

My salt, your salt: science, culture and agriculture

James A Darling¹

¹ISA Dryland Salinity Committee

My salt, your salt

You can't have culture without agriculture.

Salt is first and foremost a matter of culture – for communities, for countries, for continents. Inevitably it is also an issue for agriculture.

Continent Australia needs to be able to deal with the cultural fact of salt, including the origins and extent of salt, before land managers can be expected to deal correctly with salt or saline land.

I remember a silence like no other. It was an early summer's evening on the 2nd Nov 1999. Over 100 farmers packed the meeting room of the community hall, the Keith Institute, to hear a visiting halophyte and salt-tolerant crop breeder speak. "I love salt," he began in a strong American accent and stopped. The room took an audible gasp and forgot to let out the air. Had everyone heard right? Heard those two words, salt and love, together? Love!

"A cancer on the land" was a common expression of farmers at that time to describe the growing problem of what is now called dryland salinity.

A generation ago in Australia salinity rarely got a mention. Salt was censored like spam. It wasn't something you owned up to. It was a slur, something bad in corner cupboard, lived with and ignored: at best someone else's problem, at worst myopic denial.

But nature cannot be gainsaid, and neither can salt.

Salt is one of the abiding paradoxes of our planet: you can't do without it and you can't do with too much of it.

Salt opens a divide as wide as a chasm. The span of difference between the Old Testament poetry of contamination and corruption "...and she became a pillar of salt", and the praise and exhortation of the New Testament's "Ye are the salt of the earth..." is as plain as day for all to see.

Salt the preserver and salt the destroyer is as much a component of our cultural landscapes as it is of our agricultural landscapes.

A couple of years ago I came across a paperback with the title *Salt: A World History*. I purchased it immediately. The book traces centuries of human history through the focus of salt and its role in the prevalent culture from the earliest records in China and Egypt through to the present day. Control of salt mines for the provisioning and movement of armies was a recurrent theme. No civilization could exist without secure access to salt.

Salt is prophetic. Attitude to salt speaks about the future, its management, our survival and the quality of that survival.

Less than 10 years ago, like shooting star, active salt called salinity whooshed across the skyline of the Australian psyche and burnt bright and briefly as an urgent national issue for a number of years until drought, water rationing and the threatened collapse of the Murray-Darling River system dimmed its light.

By putting salt and salinity on the national agenda, the leadership of the National Dryland Salinity Program and CSIRO Land & Water did a great service to the growth of public understanding of the landscape processes of this continent.

The research community and innovative landholders continue to make advances and salinity management remains a work in progress.

But did the brief, bright national focus on salt and salinity shift the cultural axis of the nation? And if it did, how profound and seismic was the shift?

There follows an inevitable question: was an opportunity lost for better communication, more education, an inculcated public knowledge of how salt works in the Australian landscape? Too often the broad cultural sweep is lost, never encapsulated, never clearly stated, sidelined by the routine obsession of administration and the day to day pedantics of research.

Ask Australians to give their account of where salt comes from and how much salt exists in the national landscape and I would have grave misgivings about the accuracy of the answers. Indeed, I could instance examples of intelligent people, whose purported and adamant knowledge of the origins and extent of salt, were completely wrong.

It is necessary for Australians to know that most salt that is part of this continent is a result geological age – 450 million years is a long time – and has been deposited on the ground by rainfall. Deposits vary from tonnes/ha/yr close to the sea, to a couple of kilograms/ha/yr in inland areas.

Whatever the variance, you can be sure salt will be there and that over such imponderable lengths of time, the mathematics make it a massive salt load for the environment of Australia to deal with.

In this vast time-frame there is a global movement of salt – the circulation of the same amount of salt within the earth's atmosphere since who knows how long, as natural as rocks.

My salt and your salt: essentially the same salt.

Science, culture and agriculture

Knowledge is the cornerstone of making a real difference.

Expression and communication is the blood in the veins of planet earth: we can't live without it.

Scientists must find a way to express their knowledge that engages the public. They must find, not only the right words, but also select the medium or media best suited to make that contact, that engagement, which establishes a platform where persuasion enables progress.

Science is about a world which can be understood and known and imagined. Yet scientists have a reputation for being disengaged and inward-looking and more able to communicate their wares to their own kind than to the general public.

The effort of the individual scientist or team of scientists is to test their dream, their research, to prise the shadow of the dream off the cave wall, and to bring it into the glare of light and scrutiny.

For a scientist, contemporary social and political accountability is a two-edged sword: on the one hand it can give a mandate for unimpeded vision and on other it can be the justification for autocracy or tyranny.

Science and scientists are sensible to be cautious: their names are being invoked by many, politicians and environmental evangelists in particular, for multiple, strident and conflicting purposes.

I support the position that the entirety of research should not have a commercial justification and that there should still be funding for scientists with the potential to unleash esoteric, tenacious and brilliant discovery.

Science dependent on commercial application is a dangerously compliant and confined creature. Productive, yes; dissenting, hardly.

And who dares ask the questions of integrity?

What if your opinion is in conflict with those of your superiors? How far can you go in

challenging before loyalty and allegiance are called into question? What if you are muzzled and it's important to get your results out into the sphere of influence otherwise events will overtake their relevance? What happens if you are put in a public position of endorsing what you are actually opposing?

Politicians take advice from a range of sources. Bureaucrats have access to the executive arm of government and a presumed entry into the scientific community. Funding is always an issue. Governments expect an appropriate return for their money and expect scientists to oil the wheels and facilitate, not to make it difficult.

The temptation is the same for governments as it is for all of us: if there is an inconvenient truth, axe it.

It underlines the imperative that many and diverse sources of funding are required to protect the integrity of the scientific community.

But what is the actual governance of this community that requires integrity and protection? How does the scientific community govern itself? Is it a sort of democracy or meritocracy or what? How much does it vary from one discipline to another, from one institution to another, from one state to another, and from one country to another? Does this matter? Is it simply the difference of culture between institutions, between states, between countries? And, if so, how well does one culture relate to another.

Science needs a reputation for being open, inclusive and informative about its own governance. It needs to speak a relevant and global language. It needs to address cultural divisions.

For the general public, science vibrates like a mystery that exists just a bit beyond the grasp. It doesn't mean that people are not interested in the wave length. It means they are not plugged in, not engaged.

The main question for the general public in the global warming, climate change generation, remains unchanged: is scientific opinion is trustworthy or not?

How do you answer that?

Scientists play a pivotal part in the growth and development of our world. Science brings objectivity, measurement, credibility. The imprimatur of science is a priceless possession. Credibility, in whatever field, is an upright and brittle and wonderful vessel.

I conclude by going back to the beginning: you can't have culture without agriculture. I could equally say that if you do have a vibrant and sustainable agricultural base then there's every chance it's part of a strong, dynamic, broader community.

But the dynamic of dominant cities in the 21st century means that many people are in danger of not considering from where they are fed.

Angkor Wat was a thriving centre of Asia before its extraordinary agriculture fell into neglect and its civilization collapsed.

Salt is prophetic: it tells us about what is to come.

In that future to which we aspire, science will need a global reach, to speak with a global vernacular, and to be trustworthy.

References

Genesis ch.9, v.26

Matthew ch.5, v.13.

Mark Kurlansky, Salt A World History, Jonathan Cape, London 2002.