

# Grounds for optimism

A summit of Africa's leaders marks a deepening commitment to science and technology in the continent.

**N**ext week, heads of states in the African Union will gather for a summit in Addis Ababa (see page 356). The meeting's two main themes are climate change and the harnessing of science and technology for development — making this Africa's highest-powered gathering on science in years.

Issues to be discussed include a proposal for an Africa-wide science fund (broadly analogous to the European Union's Framework programme), plans for new research centres, and a biotechnology strategy for Africa. This last issue is an attempt to reconcile supporters and critics of agricultural biotechnology and establish some level of consensus on research, commercialization and regulation. Also on the table is an idea to establish a presidential science council, at which Africa's heads of state would be briefed on relevant issues in science and development, and review African Union decisions on science policy.

These proposals will be vigorously debated at the Addis summit. Some countries — notably Nigeria and South Africa, the two nations with the most money — are still to be convinced of the need for an Africa-wide science fund. At the same time, civil servants and science ministers across the continent are nervous about the idea of a presidential council, as they perceive (not unreasonably) that it could interfere with their own organization, the newly established African Ministerial Council on Science and Technology, also a component of the African Union.

The idea for a presidential council is not new: it was also put forward and agreed at the last African leaders' summit to deal extensively with science almost two decades ago. The inspiration that time came from Kenyan entomologist Thomas Odhiambo, who used his legendary charm and influence to persuade heads of state that they should meet periodically with scientists. One of his strongest supporters was Nigeria's current elected president Olusegun Obasanjo, who was then the nation's military ruler. Nigeria has the largest population of any nation in Africa — around 130 million — and its oil revenues have increased its potential to exert influence across the continent.

The rationale behind the presidential council is straightforward: if you want to get anything done, you need access to the people at the top. Yet the omnipotence of typical participants in the 1980s proved

to be the idea's undoing last time, after just three meetings between scientists and presidents. "You couldn't tell who was about to be overthrown in a coup, or who was next in line to be killed. There was no continuity in our work," one of the organizers tells *Nature*.

Times have changed. Obasanjo's keenness on science and innovation is shared by several of his fellow elected presidents, notably Abdoulaye Wade of Senegal, Bingu wa Mutharika of Malawi, and Rwanda's Paul Kagame. Many more countries in Africa also have elected governments, resulting in the healthy involvement of fresh constituencies in scientific decision-making.

Nowhere is this more apparent than in the build-up to next week's summit. Representatives of many different interests, including scientists, non-governmental organizations, civil servants, agencies of the United Nations, philanthropies and the media, have been free to scrutinize and influence the summit's agenda. They were encouraged to do so by the African Union, which is loosely based on the European Union and may be much better placed than its predecessor — the Organization of African Unity — to push forward meaningful initiatives in science and other spheres.

But international politics could still throw the summit's plans to attend to scientific matters off course. Ethiopia, the summit's host nation, is currently engaged in a contentious military intervention in neighbouring Somalia, and the leaders' response to that situation could yet come to dominate the meeting.

So far, however, the organizers of the Addis summit have conceded no changes in its agenda, reflecting their determination that although the Somalia situation must be discussed, it should not dominate proceedings. This is as it should be. The planners of the Addis summit want Africa's leaders to think about the long term, and about creating conditions within which war and poverty are the exception, rather than the rule. They should not be distracted from that goal. ■

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## Clock-watching

Time for a change?

**T**he clock face around which our minutes tick away is perhaps the single most potent symbol of the industrial era. It is the clock that allowed modern life to be cut precisely into the segments that the workplace requires and the individual seeks to protect.

On wrists and office walls, hanging from the vaults of railway stations, or squatting toadlike by the bedside to curtail our sleep, the

clock and its face have become the near-universal embodiment of the always felt but hitherto seldom quantified march of time. As a result, it cries out for manipulation — whether by the hurried commuter who fools himself into punctuality by setting his watch five minutes fast, or by a government changing the clocks of a nation to make the most of the daylight hours.

There was a time — 1911, as it happens — when this journal was strongly against the latter practice, as embodied in the then radical idea of introducing daylight-saving time to Britain. Rather high-mindedly, we thought that "the scheme is unworthy of the dignity of a great nation, and if it were made compulsory by legislation, it

would be a monument to national flaccidity". In the subsequent 95 years, however, this stance has softened, and *Nature* welcomes the proposal currently before the British parliament to extend current daylight saving by putting Britain's clocks forward by one hour all year round. This would put Britain into the GMT+1 time zone in winter and GMT+2 in summer, bringing the nation into line with the rest of Europe.

