

for us, it is the latter that is in the public eye. Already unpopular for our role in the banking crash, we now have our largest employer running a system of whole-population surveillance that even a judge appointed by George W. Bush called “almost Orwellian”.

So mathematicians must decide: do we cooperate with the intelligence services or not?

Our situation has been likened to that of nuclear physicists in the 1940s. However, they knew they were building the atom bomb, whereas mathematicians working for the NSA or GCHQ often have little idea how their work will be used. Those who did so trusting that they were contributing to the legitimate safeguarding of national security may justifiably feel betrayed.

At a bare minimum, we mathematicians should talk about this. Maybe we should go further. Eminent mathematician Alexander Beilinson of the University of Chicago has proposed that the American Mathematical Society sever all ties with the NSA, and that working for it or its partners should become “socially unacceptable” in the same way that working for the KGB became unacceptable to many in the Soviet Union.

Not everyone will agree, but it reminds us that we have both individual choices and collective power. Individuals can withdraw their labour. Heads of university departments can refuse staff leave to work for the NSA or GCHQ. National mathematical societies can stop publishing the agencies’ job adverts, refuse their money, or even expel members who work for agencies of mass surveillance.

At the very least, we should acknowledge that these choices are ours to make. We are human beings first and mathematicians second, and if we do not like what the secret services are doing, we should not cooperate. ■

Tom Leinster is a mathematician at the University of Edinburgh, UK

ONE MINUTE INTERVIEW

Rhino horn is no medicine

Prescribers of traditional cures must join with conservationists to beat poaching, says Chinese medicine expert **Lixin Huang**



PROFILE

Lixin Huang is president of the American College of Traditional Chinese Medicine in California and a council member of the World Wildlife Fund. She advocates conservation, especially when animal products used in traditional medicine are involved

What has rhino horn been used for in traditional Chinese medicine (TCM)?

At times during the 3000-year history of TCM, rhino horn was used to treat infections and was believed to reduce fever. It was never used alone, but in combination with Chinese herbs.

Given that rhinos are endangered, is rhino horn still used today?

In China, Taiwan and South Korea it has been completely banned from use in medicine since about 1993. Also in China it is only permitted for use in research to identify substitutes, and is no longer listed in medical reference books. But in Vietnam – a huge market for illegal rhino horn – it is being used as a hangover cure by the nouveau riche. It is also being promoted to treat cancer. There is no scientific basis for such claims.

Has there been scientific research into the effectiveness of rhino horn in medicine?

In one human study, researchers in Taiwan found that rhino horn temporarily reduced fever in

children, but it was no more effective than aspirin. Animal studies done in the UK and South Africa found no pharmacological effects of rhino horn – or any other animal horns.

What alternatives are there to rhino horn?

There are plenty of alternatives; the studies I just mentioned found traditional plant-based medicines, such as *Radix Isatidis*, are great substitutes. They are now promoted by traditional medicine authorities in South-East Asia.

You work actively on conservation. How did you first become involved in this?

In 1997, in my role as president of the American College of Traditional Chinese Medicine, the World Wildlife Fund contacted me for a meeting. There and at later conferences, I learned about the challenges of conservation – including the fact that there was no dialogue between the TCM and conservation communities. So I decided to play a bridge-building role. By 1999, we had a meeting in Beijing that brought together the scientific, medical, conservation and TCM communities.

Why is this partnership between the medical and conservation communities so important?

TCM is no longer exclusive to China or South-East Asia. It is now used in 70 countries in Africa, North and South America and Europe. There is an urgent need to educate consumers about the crisis we face in terms of illegal poaching and black market sale of endangered animals. Also, greater demand is having a negative impact on individual medicinal species and the ecosystems in which they thrive. Chinese herbal formulas use over 11,000 plants, animal products and mineral substances – about 80 per cent of which are collected in the wild.

So how can we protect the species put at risk?

Long-term survival of medicinal plant and animal species depends on well thought-out, widely adopted conservation strategies. They are in everyone’s interest – including those of us in the TCM community.

Interview by Curtis Abraham