technical jobs there are. In the United States just now, less spending on defence has significantly shrunk the technical work-force, for example.

The NSF study disregarded such factors in its search for a single number that might rally support for its cause. Inevitably, it backed into an indefensible position. In doing so, it has given comfort to those who doubt NSF's capacity to carry out analyses of complicated problems.

But there will be lasting and more serious consequences. This fiasco muddies the waters for the next attempt. It also chips away at NSF's credibility when its small but growing budget is under attack from those whose causes, from education to housing, have not been similarly blessed. None of this implies that there are no problems in the recruitment of able technical people, but merely that NSF has missed a chance to find solutions of them. □