

# A scientific revolution

The Arab Spring puts the Middle East in a position to become a scientific powerhouse, but it needs help from the west, says **Ahmed Zewail**



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ended after the second world war, these countries looked to the superpowers for help, first west then east. And when the cold war ended, there was only one place left to look: up. That search for answers has been exploited by some to politicise religion.

It goes without saying that the developing world should help itself. The Middle East must not think itself incapable of competing with developed nations. But in addressing the gap, one must bear in mind a history that has resulted in large populations of frustrated people who lack real opportunity.

Many graduates in the Middle East are without jobs. What are their options? Their energy must not be allowed to be diverted into fanaticism and violence. In contrast to the silver wave faced by rest of the world, the Arab world is facing a youth wave. These young people can achieve great things in science if they are given the chance.

I see three essential ingredients for progress. First is the building of human resources by promoting literacy, ensuring participation of women in society and improving education. Second, there is a need to reform national constitutions to allow freedom of thought, minimise bureaucracy, reward merit, and create credible – and enforceable – legal codes.

The recent revolutions in Egypt, Tunisia and elsewhere show that these changes are possible. Over the past two decades I have been involved in promoting political and educational reforms, and I feel we now have an opportunity to make a real change.

SCIENTIFIC research in the Arabian, Persian and Turkish Middle East lags behind that of the west. Of course, there are individual scientists who produce world-class research and there are institutions and nations which make significant contributions in certain fields. Publication and citation indicators show some encouraging trends. But naturally one asks: “Why have Arab, Persian and Turkish scientists as a group underperformed compared with their colleagues in the west or with those rising in the east?”

It is simplistic to say that there is a single cause, such as a (false) dichotomy between faith and reason. Muslims are no different

from anyone else; there is no ethnic or geographic monopoly on intelligence. Muslims in Spain, north Africa and Arabia were at the peak of a sophisticated civilisation when Christian Europe was in the Dark Ages.

I think the answer lies in the recent history of the Arab, Persian and Turkish world. Consider what happened in the past century. First there was colonisation by western empires, which installed class and caste systems from outside. The result was huge populations of illiterate peasants. Illiteracy reached nearly 50 per cent, and among women it was as high as 80 per cent in many countries. When colonisation

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Thirdly, the best way to regain self-confidence is to start centres of excellence in science and technology in each Muslim country to show that Muslims can compete in today's globalised economy and to instil in the youth the desire for learning. It is gratifying to see such centres being set up in Turkey, Malaysia, Indonesia, Qatar and elsewhere. In Egypt I am reviving the National Project for the Development of Science and Technology, which the Mubarak regime made every effort to derail despite the overwhelming support of the Egyptian people.

What can the developed world do? First and foremost it can partner with Middle East nations to improve their research capabilities. It can also offer aid, but only under certain circumstances. Aid packages are usually distributed among many projects with no follow-up, leading to diffusion of resources and a lack of impact. Better results can be achieved by directing a significant fraction of the assistance to programmes of excellence selected to build up both infrastructure and human resources.

Aid must also be depoliticised. The use of an aid programme to help totalitarian or undemocratic regimes is a big mistake. In the long run it is far better to be on the side of the people, not on the side of a dictator.

Such partnerships aimed at improving science and technology in the Arabian, Persian and Turkish Middle East are in the best interests of both the developed and the developing worlds, as knowledge-based societies are better equipped to be part of the world economy. They will also contribute to progress and enlightenment, and hence peaceful coexistence and a more civilised and truly global humanity. ■

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