

From end to end, and with nudged chaos
Dr Barry White

My thanks to the MCV Committee, Chair Dale Baker, Program Manager, Anwyn Lovett and to the conference organizers for this invitation. I also welcome the MCV Program reviewers, Jim Buizer and James Hansen fresh from yesterday's trans-Pacific flight, and Bobbie Brazil, Chair of Land & Water Australia. LWA have nurtured and administered the MCV program since its inception.

And congratulations to my erstwhile successor Rohan Nelson, and good luck in his new climate change job.

The Conference began this morning with some powerful and perhaps some conflicting messages from the Minister – for example, we all have to be better communicators. As the Minister put it, he can't advocate if we can't articulate?

Tonight at the other end of the day, a lighter and easier talk, maybe -. Perhaps a cyclone Larry story for starters. Shucks - It was sure nice of George Bush to phone and offer assistance to our PM. For starters he could do something about global warming. Time for a little leadership from our little leaders?

Sceptics will respond- they are waiting for proof - famous last words! The insurance companies know how to manage uncertainty – they put their premiums up.

Tonight my charter is climate variability, and a little on how the MCV program got from nothing in 1992 to what it is now achieving. It was a great day at the conference today, and I heard the term 'nudged chaos' so I have elevated it to part of my title tonight.

It has been my privilege to be coordinator of this program since day one. It would be a dreadful conceit if we all thought this tiny national program spending just \$1m a year has significantly helped change a nation's farmers, or even that we are still right up with the world leaders. If you think we have succeeded, then it is because we have tapped in to and heavily leveraged an extraordinary and talented pool. I am delighted that many old and new timers from that pool are here to share the conceit, and to celebrate in our humble way, that we have survived in a hiding to nothing job for 14 years.

Why a hiding to nothing? It is about the courage, and occasionally the footwork of people who can put out a probabilistic seasonal climate forecast of likely drought, even as the rain pours down. If you have no tolerance for that kind of ambiguity you might as well stay in bed or go shopping tomorrow.

Text as the departure point for an after-dinner address at the Managing Climate Variability Conference, Adelaide, 29 March, 2006 by the Coordinator of the Program from inception in 1992 to 2005. For details on MCVP see www.managingclimate.gov.au

My home state, Queensland is in many ways a microcosm, not so much for intolerance, unlike this cultured city (which incidentally I understand Tony Blair went forth from when he was five) we don't have V8 races in the streets. Queensland is a microcosm, a target perhaps, for many of the global warming issues, or maybe just a canary like Perth.

It was suggested I was out of tune and being a bit disloyal when the press reported a while back my statement that Queensland was arguably out front world leaders in the quinella, in end to end systems terms, of greenhouse emissions and impacts/capita – not to mention an unconscionable role as a global leader in coal exports. The big 4 emissions contributors are or were - the 4 Cs, clearing, cattle, cars and coal. Given what goes up and around, comes around, we are also one of the most vulnerable societies with our extraordinary ENSO influence and its impacts on the economy, on our society and on our natural resources including on the Barrier Reef.

But my remit is climate variability. I will claw back by grabbing the connection with climate change as it was oh so carefully made by John Zillman

'It may not carry the same urgency for concerted international political action, but the largest practical challenge of climate change will continue to be that of coping with its natural variability, and extremes, and adapting to any amplification of these that may result from greenhouse warming'.

A pity about the words- 'may result'; more scraps for the skeptics, and a nonsense tense for the thousands that died in the 2002 Paris heat wave from probable current amplification. So much of the climate change science story has been aimlessly marketed to that as yet unborn demographic concerned about what happens in 2030. It is so clearly a hot now problem.

Climate variability R&D now survives on crumbs in a wedge play, a wedge between weather, and climate change. Weathers mission is more about safety, for climate change the mission is still missing. The old definitions used to be - weather is what you get, and climate is what you expect. Climate change is, and no maybe now, what you didn't expect. But we are all uneasy with uncertainty, and we deal with it in irrational ways. (an example of the unease - you will by now be wondering how long I will prattle on for – about 15 minutes is all.)

I would like to acknowledge what is too little acknowledged, the enormous contribution that Australian climate scientists have made to climate change and climate science globally, particularly via their contributions buried in the IPCC reports. But I do wish they would speak out a bit more in our media. If they get sacked they can always become a consultant, and at least sleep better.

Back to the Zillman practical challenge – climate variability. The MCV budget has averaged about \$1m annually out of a national climate research expend of the order of a few hundred million. Perhaps too little of that is targeted at applications in climate variability/climate risk management. But much of the rest is strategic R&D, climate change, international science driven and in areas where there is little user consultation, no end to end.

But I can still ask, how come, almost all I think of the significant R&D projects in climate variability applications have been funded by MCV and its predecessors, and on \$1m annually. If you want to put up some significant R&D projects that MCV did not fund, then try. I only know a few, and some are road wrecks or have been flushed down the sluice gates. The question is: how come almost all the significant applications research

projects in CV have been funded by MCV and its predecessors, and on \$1m annually? Our reviewers too may need to know the answer.

