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Peopled landscapes: The impact of Peter Kershaw on Australian Quaternary science

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“I don't think the human mind can comprehend the past and the future. They are both just illusions that can manipulate you into thinking there's some kind of change.”

Bob Dylan (Ft. Lauderdale Sun-Sentinel Interview, 28 September 1995).

Introduction

The way we view the Australian landscape at the start of the 21st century is notably different to how we viewed it in the late 20th century, and Peter Kershaw has had a most significant role in this. One of the key elements to Peter's intellectual contribution lies in the discovery that the Australian landscape is more changeable and dynamic than was previously imagined, and in particular more deeply influenced by human history than we could have then known. The notion that people arriving in an uninhabited landscape over 40,000 years ago so fundamentally changed fire regimes, and that Aboriginal people have continued to shape the environment through ongoing landscape firing practices ever since – and as a consequence affected the whole ecology of an island continent – is one that shook the scientific community and forced a rethink of the way we view the long-term history and present environmental

state of Australia. The impacts of this on the broader Australian and international community have contributed to a critical rethinking of political paradigms and conservationist policies and their articulation with Indigenous perspectives on landscape, especially as these relate to fire management (e.g. Hale and Lamb 1997); indeed, in the mid-1990s the Australian Conservation Foundation's general approach to landscape management radically shifted to take better account of Indigenous concerns, together with Indigenous voices a result of the accumulated wisdom of previous years of palaeoecological research that by then demanded consideration of the role of people in landscape management. These were precisely the kinds of issues spurred by Peter's findings in north Queensland and elsewhere, research results that had shown to be critical to understanding the Australian environment today as in the past. Thus while throughout his career Peter himself has been more directly concerned with gathering evidence towards establishing the facts of Australia's landscape history, those results have influentially fed back into community perspectives, political dialogue and policy-making. Peter's work continues to engage both the scientific community and the public in an ongoing debate over the role of people in shaping the environment.

The investigation that contributed most to the shift in our understanding of the role of people in Australian landscapes was based around a pollen record from Lynch's Crater (Figure 1) in northeast Australia (Kershaw 1974). Peter began working on this long environmental record for his PhD thesis (Kershaw 1973) in the Department of Biogeography and Geomorphology at the Australian National University (ANU) in the early 1970s, at a time when palaeoecological research in Australia was in its infancy. In 1974 he published in *Nature* his seminal paper on Lynch's Crater, demonstrating a radical vegetation change in northeast Australia around 38,000 years ago, at about the time when people were then thought to have first arrived on the continent (see Turney *et al.* 2006 for a subsequent redating of this vegetation change at Lynch's Crater, keeping in line also with subsequent redating of the first evidence of people in the landscape). This was also the year when the influential 'Sunda and Sahul' symposium was first planned (Allen *et al.* 1977), and the foundation year of the Australian Archaeological Association where, for the first time, researchers of Australian archaeology could assemble at an annual forum to share findings and discuss intellectual developments. This was a period of burgeoning interest in Australian Aboriginal archaeology and landscape history, where systematic connections were being forged between these two disciplines and interests (Aboriginal and landscape history). While discussions had by then already emerged on the role of people in shaping the environment (e.g. Jones 1968), especially through Rhys Jones' notion of 'firestick farming' (Jones 1969), and cause(s) of megafaunal extinctions had already long been debated since the 19th century (see Johnson 2007 for a review), what Peter brought to the equation were long environmental records and a conceptual shift signalling the necessary and obligatory incorporation of people into interpretations of landscapes, as managed and dynamic social spaces. From Peter's early works at Lynch's Crater, it was realised that it was simply not legitimate to interpret palaeoenvironments of the last c.40,000 years other than as *peopled* landscapes. This was not a matter of debating whether or not a particular archaeological or palaeontological assemblage showed evidence of human intervention, but rather a paradigm shift that newly saw palaeoecological sequences as only interpretable through consideration of human presence, given that people lived in the landscape and thus affected it. The question had become not so much whether or not people had a role to play in the evolution of the Australian landscape, nor whether they were palaeontologically or palynologically visible in that landscape, as a determination of the nature and scale of such interventions and their palaeoecological visibility.

From the outset Peter has been a key figure that led to a culture of research that closely enmeshed Australian archaeological with palaeoecological research during that period of the

Figure 1. Coring at Lynch's Crater in 1971.

1970s when environmental understanding proved critical to archaeological paradigms. While today connections between culture and environment have largely been reframed to incorporate new nuances of 'dwelling', 'inhabitation' and the like (e.g. Thomas 2008), the kinds of research connections that Peter helped to frame between environmental and cultural sequences have resulted in strong research bonds between the disciplines of palaeoecology and archaeology in Australia and beyond.

Peter Kershaw

To properly understand, and appreciate, Peter's impact on the study of the Australian landscape we begin where he himself began. Peter grew up in Littleborough in the north of England where the industrial edge of Lancashire nosed up the valley into the peat-covered Pennine hills. He attended the local schools then went to the University of Wales at Aberystwyth where, as a student of geography, he first became aware of Quaternary pollen analysis. After acquiring an Honours degree, he moved to Durham University to do a Masters in ecology supervised by Judith Turner. Soon afterward he successfully applied for a research assistantship to Donald Walker, in the still infant laboratory at the ANU, to help extend the then dominating interest in Papua New Guinea to continental Australia.

