

TABLE TALK WITH PETER ROGERS



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SENIOR WRITER

'Plenty of water, if we're smart about it'

HARVARD don Peter Rogers has carved a career out of studying how to manage water efficiently, but even he had something to learn from a 77-year-old cowboy - Stetson and all - on a bus ride in Lincoln, Nebraska.

Professor Rogers, 73, recalls: "He and his wife run a seven acre farm there. We chatted and I suddenly discovered that he knew more about water and agriculture than I would ever know."

Among other things, the cowboy told Prof Rogers how he used a strategic yet cheap irrigation system of "centre pivots" to double his crop yield while halving his water use. This irrigation system consists of a series of overhead sprinklers which are spaced out such that the water is used optimally.

Prof Rogers believes that centre pivots are the ticket to minimising water wastage in farming today - which is saying a lot because, for more than 40 years, he has studied how to reduce water wastage in more than 30 countries, including China, India, Pakistan and Bangladesh. An alumnus of the University of Liverpool, Northwestern University and Harvard, he is now the latter's Gordon McKay Professor of Environmental Engineering, and also teaches city planning.

The married father of four is here till May to put together a water security programme for Asia at the National University of Singapore's (NUS) Global Asia Institute.

I caught up with him earlier this month to ask him why he says the world is running out of water:

Q What is foremost in your mind about water security today?

Singapore has done a terrific job of ensuring its water supply for the next 50 years at least. Some may say it's excessive concern because it's a political, not economic, decision. Everything has been carefully thought out, from the collection of drain water to the closing of estuaries. Contrast that with places like Orange County, California, which also had to recycle wastewater (but resisted doing so for 15 years because they were very conservative about such things).

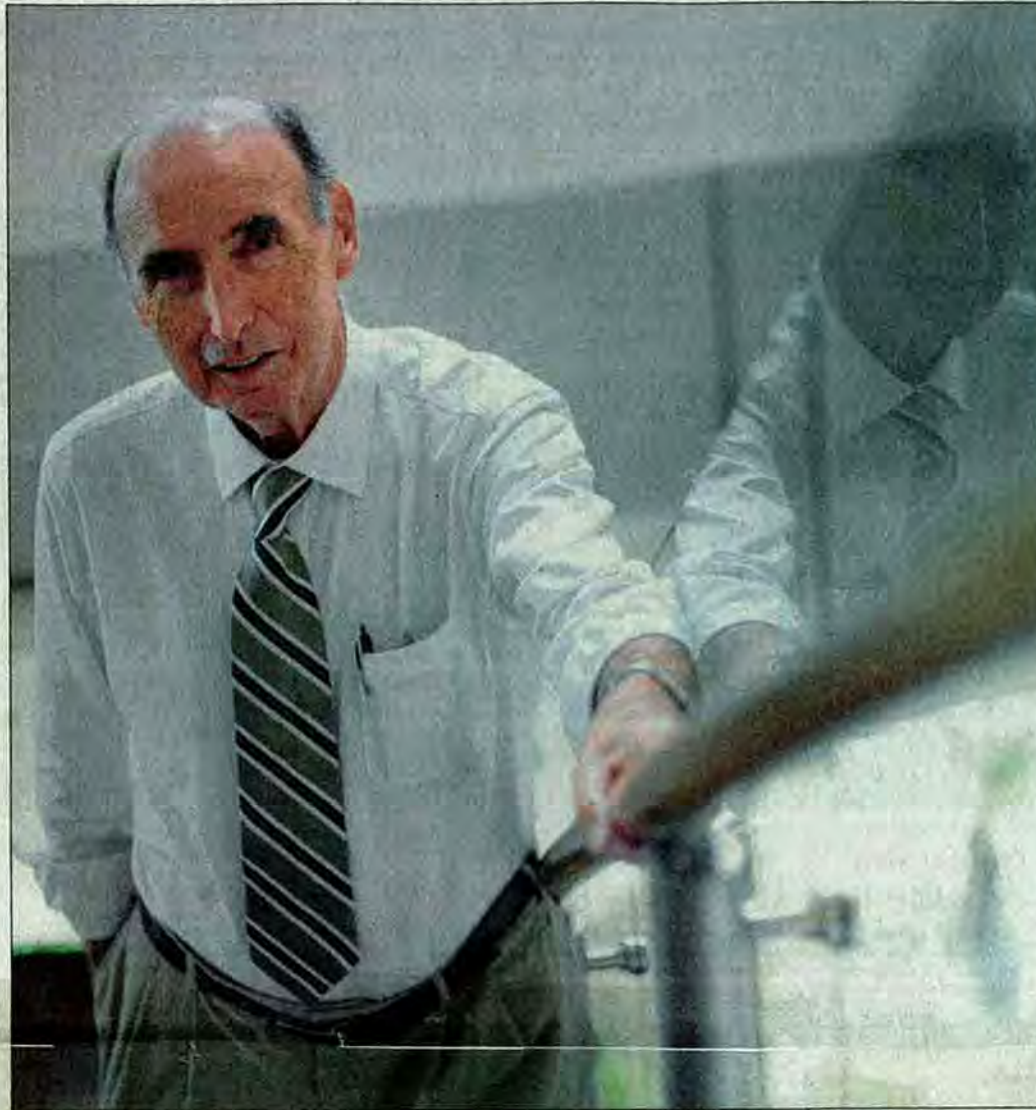
Also, environmental groups have been pressuring the county not to dump its treated waste water into the ocean because most of the effluents (remain in such treated water)... So somebody said, "Why don't we treat this waste water a third time and then (subject it) to reverse osmosis so that we can recycle the water?" That was a stroke of genius: you now don't have to dump effluents into the ocean and desalinating wastewater is a lot cheaper than desalinating ocean water because the concentration of salts in wastewater is lower.