The evidence is that lighter evenings make life safer and may well save energy too (see page 344). A three-year experiment along these lines, well monitored to ensure that the change lives up to its proponents' claims, seems a sensible idea.

Much less persuasive is a separate plan to move forward the time on the 'Doomsday clock', an icon cannily created by the editorial board of the *Bulletin of the Atomic Scientists* in 1947 to alert the world to the looming threat of nuclear annihilation. Last week the current board decided to broaden the clock's remit to include such developments as climate change, and to move its hands forward by two minutes to just five minutes to midnight.

This raises two concerns. A minor one is that 'nuclear war' means something rather different today to what it meant at the time of, say, the Cuban missile crisis (when the hands were set further from midnight than they are now). A nuclear war is no longer necessarily synonymous with an all-out exchange between superpowers, and may not lead to the doomsday envisaged by the creators of the doomsday clock. This is not to minimize the horrors of a limited nuclear exchange, but to acknowledge that the context for the still vital project of averting any military use of nuclear weapons has changed.

A greater misgiving comes from the addition of non-nuclear concerns to the doomsday calculus. This seriously muddies the waters. Climate change is undoubtedly a major challenge, but it does not threaten doomsday in the manner of a full-blown nuclear war. Global warming has no hair trigger, no tiny margin between safety and disaster, no doom that can be unleashed in the flight time of a missile — none of the characteristics, in fact, that made the fatal minutes on the face of the doomsday clock so iconic.

Climate change is a substantial threat, but it is quite different in character to nuclear war: it is the deterioration of land, the increase of drought, a billion livelihoods descending from backbreaking to impossible. The principal human cost of climate change is likely to be an intensification of global mortality due to poverty and ill health — mortality that already runs at a level that all would condemn as unacceptable were it not that, as a world, we accept it. This moral weight makes it pressing, but does not make it urgent in the 'time ticking away' sense the doomsday clock so powerfully evokes. It is more important that policies to reduce the harm done by climate change be sustainable over the long term than that action be taken precipitously.

To fight climate change, we do not need to alarm ourselves with clocks of doom. Instead we just need to use our time to good purpose. And the reduction in energy use to be expected from single-double daylight saving in Britain — or from the extended single daylight saving that is to be implemented in the United States this year — will be a marginal, but nonetheless welcome, step in the right direction. ■

## Making connections

A series of essays is launched in *Nature*.

There are times in the development of science when a shift in approach is sufficiently extensive that only a collection of thoughts and perspectives from many different practitioners can do justice to it. This issue sees the launch of a themed series of essays, called Connections, which take such an approach to the interdisciplinary study of complex, dynamic systems (see page 369).

Scientists in almost every discipline are grappling with the problem of how best to model such systems. Cell biologists are being driven to do so, for example, by the surge of data from techniques that reveal biological processes in unprecedented detail, and quantum physicists by properties exhibited by collections of particles that would not have been anticipated on the basis of how a single particle behaves. Across these fields and beyond, deeper insight requires a systems-level approach that seeks to understand interactions and make connections. Although the goal is clear enough, the way to reach it is not.

Many researchers recoil from terms such as 'systems biology' and 'complexity', interpreting them as euphemisms for things we don't adequately understand. Research on problems involving dynamic interactions between large numbers of entities is often directed by the availability of the data, rather than by a carefully considered question. And a rush of studies claiming to uncover simplifying prin-

ciples that unite complex networks has sometimes generated more heat than light.

In some cases, attempts to understand networks and whole systems are driving researchers to cross disciplinary boundaries. Social and physical scientists are often more accustomed to such collective activity than molecular biologists, for whom the borrowing of techniques and expertise is now becoming commonplace.

The essays in the Connections series will illustrate some of the insights that are emerging as researchers pursue more holistic approaches to problems, while engaging in an unprecedented degree of collaboration between biological, social and physical scientists. They will raise provocative ideas about how to probe dynamic systems, illustrating, for example, how systems approaches can challenge assumptions established within the more reductionist framework of twentieth-century science.

The series begins just a few weeks after the popular Essay page returned to *Nature*. It will reiterate the tradition of this format as a forum for scientists to reflect on new ideas, or re-evaluate old ones. The Connections essays will also be collated on the web, where access to the first four will be free. We hope that, week by week, a greater story develops than could be told by a single article — and that over the coming year, the Essay page will continue to provide scientists with a valuable opportunity to say exactly what they think. ■

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