Arriving with his wife Susan in the summer of 1967, Peter was given the task of observing the drilling in the Lake George basin by the Bureau of Mineral Resources and taking samples of any deposit there which might have contained preserved pollen. Such material as he was able to obtain, with much scepticism, in the field he found to be virtually barren in the laboratory; a very disappointing start. So a shift of emphasis was called for.

Given the laboratory's existing tropical interests, it made sense to go north, specifically to the biogeographic boundary zone of the Atherton Tableland where, in 1962, Walker had established that pollen was plentifully preserved in a 'grab sample' of sediment from Lake Euramoo. Accordingly, the Walkers and the Kershaws entrained for Far North Queensland in June 1968 and set themselves up in half a house hired at the waterworks settlement of Tinaroo Falls where Peter voluntarily took on the additional evening duty of wheeling a two year-old Kate Walker around the streets to encourage her to sleep.

Fieldwork was not without its problems but, despite a raft that floated just below water level and what, in 2011, would be regarded as impossibly primitive coring equipment, a good sequence of samples was obtained and carried back to Canberra.

Months later, Peter presented Walker with an outline pollen diagram, undated, which undoubtedly showed sclerophyll woodland to have predated the existing rainforest of the Euramoo basin. Peter attributed this to a climatic change but Walker was not so sure, suggesting that it may have been a seral phenomenon immediately following the eruption by which the crater had been formed. The only way to solve the question was to sample more crater sediments of differing morphologies, and perhaps differing ages, in the region and date the vegetation change. It was also evident that Peter had a mind of his own in recognition of which he was awarded a scholarship to continue the work for a PhD and so threw off the shackles of assistantship. Thus was laid the foundation of a remarkable achievement in which Peter proved himself right (to Walker's delight) and established a basis from which he and others have made the Atherton Tableland the most concentrated source of palynological and related data in the tropical Quaternary world.

Figure 2. A biogeography field trip to Ironbark Basin, Angelsea, in the late 1970s prior to the establishment of a post-1983 fire regeneration project that has continued with second-year students to the present day.

Peter subsequently moved from the ANU to the School of Geography and Environmental Science at Monash University, where he continues to foster environmental education and research (Figure 2). One of Peter's great strengths in teaching and research is to gather around him people with exceptional skills and dedication to the research tasks at hand. His long-term collaboration with his student and then colleague Merna McKenzie continues to produce invaluable insights into the nature of glacial cycles and tree-line fluctuations in southeast Australia. The arrival of Sander Van der Kaars, one of the first Logan Fellows at Monash University, ushered in a period of prolific pollen counting in the department, focussing on the potential for marine records from the west and north coasts of Australia to unlock our understanding of the influence of the monsoon on Australian landscapes. And Peter long promoted the incorporation of Indigenous archaeology in teaching and research of environmental science, a logical outcome of his early views of peopled landscapes; indeed it was his presence that caused Bruno David to come to the School of Geography and Environmental Science rather than the anthropology department in 1997 and thereby establish Monash University's first Indigenous archaeology programme (further developed a few years later by the arrival of Ian McNiven). These collaborations, and those with his many successful honours, post-graduate and post-doctoral fellows led to the School being regarded as the pre-eminant department for undergraduate and graduate training in biogeography and palaeoecology.

After some 44 years of academic research and teaching in Quaternary ecology and biogeography, Professor Peter Kershaw retired in October 2010. A meeting was held on 1st November 2010 at the Royal Society of Victoria in Melbourne, for a day honouring Peter's contributions to palaeoecology, biogeography and archaeology in the Australian region (Figure 3). The presentations listed below represent a snapshot of the legacy of Peter's endeavours, collaborations and inspiration that will no doubt resonate into the future of Quaternary research in our region. He is a valued colleague driven by his commitment to the discipline and graduate students, and in each of these areas he has achieved outstanding results:

- Matt McGlone, Keynote, "Separated at birth: physical, biological and social aspects of the trans-Tasman relationship"
- David Mercer & Homer Le Grand, "Peter Kershaw's career at Monash"
- Martin Williams, "Did the 73 ka Toba super-eruption have an enduring effect? Insights from archaeology, genetics, palynology, stable isotope geochemistry and climate models"
- Jim Bowler, "Fishing at the LGM: A day in the life of early boat people"
- Patrick De Deckker, "Multidisciplinary studies applied to core Fr10/95-GC17 offshore Northwest Cape, Western Australia"
- John Dodson, "Paradise Lost: tools and lessons on how human-kind shaped the world"
- Richard Cosgrove, "The Archaeologists Palynologist: the connection between archaeology and palaeoecology in Australia"
- Lesley Head, "Tomorrow is a long time: palaeoecology and contested landscapes in Sweden and Australia"
- Peter Gell, "Palaeoecology as a means of auditing wetland condition"
- Patrick Moss, "Holocene Landscape Change in the Humid Tropics of Northeastern Australia"
- John Tibby, "Palaeolimnological evidence for European impact in Australia"
- Kale Sniderman, "New insights from the fossil record into the history of Australia's sclerophyllous vegetation"

Figure 3. Attendants at the one-day meeting held at the Royal Society of Victoria in Melbourne, 1st November 2010, in honour of Peter Kershaw (centre, back row, whitest hair).

