

CORRESPONDENCE

Curb deep-sea mining now

Cindy Lee Van Dover in her review of the Bismarck Sea mining project (*Nature* 470, 31–33; 2011) accepts the inevitability of interest in excavating the sediments of hydrothermal vents for minerals such as copper, zinc, gold and silver. Many of the hundreds of these sites are accessible, and the issue is widely seen as not whether mining should proceed, but how it can be done profitably and safely.

I approach the issue with a strong bias, based on efforts over decades to figure out how to keep the world working as a biophysical system capable of serving indefinitely as a human habitat. On the overall issue I am not optimistic. On one topic, however, I am certain: the integrity of the oceanic biophysical system is being lost now and the human cost is overwhelming.

The fact is that intrusions into the global environment have passed a limit of acceptability and this one must be seen for the twofold attack on the global commons that it is.

Hydrothermal vents are one of the wonders of Earth: communities of autotrophic organisms that survive on Earth's energy as opposed to photosynthetic energy from the Sun, the source of energy of almost all other life. Each vent site may have its own high degree of endemism, essentially unique life. The mere fact that the sites are commercially attractive as ore is not an adequate reason to exploit them, any more than the existence of the giant redwoods of the Sierra Nevada justifies harvesting them for shingles. The vents are a window onto the history of life. By what right do we destroy them for corporate profit?



Worse, mining of marine sediments mobilizes the noxious minerals they contain, including those that are toxic to other marine life. Suddenly, we have another contribution to the chemical disruption of the ocean. We are well aware of the process and its effects. Do we need more research to confirm our experience?

Global problems all have local origins. Here we have the beginning of another process we shall never be able to stop, once started. Another mountain-top mining. Another Tar Sands of Alberta. Another North Slope oil development. Scientists who join the programme are offering tacit approval of it, no matter what their perspectives. The world is too small for this further destructive intrusion — it should be stopped now before it becomes another corporate atrocity, too big and too valuable to stop.

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NIH plan will hinder translational studies

The proposal by the US National Institutes of Health (NIH) to dismantle the National Center for Research Resources (NCRR) (see go.nature.com/yw3cq3) is more likely to inhibit than enhance translational research.

Through its Division of Comparative Medicine (DCM), the NCRR has long promoted translational research by supporting facilities and by providing resources and training to identify and target disease mechanisms. The proposed replacement for the NCRR, the National Center for Advancing Translational Sciences (NCATS), acknowledges the value of an integrated DCM by retaining its core functions as a cohesive programme within an 'Infrastructure Entity'.

However, in our view, the vision of NCATS as an incubator for innovative

medicines is unrealistic. A major obstacle to developing new treatments through translational science is an inadequate understanding of basic biological pathways and mechanisms — not anaemic efforts by industry to test potential drug candidates. Using the NCRR's existing research resources as a means of enhancing the NIH's traditional strength in mechanistic research is a more certain route to translational success than focusing on chemical screening and intramural bioassays, as proposed for NCATS.

As veteran comparative biologists, we feel that the decision to slash the NCRR to initiate NCATS was undertaken without due diligence or sufficient opportunity for public debate. The rush to establish NCATS without a settled organizational plan and against the advice of numerous translational science researchers bodes ill for the new centre's ability to perform meaningful translational research in the foreseeable future.

The preservation of the DCM in the Infrastructure Entity will maintain core NIH translational science functions. The sprint to form NCATS by dismembering the NCRR might be good politics, but it is bad public policy.

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*See <http://dx.doi.org/10.1038/471036b> for a full list of signatories.

SEE NEWS P.15

Neuroscience cuts will hurt key areas

We call on the UK Biotechnology and Biological Sciences Research Council (BBSRC) to reconsider its intention to cut funding for neuroscience by around 20%

(see go.nature.com/u4mgyq and go.nature.com/8ig9oy).

The neuroscience currently funded by the BBSRC must survive a rigorous committee selection process. According to the research council, the cut is being imposed not because the neuroscience funded is less than excellent, but because it does not address BBSRC priority areas.

Yet neuroscience research is crucial in every BBSRC priority area. In public health, it can improve the understanding of mental illness, age-related cognitive decline, and diet and exercise factors (through the neural basis of food selection and motivation, respectively). It can improve animal welfare by giving insight into the mental state of farm animals, and is relevant to food security — for example, by controlling crop predation through knowledge of the neural basis of insect behaviour.

