many orders of magnitude fewer unknowns than conventional methods.

Two recent examples of problems thought to require terascale computing come to mind. First, to calculate the amplitude of reflected acoustical waves in a corner of complex three-dimensional domain to an accuracy of three percent, a uniform mesh covering the domain would generate a problem involving 80,000,000 unknowns. This clearly seems to be a terascale situation. By using new methods of error estimation and adaptivity, the same result could be obtained with 2,000 unknowns and done on a workstation. To calculate interfacial stresses in a two-phase composite with 128,000 inclusions to within 2 percent accuracy leads to a problem size of 800,000,000 unknowns; new algorithms can yield the same accuracy for a list of cases and using a series of problems in the 20,000 range; this can also be done on a workstation. Despite appearances otherwise, neither problem really requires terascale computing. As someone said: "It is not enough to have a big hammer. What is important is to hit the nail on the head."

Make no mistake. I am pleased to see the terascale age arrive and look forward to petascale computing by the year 2012, well before Moore's law is expected to be repeated. Nor, do I agree with Truesdell that the computer is the ruin of science; but I will amend his argument by asserting that in scientific and engineering investigations, computation without computational science is often, indeed, a fraud. To avoid the abuse Truesdell refers to, good science and good mathematics must be brought to bear on the computational process itself. Computational science and engineering can fulfil the great promise I mentioned earlier, but to do so will require the finesse, intellectual energy, and scientific breakthroughs that make the subject viable and challenging and a worthy addition to that discipline that lies in the huge intersection of mathematics, engineering science, and computer science and technology. ❑

Leslie Fox Prize 2001

Leslie Fox was a founder member of the Institute, the director of the Oxford University Computer Laboratory from 1957–1982, and a distinguished worker in numerical linear algebra and differential equations. The prize was established in 1985 with funds donated in his memory. Awards are made every two years for papers in numerical analysis given by persons under 31 on 1 January in year of the award. The adjudicators may award more than one first and second prizes.

The prize has gained standing from the subsequent achievements of its winners. The winner of the first prize in 1985 was Nick Trefethen who now holds Leslie Fox's former chair at Oxford. Subsequent winners include Nick Higham, Andrew Stuart and Chris Budd who now hold chairs at Manchester, Warwick and Bath respectively. Overseas winners have achieved similar standing elsewhere.

Winners of the 2001 Fox Prizes outside Oxford's University Museum

This year attracted 27 high quality entrants. The adjudicators, chaired by Nick Trefethen, this year considered that at least ten entrants reached the level typical of finalists in the past. Twelve entrants were women, but none had been born in the UK although some were subsequently educated here. A short list of seven entrants was selected to present their papers at the Fox Prize Meeting on 22 June in Oxford. The adjudicators awarded the first prize to an entrant whose research and talk were both assessed as outstanding, Anna-Karin Tarnberg of the Royal Institute of Technology in Stockholm. Second prizes were awarded to Tilo Arens, Brunel University; Begona Cano, University of Valladolid; Eric Darve, Stanford University; Jing-Rebecca Li, Courant Institute; Dominik Schoetzau, University of Minnesota; Divakar Viswanath, University of Chicago.

The Fox Day meeting was also a pleasant social occasion with 50 people present for the talks. In the evening a banquet was held at Balliol College when Clemency Fox, Leslie's widow was present and Gil Strang of MIT gave the after dinner speech. ❑