a short-term economic gain at the expense of others, what hope can there be for a civil trading regime worldwide. And what hope, in those circumstances, can there be for a solution of persistent economic problems in rich and poor countries alike? □

Patent disputes (cont'd)

The need for changes in patent legislation becomes more clamant every day.

THE latest development (see page 348) in the long-running dispute over the patent for the polymerase chain reaction (PCR) is another indication that the world's patents legislation is due for overhaul. The patent was originally vested in the US Cetus Corporation, which sold it on to the Swiss-based company Hoffman-LaRoche for a reputed $300 million. Key to the patent is *Taq* polymerase, a DNA polymerizing enzyme from a thermophyllic bacterium. It is to Roche's credit that it seems to have recognized early on that PCR would become an invaluable laboratory technique.

Two kinds of disputes have now arisen. There are disputes about the validity of the patent (based on claims that earlier research in Russia and elsewhere invalidates the claims of Cetus) and disputes about the restrictions the patent-holders can place on the use of *Taq* polymerase. The main dispute between Roche and Promega is of the second kind; Roche alleges that Promega has been encouraging its customers buying its own *Taq* polymerase to use that for PCR investigations as well as for other purposes. These disputes will no doubt eventually be settled in the courts. So far as is known, law-suits have not yet been joined on the question of whether researchers are free to use *Taq* polymerase from any source (it can be made in the lab) for PCR without making some payment to the patent-holder. Continuing uncertainty on that score is an ambiguity in the legislation.

That is one huge uncertainty that needs to be cleared up. By now, the public purpose of the patents system is well understood. Inventors are given the exclusive right to exploit some innovation simply so that their special knowledge will be in the public domain, allowing others to prepare to exploit it (after the term of the patent) or use the special knowledge in other investigations. That has been generally understood as meaning that the patent-holder has the exclusive commercial right to use a patented process or sell a patented device, but that others are free to use the same in their own private research.

The difficulty with the PCR is that it is still predominantly a research tool. Even laboratories using PCR for genetic diagnosis on a commercial basis may be able to claim that they are in research if they contribute their data to some public database. Academic laboratories, inclined to timorousness, will necessarily be less cheeky. But under present legislation, there can be no general rule that the use of a technique in a research laboratory must *ipso facto* be free from patent restrictions. As things are, there are only the loosest definitions of what is allowed and what is not.

Legislators should also pay attention to the ambiguities arising from claims to patent rights on human genes or parts of them. Patents offices have slipped into the habit of being over-lax in their readiness to grant patents in this field. The criteria that must be satisfied if a patent is to be issued are that an invention must be original, useful and not obvious. The case for patent protection of parts of genes is that they are indeed artefacts, that they are useful (in fishing out intact genes, for example) and that (at least until three or four years ago) their potential value was not self-evident. The US patents office turned down the first application on behalf of a clutch of nucleotide sequences of "expressed sequence tags" (ESTs), but what would have been the outcome if NIH (the applicant) had sought protection for the technique? On the face of things, there is no obvious reason why it should have failed. But that would have caused more ructions than PCR has done. □

Opportunity missed

Harold Wilson had the right enthusiasms for science, technology and society, but was too impatient.

THE death last week of Lord Wilson, previously Harold Wilson and the British prime minister for two recent spells (1964–70 and 1974–76) is of more than passing interest to the research community. For was it not Wilson who startled Britain in 1963 with his speech at Scarborough promising that the re-election of a Labour government would reshape the British economy in the "white heat of a technological revolution"? What went wrong?

Wilson was a gregarious character, and many of his friends were academics. For three years before the 1964 election, he and his party set about preparing a strategy for science and technology. There were many meetings, the more formal over weekends at the not especially fashionable Hotel Bonnington. A few people, notably the physicist P. M. S. Blackett and the economist Thomas Balogh, were especially influential members of the group. They dreamt the dream of Wilson's technological revolution.

What went wrong is easily understood. Wilson was in too great a hurry. The first scheme entailed building electrical aluminium smelters that quickly proved uneconomic, while the new government poured its technical expertise into restructuring British industry with the objective of making industrial companies bigger. A key part of the argument was that only large companies could afford sufficiently ambitious research programmes. In the event, the controversial doings of the Industrial Reconstruction Corporation probably led to a shrinking of the volume of research in British industry. Curiously, much less attention was paid to the needs of British universities than was evidently required even then. And Wilson himself threw his great skill into the pressing political problems confronting his government. If he had paid more attention, and to the right things, he might have done for Britain what Mitterrand and Chevènement did for France fifteen years later. □