The BBSRC funds so much of this research because of the high quality of British neuroscience and because its researchers have consistently proved that they can compete for funding.

So far, the BBSRC has been admirably responsive to research excellence on the ground, and open to going where scientists lead. This imposition of funding priorities from the top is a regrettable change.

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Easier citizen science is better

Non-scientists are now participating in research in ways that were previously impossible, thanks to more web-based projects to collect and analyse data. Here we suggest a way to encourage broader participation while increasing the quality of data.

Participation may be passive, as when someone donates their computer's 'downtime' to projects such as SETI@home, or active, as when someone uses eBird to log birds they have spotted. Unfortunately,

the prevailing data-collection and storage practices for active projects inhibit participation by non-experts.

Many projects rely on positive identification, whether explicitly (as for eBird) or by soliciting photographs and descriptions that others can use to classify the observation (as for the UK website iSpot). Because non-experts often lack the knowledge to identify species, they may opt not to participate or may provide inaccurate data by accidentally misidentifying something. The result is a trade-off between participation and data quality.

This trade-off can be avoided simply by changing the way information is collected and stored. Participants should be given the option to report a sighting in terms of observed attributes, eliminating the need to force a (possibly incorrect) classification. For example, allowing someone to report a bird as oil-covered may be more valuable than asking them to guess what the species is. For such data to be used effectively, they need to be stored in a way that supports attributes rather than fixed, predetermined classes.

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Include Israel when comparing metrics

Your readers deserve to see research metrics from the Arab world (*Nature* 469, 453 and 470, 147; 2011) compared with those of its nearest neighbour, Israel.

You compare the number of publications, researchers per million of population and the percentage of gross domestic product (GDP) expended on research and development (R&D). But all of your graphics omit Israel, even though the GDP graphic includes the European Union and Turkey.

The picture would be different had Israel's metrics been included. Israel published 14,943 papers in 2008 (Science

Citation Index). In 2007, there were 7,841 researchers per million population, and civilian expenditure on R&D totalled 4.3% of GDP in 2009 — the highest percentage in the world (Central Bureau of Statistics, State of Israel).

From 1948, Israel and its Arab neighbours started on a roughly equal footing. Israel has achieved much, despite arguably being the poorer nation in terms of traditional measures such as land area, natural resources and freedom from conflict. Its strong investment in human capital, fostered by a free and open society, has produced six decades of spectacular growth. Those achievements stand in contrast to six decades of regrettably slow (and relatively static) progress in the Arab world. Your analysis would have been more accurately portrayed in this context.

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Lay aside the ladder of descent

Your argument that the curious *Xenoturbella* flatworm represents a "crucial intermediate stage of animal evolution" (*Nature* 470, 161–162; 2011) perpetuates a popular misconception, stemming from a presumption that the features of such ancient living relics are intermediate between those of other extant creatures.

Today's organisms are all at the twig tips of one large tree of life, with no knowable connections between primitive and higher forms. Reproductively isolated populations of species, such as chimpanzees and humans, are not modifications on a 'ladder' of descent — thus living chimpanzees are not our ancestors, but a sister species adapted to a different habitat (tropical forests versus savannah).

Xenoturbella has largely maintained its internal structure and body shape over millions of years of evolution, during which stabilizing selection removed

descendants that were less-well adapted to their environment than their parents.

Such 'living fossils' have always occupied a narrow ecological niche, apparently without ever experiencing much competition from more complex organisms, and so may serve as models for reconstructing crucial steps in animal evolution. But they do not represent 'intermediate' evolutionary forms in the way that some of the famous fossils from the Mesozoic, such as the feathered dinosaurs or ancient snakes with hind legs, are viewed as earlier, extinct connecting links in the tree of life.

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India needs more plant taxonomists

India, with its wide range of geographical and climatic conditions, has a rich and varied flora of some 45,000 species — almost 7% of the world's flowering plants. But their documentation is seriously compromised by the country's dearth of plant taxonomists.

Although DNA sequence data and barcoding are well on the way to being accepted as the global standard for species identification, India's plant taxonomists are struggling to keep up. A lack of proper training and infrastructure hampers molecular-systematics studies, so the evolutionary lineages of most of the country's plants remain poorly understood.

India's many outstanding botanists, familiar with regional flora, must help plant taxonomists to advance molecular-systematics studies and improve the evolutionary understanding of the country's rich biodiversity.

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