I recall meeting our reviewer Jim Buizer at a TOGA conference in Melbourne in 1995 and later in 95 at the birth of the IRI in Washington. I remember Jim saying casually that an international RAINMAN would be a good idea, but he did not bring his checkbook. Anyway, it happened eventually thanks to ACIAR and the perseverance of Jeff Clewett and his team. The sad and bizarre endnote is that Jeff has dubiously defaulted on QDPIF, RAINMAN has no promotional budget, and its future is under review. I did say at Jeff's sendoff that in the case of some top researchers, research management is an oxymoron, but, really, I only meant in the sense that the top ones are essentially unmanageable.

So the end to end system does have a few disconnects and there are too many boundaries to cross, both within and between our tribal agencies and disciplines. Climate is the classic example of where *science without frontiers* is needed.

Tonight, I am sharing in my whimsical sort of way some of the interesting things I have learnt and unlearnt since I started this incredible journey as coordinator of a brand new drought research program in 1992.

When I think about what the job tries to do, it is a bit like a boundary rider, but not mending fences, rather cutting them.

Now 14 years on, what can be said? I like the quote from Isaacs.

Science advanced, knowledge grew, nature was mastered, but reason did not conquer, and tribalism did not go away.

Back to the advancing science, and an example to show that eureka moments are not the preserve of researchers. As editor of the newsletter Climag, I used to get some interesting letters, one implicitly an attack on our iconic poet, Dorothy MacKellar of Sunburnt Country fame – In her premonition of ENSO knowledge, she forever labeled our luck-dependent land, 'a land of drought and flooding rains'.

A retired farmer wrote seeking my advice on a pattern he had observed long ago. Now, I wish first to reveal a pattern I too have found. It is the melancholy lot of humans to find patterns where there are none, and miss the bleeding obvious sometimes. We are better at generating ideas than testing them.

My correspondent wrote - *I was farming for about half of my 92 years and I developed a theory that our country is not a land of droughts and flooding rains - but it is the opposite.* He went on to say - *Droughts follow floods as occurred after a visit by our queen in 1954.*

I remembered that 54 sequence well - in my pre republican days as a small boy back in 1954 waving my little Aussie flag at the big black Rolls speeding by down the Oakey Road. With little boy logic it would have seemed the righteous thing for me to wave, given here was the Queen in her land, Queensland. No wonder we don't look after it very well.

Well, I thought I should check the pattern out, this reversal of the droughts and flooding rains sequence. Perhaps I too could have my very own cottage forecast niche. And yes, to my surprise after diligent data mining and the odd ad hoc hypothesis, I hit upon an even more bizarre correlation. Her 3 visits in 1954, 1973, 1988, and the fourth now in 2006 ?, were all La Nina precursors. And the Queen last week opened the Commonwealth Games with its powerful duck and flying tram symbolism of extremes of

rain and wind, a week before Cyclone Larry sends things flying,. So if the Queen's visits can keep on forecasting even weak La Ninas, with apologies to Whitlam, *well may I say-god save the Queen*. (nothing can save Charles).

My context I now retreat to again is end to end forecasting. Of course we are all believers in that. If you ask a scientist to draw the diagram they will do it easily with climate science often up the top, then applications – distribution – media - decision maker etc. etc mostly the arrows go one way, very much a mid 20th century concept of the beneficial science truck delivering. Bucks in the truck as the grain farmers say.

But the way end to end is spoken about and sometimes practiced is a top down and too often self-serving convenience. The end to end forecasting system should be called a cycle. End to end is one of those concepts that is easier to doodle than deliver on - easier drawn than lived. The ultimate dream is that user needs might even influence the priorities for model development.

Perhaps the major achievement of MCV has been that it helped forge a few links in that cycle. Some of the proudest moments were seeing the synergy evolve in projects that spanned the continent and even bridging Bass Strait to involve the Hobart marine group. Once you get oceanographers talking to farmers and both talking to climatologists you can relax and enjoy the music- until the money runs out and the music stops. Those links were also crucial in developing some of the landmark products without peer globally, projects like SILO and CLIMARC that gave easy access to continuous data and removed one of the major barriers to wider use of that incredible heritage of climate data that we enjoy.

How do farmers make decisions? Like everybody else of course, not optimally, but relax - mostly it does not matter too much.

Flat optima abound, and if your decision turns out crook, obviously bad luck. But my good decisions are always due to good management. Makes us slow learners- obviously an advantage if you have learnt the hard way and your environment does not change much.

An example - at the Spotted Cow Hotel, and over a beer after a hot day with a farmer from Goondiwindi, we talked about the weather, as you do. He said he decided in the end not to plant a sorghum crop. I asked him "what do you reckon about those El Nino forecasts" (but not revealing my line of business, as you don't). 'Sorry mate, I don't believe that El Nino stuff works- load of rubbish' he said. I suggested that El Nino might work whether he believed or not, and- he just looked out the window, as people sometimes do when I philosophise. A deft change of subject by me, and then a bit later I steered back to the sorghum story. Well, the main reason he didn't plant was that his neighbour didn't, and he thought his neighbour knew a bit about El Nino odds.

