Central and eastern European countries, waiting hopefully in line for membership of the European Union, have been through much the same as east Germany. The structures of the old academies have been replaced, for example, and new university laws have been approved.

But without the cash injection that east Germany enjoyed, progress has been slow. Moreover, the passive mentality bequeathed by decades of communism seems to be harder to shift without the short, sharp shock experienced in east Germany.

Most depressing has been the failure of Italy, with its long and admirable scientific tradition, to reform its scientific structures to curb the power of the *baroni*, as powerful professors are known, and let a competitive and meritocratic system flourish.

Opportunities that opened up with the demise of the corrupt Christian Democrat governments in the mid-1990s were grabbed only half-heartedly, and the mystery of Italy's introspective stagnation continues, along with the mystery of its occasional successes.

Alison Abbott

'If knowledge is king, we may need a republican revolution'

David Dickson has been news editor of *Nature* since 1993, and was its Washington correspondent in 1978–82.

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Last month, more than 300 years after the philosopher Francis Bacon coined the phrase 'knowledge is power', a British cabinet minister came up with an even stronger aphorism. In the years ahead, he said, "knowledge will be king".

The steady growth in the importance of science over the past decade — and the unprecedented growth in science budgets over the past 50 years — confirms this statement, and the way in which it sets a theme for the next millennium.

Some scientists will, no doubt, continue to claim well into the next century that they are failing to receive the recognition they deserve. But, with politicians and economists committed to the expansion of a global knowledge economy, there is ample evidence that any remaining financial restrictions are more the result of economic constraints than a lack of political (or popular) will.

Yet the 'regal' power bestowed on science has its dangers. Some, as Declan Butler points out above (see page 6), feel that the authority it appears to provide — particularly to those grasping for platforms of apparent certainty in an uncertain world — is misguided at best and tragic at worst.

One constant theme of the news pages of *Nature* over the past decade has been the unedifying sight of politicians trying to wriggle off the hook on which they have impaled themselves by a commitment to the 'guaranteed' safety of processes and products. Examples range from the storage of nuclear waste to beef contaminated with bovine spongiform encephalopathy.

Scientists often distance themselves from such guarantees; they are the first to recognize that scientific 'truth' is approximate and transitory. The problem has come not from the respect that scientific knowledge deserves, but from the 'absolute' authority it can be given in a political context.

Or take the issue of knowledge as intellectual property. Before coming to *Nature*, I had little idea of what a patent was, and even less of its implications. Since then, I have covered stories ranging from the Supreme Court's key decision in the early 1980s that life can be patented, to recent disputes over the rights to the enzyme *Taq* polymerase.

A glance at this week's news pages, with seperate stories about patents on high-temperature superconductors, on plants and on genes, will confirm how far science's evolution from public knowledge into an essentially private commodity has penetrated to the core of the scientific enterprise.

The dominant theme of this coverage is not the legitimacy of the patent system, acknowledged in the US constitution as an appropriate way of rewarding inventors, including scientists. Rather it is the way in which the power given to an inventor is used, and the danger of it being used in an absolutist fashion.

The rights to life

In principle, patents were meant to ensure that individuals shared their inventions for an appropriate reward, and in most cases this is what happens. But much of our news coverage has, by its nature, highlighted allegations of this reward being wrongly claimed (as in the recent court disputes over *Taq* or human growth hormone), too greedily pursued or too aggressively exercised.

Directly related to this is the increasing reluctance of scientists to share data on the grounds that it is potentially profitable — but only if patented. A footnote to a recent press release from a leading US genome-sequencing company puts it eloquently when it warns that one risk to its business prospects is the "adverse effect of public disclosure of genomic sequence data".

There is, of course, no room for populism in science — the spectre of creationism shows this. Nor can science be democratic in the political sense. The quality of a scientific idea is not measured by the number of votes it is able to gather, even in the scientific community; it can only be judged by a rigorous peer-review process with its own tested rules of procedure.

But the authority that this process gives to science can be used or abused. Used responsibly, if offers the prospect of a healthier, better-fed and more prosperous world — hopefully the prospect opening before us. Used irresponsibly, it can increase the control of the powerful over the powerless, and widen the gap between haves and the have-nots.

If science has, indeed, become 'king', it may be time for a truly republican revolution. And perhaps the opening of a new millennium is an appropriate setting for such an event.

David Dickson

AP

Private property? Protesting against the patenting of cloned animals.

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