Governments, it is often said, are too big to solve the small problems of life and too small to solve the big ones. This is only mildly worrisome when it comes to the small problems, which might be better tackled by communities or individuals. But what about the big problems? Many of them appear to be getting bigger, with governments less and less able to deal with them.

This is surely true where science, medicine and technology are concerned. SARS, AIDS, cybercrime, and climate change are just some of the recent issues that individual nations cannot handle on their own. How, then, do we deal with them? Do we need supranational bodies with powers beyond those of nation states -- governance bigger than governments?

As an illustration of how crucial scientific issues tend to have global relevance, and how nations can be impotent when acting unilaterally, take human stem cell research, the debate over which has been re-ignited in the US by the presidential elections. President Bush believes that federal funds should be used only for research on existing stem cell lines "where the life-and-death decision has already been made." His opponent, John Kerry, by contrast, wants to make "the funding of stem cell research a priority."

Yet whoever wins the election, it will make little difference to the future of stem cell research. If Kerry wins, the field will likely win more federal dollars. If Bush wins, private funds will continue to sustain it in the US. Even if it is banned in the US -- an extremely unlikely development -- it will continue in countries that allow it, such as the UK and Sweden.

Indeed, any line of research or treatment that troubles people in one nation can now be pursued elsewhere. Thus, while many nations ban trade in human organs, those able to afford them can buy in India and Turkey. And while the citizens of several countries are troubled by genetically modified foods, their development proceeds unabated elsewhere. In short, no nation can by itself hold back scientific, medical and technical developments any more.

Quite a few scientists may delight in such unfettered freedoms. But the question stands: if a development is seen to significantly undermine the national or global public interest, is there a way to deal with it effectively?

Some have faith in the evolution of global civil society -- the thousands of international NGOs and informal networks that link researchers, activists and officials across the world. These groups have already had many successes, including banning landmines and slowing down the hunting of whales. However, they rarely concern themselves with technical innovations and scientific research.

Others, myself included, see hope in the rise of supranational governing bodies, such as ICANN, which is responsible for assigning internet domain names and addresses, the International Chamber of Commerce, and in some cases the World Trade Organization. These institutions differ from the numerous intergovernmental organizations in that they do not act according to the votes of member nations but through panels of judges or experts who make decisions based on international law and public need.

How might such a body evolve and act in the area of science and medicine? A good candidate for the world's first truly supranational organization might be a Global Health Authority, arising out of the WHO. For most of its existence, the WHO has been a
cumbersome intergovernmental organization, but after SARS jumped across the world in 2003, it was accorded considerable new powers, including the authority to intervene in countries afflicted by a health crisis. Thus the WHO has developed from an intergovernmental agency into something more like a global authority.

It is easy to see how a Global Environmental Protection Authority might work in a similar way -- for instance, if and when global warming got out of hand. Arguably there is a precedent of a kind in the mechanism that led to the Montreal protocol, which bans ozone-depleting substances.

So far, the scope of nascent global authorities has been limited because most nations are unwilling to give power to bodies over which they have little control. The fear is that they would be like a bunch of domestic agencies cut loose, without a cabinet or legislature to pull them together. Unsurprisingly, all previous attempts to form world governments to ensure global peace or social justice have failed.

However, it is time to revisit the idea. First, there is a clear need: nation states are proving increasingly inadequate at dealing with transnational problems. Second, the means and the will are there: new communication technologies have made concerted global action easier, and the threat from terrorism could lead many countries to recognise the need for global governance. We are living in a world in which science and technology are globalised. Morally and politically, we need to catch up fast.