Discussion

By those who shared the laboratory with Peter at the ANU, he is perhaps best remembered for his goodwill, hard work, Dylan-style songs and his forcefully enunciated views on anything from pollen morphology to the dangers of religious bigotry. He was also the only member of those early years of ANU pollen research to count pollen while smoking a cigarette, particularly in the evenings when nobody else was working, as evidenced by the accumulation of ash around his microscope each following morning.

Perhaps fittingly, then, it was the application of charcoal analysis alongside pollen counts to explore the role of fire in vegetation change that showed an unprecedented change in fire regimes accompanying the arrival of people into Australia and that led to fundamental changes in the extent and composition of rainforests in the Atherton Tableland region. Such an approach was new and innovative at the time, being utilised in the Department of Biogeography and Geomorphology at the ANU to address questions of landscape change. Whether or not the timing and extent of these transformations reflected the wider tempo of change in the Australian landscape is yet to be fully resolved and is likely to occupy the lives of many Quaternary researchers for years to come.

Peter's concern with the Australian landscape as a peopled landscape meant, and means, that archaeologists need to consider landscape processes in the interpretation of excavated sequences, while geomorphologists and biogeographers need to consider people in their own interpretations of landscape processes. In this context and for the Australian region in particular, Peter's contribution to these disciplines have revolved around a number of major themes:

1. For Australia's long history, the visibility of people in the landscape through the effects of anthropogenic landscape burning.
2. As best shown at Lynch's Crater, but evident at numerous other sites also, the ability of individual pollen *site* sequences to implicate *landscape* histories. That is, the ability to transcend different spatial scales of interpretation, as evident by the ability of palynological research within individual sites to implicate whole landscape histories, an

interpretative leap rarely legitimately achievable in purely archaeological research (Figure 4).

3. Peter was also the first person to securely date several glacial cycles in Australia and through the pollen records he showed that these cycles were different in their vegetation composition. This work came out of what was then seen as a pressing need to demonstrate synchronous orchestration of Australia's past climate with global climate signatures. He grasped the opportunity to open up the rich palynological fields of the western plains of Victoria, where maar deposits not unfamiliar to him from his earlier Atherton Tableland work yielded windows of opportunity to investigate the long Quaternary record of climate and vegetation change in southeast Australia.
4. The development of new and novel approaches to palaeoenvironmental reconstruction, particularly pioneering the use of bioclimatic profiles of extant taxa to generate quantitative palaeoclimatic estimates from pollen data (e.g. Kershaw and Nix 1988).
5. A preparedness to recognise that we do not know everything about the past, with present understandings sometimes turning to blind prejudice informed by the limitations of our data, meaning that we need to question conventional wisdom. Peter has thus been willing to play devil's advocate when new data hinted at the arrival of people in Australia 150,000–100,000 years ago, as evidenced by significant changes in pollen and carbonised particle frequencies in offshore sediments, northeast Australia (Kershaw *et al.* 1993); and a subsequent preparedness to reverse his own views in light of subsequent findings (e.g. Moss and Kershaw 2000). While these new interpretations flew in the face of conventional wisdom – and were subsequently shown to be wrong – Peter was prepared to shake the discipline(s) in light of evidence that required explanation.
6. Expanding our understanding of the deep-time biogeography of Australian rainforests and sclerophyll plants, most notably the Araucariaceae, an iconic Gondwanan family (Kershaw and Wagstaff 2001).
7. The encouragement of cross-disciplinary research and use of multi-proxy evidence to strengthen the reliability and interpretability of research findings.

These themes have each significantly contributed to how we now come to read, and understand, the Australian landscape as historically created from some 50,000 years of Aboriginal engagements with their surroundings. In this spirit of investigation, where understanding landscape history requires a joining rather than separation of parts (e.g. plants vs sediments vs people), in this volume we present a set of papers by scientists who have each been directly influenced by Peter's work. The case studies presented each consider the landscape as one that has developed with people in its midst. These are not prefigured landscapes as stages for people to subsequently act upon, but rather engaged landscapes at their very core: landscapes that are defined by such engagements. In this sense a peopled landscape is one that would not exist in that form without those who gave it its particular characteristics. One of our roles, as archaeologists, geomorphologists, palaeoecologists and biogeographers, is to determine the nature of those historical engagements that enable us to define how in history people have come to influence and shape the world in which we live today. This is the ongoing legacy of Peter Kershaw's ongoing contributions to the study of landscape history (Figure 5).

Figure 4. Peter Kershaw (right) celebrating another successful coring expedition at Lynch's Crater in 2004 with Damien Kelleher (left) and Chris Turney (middle).

Figure 5. Peter Kershaw at the Bromfield Swamp lookout in 2004.

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