Back to the climate science link in the cycle. I still recall my naïve notion that funding for MCV would be easy to come by, and breakthroughs were just around the corner. Indian Oceans memory (repressed mainly), the ACW, QBO, PDO, SFA (actually Stochastic Frontier Analysis), the list of the latest buzz goes on. This business is acronym heaven. The Bureau puts out a wonderful product '*Climate Activities in Australia*'. But it has an acronym list –10 pages. Lucky the book appears targeted at the WMO who speak little else.

I recall the Ministers letters advising of the funding back when this all began in 1992, and it raised the expectation that R&D corporations would add matching dollars. I quoted that to one R&D Corporation to be quickly told that sounded like blackmail. A couple of

other R&D corporations were more than happy to free ride, as they justified- sorry not their problem. With some industries like horticulture it was all too hard as funds were then spread across numerous committees, one for every F&V.

Of the R&D Corporations, Grains, Dairy, Sugar and Rural Industries, have been solid supporters of MCV and its predecessors all the way. Grains RDC have a very impressive regional structure that puts them close to ground truth. Meat and Wool are currently involved to some extent in MCV. My thanks to the MCV Committee for their wonderful support over the years. It was not just about their investment, they knew this was such a fundamentally important research area, and they knew it was risky for them to go it alone or walk away and hope some other funder would get it right.

The National Farmers Federation has also given great support when the times looked lean.

Over the years the direct government contribution to MCV has declined and the industry proportion has increased by MCV marketing what it can offer. That is good news in terms of harnessing farmer support, but it can make it difficult to have a real impact on more general and generic research needs, as well as being a catalyst in new areas. But is that MCV's role? I have had a few pointed suggestions we should not be into areas like improved climate forecasts, what might be seen as somebody else's core business. But in an environment where national research agencies chase external funding and have limited capacity for consultation, there can sadly be no guarantee that their vanishing core business will deliver on the national interest.

Doing the rounds raising funds is hard work, more so if you are not a born or reborn salesperson. I had the researchers dilemma of wondering if you had funders of vision that understood quantum leaps were hard to come by and therefore no need to oversell. Research is supposed to be risky and science needs genuine skeptics. As WB Yeates said in another time and place *'the best lack all conviction, and the worst are full of passionate intensity'*.

I would have thought it obvious that the tax system does fundraising better for public good research. It is an enormous challenge for the MCV Program to respond to the changing, diverse and the common needs of the major industries and natural resource management issues across rural and regional Australia.

Whilst the MCV program is perhaps the leading example of how well the dozen or so R&D type Corporations can cooperate on a common goal, sometimes the machinery is slow and cumbersome, and has to be reinvented for each program phase. But a big advantage of the MCV program was that it had flexibility, and could make things happen across boundaries. The other perspective is that we only had 3 good funding rounds in 14 years and researchers do funny things when you are out of funds. Orphan projects are one consequence.

What is left to be done? Twice last week I got unsolicited comments that Brisbane's dams must be in the wrong place. Public perception is that the big urban water supply droughts are poor planning. That is easier for politicians and the media to live with than the prospect of living with greater uncertainty and recognizing climate change might be a factor.

Public understanding and media debate on risk related issues is extraordinarily intolerant of a bit of ambiguity. Most sensible people are very uncomfortable with increased uncertainty. One reflex is to delay action, and fund more climate science rather than ways to adapt to greater uncertainty. Climate change, drought, water debates are all

riddled with populist clichés. The populist idea of risk management is to pick the most likely scenario and go with it.

Against that background the MCV program and the agencies in the seasonal forecasting business can claim to have done a difficult job very well. We now can claim that the overall national effort of which MCV is some small part, has resulted in close to 50% farmers taking seasonal forecasts into account. But we can all quote examples showing limited understanding by many. Problems with probabilities keep popping up. The 50% or so might not be too far from some kind of ill-defined optimum. But when you get comfortable with that it is worth recalling it is only a bit higher than the proportion of the population believing in astrology. Of course if astrology works, it too will work whether you believe or not.

Some jobs left to do, maybe. I have no regrets about what MCV did or didn't achieve and we account both to our funders for our outcomes and to the science community for our research. That dual accountability is our great strength.

I used to sometimes think, if I officially worked more than a couple of days a week for MCV, about how broad should the role of MCV be - just a funder of the few projects it could afford, or at a program level as a mover/shaker nationally. In my more optimistic moments I used to think it would be useful if Australia had something like a national climate agenda, and some vital ingredients like a Cooperative Research Centre to lift the R&D effort to a level that could have a broader more representative national impact, beyond what we have cobbled together on about our \$1m annually.

I understand the WMO supports member countries having a national climate agenda. I understand too that the Bureau last had a go in the late 1980s. The only answer I ever got as to what happened was they forgot to mention it to some other key players. I was part of a mid 1990s failed attempt to get a coordinated national approach underway. I don't know what happened to the CRC bid either. Three strikes in all. Maybe this is all so last century as they say, the world has moved on and an all too narrow climate change agenda is the name of the main game. New tribes, new boundaries, and hard to compete with all the spin and weave if you are not of Canberra.

So it's late and time for me to move on –

may the odds be with you.