OBITUARY



Michael Francis Barbetti (1945–2019): In memoriam

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Mike Barbetti with ceramic remains found in ancient kilns (ca. 1989). University of Sydney Archives [REF-00093071].

Michael (Mike) Barbetti's research crossed several scientific disciplines including palaeomagnetism, archaeomagnetic dating, radiocarbon, archaeology and dendrochronology.

Mike was born in Western Australia in 1945. He obtained a BSc degree in Geophysics at the University of Western Australia, and an MSc degree at University of Manitoba, Canada. In 1969, Mike moved to the Australian National University (ANU) in Canberra to start working on his doctoral project on archaeomagnetic and radiocarbon studies of Aboriginal fireplaces. Two major papers derived from his doctoral research were published in *Nature*, which marked a significant contribution of his research to the

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field in his early career. One was on the timing of a human presence at Lake Mungo, a dried out lake in southwestern New South Wales (Australia). The research extended back the timing of human occupation in Australia to at least 32,000 BP (Barbetti and Allen 1972). The second *Nature* paper reported a large excursion of the Earth's magnetic field at around 30,000 BP through archaeomagnetic measurements of some Aboriginal fireplaces in the ancient lakeshore dune of Lake Mungo (Barbetti and McElhinny 1972).

After completing his doctoral research in 1973, Mike went to the Research Laboratory for Archaeology and the History of Art, Keble College, University of Oxford, then later to the Department of Physics at the University of Adelaide to continue his research as a Research Fellow. Mike was interested in temporal changes in the Earth's magnetic field, their mechanisms and possible effects of these changes on the production of radioactive nuclides, particularly ¹⁴C. He investigated variations in palaeomagnetic field from sediments baked by lava flows of the Chaîne des Puys in the French Massif Central, which resulted in a paper in *Nature* (Barbetti and Flude 1979a). He also carried out new archaeomagnetic measurements on ancient fireplaces at Lake Mungo. These results together with his compilation of other published data for several sites around the globe were used to estimate a geomagnetic record for the Late Pleistocene, indicating a weaker Earth's magnetic field for much of the period 50,000–10,000 BP compared with recent times. This research was published in another *Nature* paper (Barbetti and Flude 1979b), in which Mike also employed his constructed geomagnetic record to estimate probable trends in the ¹⁴C timescale during the Late Pleistocene. Mike was very active with various other archaeomagnetic research projects during this time (Barbetti and McElhinny 1976; Barbetti et al. 1980a, 1980b; Barbetti and Sheard 1981; Barton and Barbetti 1982).

Mike joined the Radiocarbon Laboratory at the University of Sydney in 1979 and was appointed as Professional Officer-in-Charge of the Laboratory after Associate Professor Richard Temple retired in 1981. The Laboratory became a part of the NWG Macintosh Centre for Quaternary Dating when it was formally established in 1984, through a bequest from Ann Macintosh. The Centre was established in the Madsen Building following a relocation from the Department of Physical Chemistry in an adjacent building. Mike remained the Director of the Centre until his retirement in 2005. We had the good fortune to work with Mike at the NWG Macintosh Centre (C.M.-W. in 1987–1990 and Q.H. in 1993) and to collaborate with him in various projects during that period and subsequently.

Since his early career, Mike was interested in archaeology and archaeomagnetic dating as evidenced by archaeomagnetic analysis of Glozelian ceramic artifacts (Barbetti 1976) and Holocene fireplaces (Barbetti 1986). His involvement in the archaeology of mainland Southeast Asia commenced through his association with the TL Laboratory in the Department of Physics at the University Adelaide. His participation in the Thai ceramics archaeological project (Art Gallery of South Australia/Department of History, University of Adelaide) from 1983 resulted in the first palaeomagnetic chronology for major historic stoneware production centres in central northern Thailand (Sisatchanalai, Sukhothai; Barbetti and Hein 1989; Grave et al. 2000). Mike then extended his expertise in archaeomagnetic dating to produce foundational studies for Burma (Hein et al. 1989) and Laos (Hein et al. 1992). These marked the beginning of his long-term research commitment to the region. Mike's engagement with Southeast Asian archaeology focused on Cambodia and chronology building for the Khmer kingdom centred on Angkor where his qualities as a researcher and mentor are in full display (Evans et al. 2007; Fletcher et al. 2003, 2008; Penny et al. 2005, 2006, 2007; Zoppi et al. 2004). Together this body of work represents a unique and substantial contribution to our understanding of the archaeology of mainland Southeast Asia.

Since the early 1980s, Mike was involved in and contributed to the development of tree-ring and dendrochronological studies in Australia, and in particular the Tasmanian Stanley River tree-ring project (Buckley et al. 1997; Francey et al. 1984). He also contributed significantly to dendrochronological research in mainland Southeast Asia, which resulted in the first pine records for the region (Buckley et al. 1995; D'Arrigo et al. 1997). Dendrochronology became a part of the research carried out at the NWG Macintosh Centre for Quaternary Dating, and Mike also established a small facility for dendrochronological research in Thailand in collaboration with Mahidol University. Mike investigated temporal variations in atmospheric ¹⁴C through radiocarbon measurements of tree rings (Barbetti et al. 1992, 1995, 2004; Hua et al. 2009), and substantially contributed to the first

atmospheric ¹⁴C records derived from dendro-dated tropical tree rings (Hua et al. 2000, 2004). Mike also was interested in the influence of atmospheric circulation on regional ¹⁴C differences (Hua and Barbetti 2007; Hua et al. 2012), one of the main mechanisms for the zonal distribution of atmospheric ¹⁴C during the bomb peak period, which forms the basis for the compilation of recent atmospheric ¹⁴C from 1955 onwards (Hua and Barbetti 2004).

Mike was a brilliant, careful and meticulous scientist and always a broad picture thinker. He was a generous mentor to graduate students both as an advisor and in facilitating access to materials, as well as a wide-ranging research collaborator with graduate students and colleagues (e.g., Bishop et al. 1994; Buckley et al. 1997; Evans et al. 2007; Grave and Barbetti 2001; Hua et al. 2000; Penny et al. 2005; Tuniz et al. 2000). Mike was also keenly involved in development of national research infrastructure in Australia. He was a member of a Consortium (together with the Late John Head at ANU and Claudio Tuniz at ANSTO), which gave advice on the preparation of AMS radiocarbon targets at ANSTO in the early developmental stages of this National AMS Facility.

During retirement, Mike moved to the University of Queensland and then Naresuan University, Phitsanulok, Thailand, where he was granted an adjunct position. He continued his research and was involved in several projects on marine ¹⁴C variation (Hua et al. 2005; Yu et al. 2010) and compilation of bomb ¹⁴C (Hua et al. 2013) but was less active. We kept in touch with Mike via emails and sometimes phone calls. However, the number of phone calls and emails declined with time as his health deteriorated. He passed away in 2019 in Thailand before the start of COVID-19. We were unaware of his death until recently being informed by overseas collaborators. Mike was a good friend, influential mentor and valued collaborator, and is remembered fondly by many of us.

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