

# Science is for all of us

You may have seen a recent report that it just may be possible to make a warp drive of the kind seen on Star Trek – by warping space-time around a starship, so it can travel faster than light. Like the recent discovery of the Higgs boson, it's the kind of story that suggests science is the esoteric domain of eggheads in ivory towers, perhaps of interest but without direct relevance to the rest of us.

Compounding this impression, few job openings specify any of the sciences. Yet levels of scientific knowledge – and understanding of how science works – greatly affect the lives of you and me, including through decisions we make, and grander decisions with far reaching impacts on our lives.

Though wide ranging, science broadly involves the pursuit of knowledge that can be verified, such as through experiments. Predictions are possible, and can be extremely accurate: should you somehow leap from a high building in a vacuum, within 10 seconds you would be plummeting earthwards at 353 kilometres an hour.

Science can also be imprecise, finding it hard to pin down reality. Medical science provides several examples. For instance, after extensive research into diets, the best scientific advice for anyone wanting to lose weight has not progressed much beyond the commonsense, "Eat less. Move more."

Even supposed medical truths can prove ill-founded. Peptic ulcers were believed to be caused by stress or dietary factors, until two doctors went against prevailing wisdom and showed most result from a bacterial infection. I have a strong interest in salt, as I find it helps combat my chronic sinus troubles. Well known warnings link excess salt to high blood pressure, in turn threatening heart attacks and strokes. But reading information online I learn that the evidence for this is shaky; an article in Scientific American last year noted, "For every study that suggests that salt is unhealthy, another does not." So at times, it's worth investigating a little, providing you find reliable sources.

While I believe salt intake should suit individuals, the situation is more straightforward regarding antibiotics, misuse of which reflects poor awareness of science in society. In Hong Kong, antibiotics tend to be over-prescribed and too readily available, and patients are prone to stop taking them when feeling better rather than as courses are completed. This in turn leads to some bacteria strains becoming drug resistant "superbugs" that can cause lingering infections or even death.

The Centre for Health Protection is taking measures to combat drug resistance. Such official action depends on sound science, and you might hope that scientists are all working hard to discover objective truths that help in making the best decisions for us all.

Sadly, however, scientists are not always so saintly. When the tobacco industry was threatened by anti-smoking controls, it enlisted support from some researchers who helped spread doubts about the adverse health impacts of smoking and passive smoking, playing a role in what a report on the World Health Organization website called, “the most astonishing systematic corporate deceit of all time.”

You might laugh at me for my naivety, but I find it deeply sad that even in science, the old saying of “Who pays the piper calls the tune” can apply so strongly. I’m especially interested in nature conservation, and like the idea that the system involving environmental impact assessments can minimise or prevent severe harm by development projects.

But this system depends on having worthwhile assessments, while the “environmental” consultants preparing the assessments in turn depend on funding from would-be developers. This means that consultants tend to bias their reports in favour of development, and against the environment. A conservationist friend considers the bias so strong that he dismisses biologists working on environmental impact assessments as “biostitutes”.

I have done some environmental consultancy work – trying to avoid being a biostitute,! – and read a few reports by others, finding that while quality varied, each had a rose-tinted view of the prospects for development.

No matter, at least as far as the assessments and consultants’ incomes were concerned. The South China Morning Post last year reported that the director of environmental protection, Anissa Wong Sean-yee, had not rejected a single one of the assessment studies she had handled. With the government’s own watchdog – the Advisory Council on the Environment – branded a rubber stamp, who is left with the task of really assessing the assessments?

The answer is almost: you and me. Green groups may critique environmental impact assessments, yet their efforts often rely on volunteers who may have passion for and expertise in aspects of nature conservation. These “citizen scientists” include birdwatchers, botanists, experts on dragonflies and moths, divers and avid hikers.

Citizen scientists can play vital roles in our society, perhaps especially in environmental protection. As well as focusing on threatened sites such as Sha Lo Tung, Tai Long Wan and Tung Chung Bay, committed individuals are needed to make progress with broader issues, like air pollution.

With autumn winds blowing from the north, Hong Kong’s severe air pollution is back with a vengeance. As I write it is not yet noon, but based on the current “very dangerous” air pollution levels, the Hedley Environmental Index estimates there have already been six preventable deaths today. Science tells us our air pollution causes significant sickness and even death. Commonsense tells us we should aim for air that’s safe to breathe.

And political expediency prevails when it comes to air pollution. Previous Chief Executive Donald Tsang promised new Air Quality Objectives, but failed to deliver on his promise. With more widespread scientific awareness in society, and in government, we just might set worthwhile goals for air quality – and our quality of life.

Yet personal health issues, nature hotspots and air pollution pale into insignificance compared to what I believe is the key issue requiring awareness of science in society: global warming. To some people, the idea we humans can affect the climate seems as fanciful as a starship warp drive. But science tells us we can and are doing so, and news this week of an astonishing new record low for Arctic ice cover is further cause for alarm.

Fossil fuel companies sponsor efforts to downplay risks, using tactics strikingly similar to those the tobacco industry deployed in its corporate deceit. The issue proves overwhelming for the media. So it's crucial that each of us does what we can to become informed and involved, and strive as citizen scientists to advocate and ensure changes for the better.