Q So why has it taken this long for reverse osmosis to catch on?

That's a great question. The answer is that reverse osmosis used to be very expensive (partly) because there were no economies of scale in using it. But its cost has now plummeted from US\$5 a cubic metre to 49 US cents (62 Singapore cents) a cubic metre, because chemical engineers have found a cheaper way to fabricate the membranes for treating water by reverse osmosis.

Q So there's no excuse not to recycle wastewater today?

Right now, you'd have to spend 40 per cent of your desalination costs on energy to desalinate wastewater. And you've seen that in Japan, they need huge amounts of water to try and cool down the nuclear reactors. Generating electricity requires lots of water (so) when economies expand, the demand for water will soar markedly. But if we can solve the en-



Professor Peter Rogers from Harvard University, an expert on the efficient use of water, believes centre pivots in irrigation systems, as well as water recycling, are key in preventing water wastage. ST PHOTO: CAROLINE CHIA

ergy problem, we can solve the water problem.

Q There seems a lot of hope in that.

What's missing is that big leap, when one can say, "Well, we may not have to do all that if we could do something else!" For instance, in California's Imperial Valley, there are 500 farms that actually waste more water than all that is used by the entire city of New York each year. (Yet) since the early 1960s, Iowa, Nebraska and Wyoming have been using centre pivots to put water where you need it. These pivots are now run by laptop computers so that instead of growing the same crops each year, you can grow many different crops - and the computer tells you how much water you need for this crop, how much fertiliser to mix in with the water. It's amazing and it's cheap. Can Asia feed itself? The answer is clearly yes.

Q Is it then just a case of educating and enabling farmers?

No. It's an organisational problem. Farmers are very smart people and they're doing the best they can. What they need is some way of organising themselves socially so that, say, 200 farmers get one of these (irrigation systems). You're going to need government intervention, but also private sector (help).

Q How might the private sector help city dwellers too?

For the past 15 years, the biggest issue about municipal water supply has been the privatisation of water. In fact, NUS' Water Policy Institute has just done a research project on that, and there are a lot of arguments about how people should not make money out of people's drinking water. The other argument is that you get much more efficient use of water if people paid for it, and private industries are better organised and so could do a better job of (managing water supply). But it's interesting that the best-run municipality in the world is Singapore, which is gov-

ernment-run. Another city that is doing very well is Phnom Penh in Cambodia, which has (Mr) Ek Sonn Chan, who won the Swedish Water Prize last year for the most improved waterworks... But you need leadership.

Q Surely you need more than that for real change?

Yes. You've also got to convince people that it's in their interests to do these things and politicians have to want to do it.

The bigger issue is agriculture. I was in Chennai recently and saw women with plastic buckets chasing after the water trucks when, 10km away, farmers were flooding their padi fields with (more water than they needed). There were no mechanisms to transfer water from (countryside to city). Instead, they proposed to build a 400km-long pipeline from the Krishna River to Chennai.

Q Why do you say we're running out of

On water and problem solving

SOFT-SPOKEN and perceptive, environmental engineering don Peter Rogers is a civil engineer by training who believes in getting to the root of any problem, to find a satisfying solution to it. Here he is on:

Singapore

"It's a unique place in a unique situation in a unique time. It has the tremendous opportunity to get things moving in Asia by bringing together opinion leaders to think things through and move ahead on problems."

What he tells others about Singapore

"If you want to be successful, look at what Singapore is doing and recommending."

The Marina Barrage

"It's a terrific solution if you're worried about water supply. Singapore's body politic has decided that it's a worthwhile risk to take but it would be very hard to do this elsewhere."

China's leaders

"Of course, they are all engineers who see engineering solutions to everything. But as an engineer, I don't see engineering solutions to everything."

India

"It got democracy before development and so it has lots of good ideas and lots of smart people in government but the way it practises democracy means that it's very hard to get things done."

Californians

"The complaint about them is that they waste water by putting it all into swimming pools. But as far as I'm concerned, if someone in California wants to have a big swimming pool, that's fine - provided I'm not paying for it."

His new book, titled Running Out of Water

"There are no equations, charts or anything complicated in this book. Just lots and lots of stories because my co-author, a politician, said, 'Doom and gloom stuff just washes over politicians.'"

CHEONG SUK-WAI

water when we can recycle water more cheaply today?

We're running out of water that we can use. The issue of quality of water has gone away because you can always take out (what impurities) you put in water - at a price.

The question now is: Do we have enough water in total? We're not sure where the water in this world came from. Some people think that it came from asteroids, although that's iffy. How many asteroids would you have to have to create enough water for all? There is very little new water on the globe. There is very little transferred water in outer space. So we have a fixed quantum of water and an increasing (population)... But there's still plenty of water for nine billion people if we're smart about it.

Prof Rogers will speak on the prospects of securing water for cities at NUS' Nexus, Level 6, University Hall (Lee Kong Chian Wing) at 12.15pm today. The talk is free and open to the public.

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