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Indigenous Understanding of Geology: The Australian perspective

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The Aboriginal inhabitants of Australia live in close association with their traditional lands. Consequently they have been found to possess a remarkable comprehension of modern remote sensing images thus confirming a three dimensional perception of the landscape or spatial awareness. This comprehension extends into interpretations on the formation of geological features in so called “dreamtime stories” which can provide a unique Aboriginal appreciation of regional geological history, and of the vast extent of geological time. Coupled with this appreciation is necessary knowledge of surface hydrogeology. Not only are the natural occurrences of water understood, but in the arid environments typical of Australia, the water retentiveness of surface materials is understood and utilised.

As shown by their selected use of hard rocks for various practical purposes (eg grinding stones, cooking stones, scraping implements, stone cutting knives) Aborigines obviously also possessed, before European colonisation, considerable information on the physical properties of local rocks including hardness, toughness, fracture and cleavage as well as stone occurrence. In some cases where suitable local stone was unavailable, it was obtained from distant areas. For example, Aborigines across much of eastern Australia obtained diabase for the manufacture of axe heads, from Mount William in central Victoria.

The exploitation of ochre for decorative and spiritual purposes also required Aborigines to have an understanding of weathering products. Ochre from the Mt Lofty and Flinders Ranges in South Australia was mined and traded as far as western Queensland. Micaceous hematite from the Bookatoo Ochre Mine in the Flinders Ranges was discovered, intensively mined and accorded sacred significance. Amongst other soft minerals, Aborigines selectively used mineral salt in their diet. They also chose to cook meat on a specific regosol where their food did not stick to the weathered rock.

As a consequence of their long and continuous habitation of Australia over countless generations, the Aborigines recorded, in their myths and legends, details of Quaternary history. Australia’s Aborigines knew that giant marsupials once ranged widely over the continent although the specific time of extinction was obviously not known. The habits and living environments of these extinct animals is also recorded through oral tradition.

The Aborigines also knew that as a consequence of lower sea levels in South Australia, Spencer Gulf was once dry while Kangaroo Island had been attached to the mainland with a wide continental shelf exposed. There is also evidence to suggest that the Aborigines experienced and remembered volcanism in southeast Australia including the eruptions at Mt Gambier and Mt Schank.

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