

Division 4. The Role of Soils in Sustaining Society and the Environment

Commission 4.5 - History, Philosophy, and Sociology of Soil Science

During the 2015 International Year of Soils, the IUSS Division 4 will illustrate its main topics through articles written by Division 4 officers or their colleagues. These will each be highlighted every week from October to mid December 2015.

For this ninth week, we are displaying an article from Richard Doyle, the presently Commission 4.5 vice-chair.

Description of Commission 4.5

This commission deals with our past; it links the study of what has happened in history and how soils can be used to help explain the past changes. This commission is not just a record of the history but the use and understanding of soils information and its relationship to human development and history.

Links between soil science, indigenous landscape knowledge and society – examples from New Zealand and Australia

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The New Zealand Maori have many ancient legends linking their gods, great warriors and monsters to the geological origins of the wild and beautiful landscapes of the ‘Shaky Isles’. The one which is most dramatic is that of the origins of the two main islands of New Zealand (NZ). If you care to examine a map of the North Island (NI) of NZ (see illustration 1) you might imagine it as a giant fish swimming south, the open mouth of this fish being Wellington harbor (Te Whanganui a Tara) and the South Island (SI) a great fishing canoe (Waka) from which the demi-god Maui is said to have hauled the island up from the dark sea in his canoe, it being the South Island. If you examine a map of the SI you can see it is indeed somewhat ‘canoe-shaped’ with the oars plunged into the sea on its east coast these representing the extinct volcanoes of Banks Peninsula (Akaroa) and the Dunedin headland. Stewart Island, to the south, represents the anchor stabilising the canoe as the great fish was hauled from the sea. The long sandy spit of Cape Farewell on the NW tip of the SI forms the fishing line on which the great fish (NI) was caught

(illustrations 1 and 2). The rugged topography of the NI was formed when Maui's brothers began arguing over the possession of the new land (the fish) and beat it with their weapons creating valleys and mountains.



Illustration 1. A New Zealand map.



Illustration 2. The Maori perception of the two main New Zealand islands.

This wonderful story tells us of the Maori's knowledge of up-faulting tectonics and raised marine rock types common in the NI and also of the very precise shape of both the South and North Islands. And possibly even that they are moving plates (canoe) on a molten ocean of liquid mantle? Perhaps they were the first to understand land movement and faulting as Maui's story shows us.

Another Maori story explains energetically the origins of Wellington harbor which has formed due to progressive uplift that has created an isthmus to a former barrier island (Miramar). This story tells of two sea monsters or taniwha, Whataitai and Ngake, who inhabited a great lake, one day they quarreled and fought, when each taniwha tried to escape the lake to the ocean (Cook

Strait) beyond. Only Ngake made it by swimming at full speed from the north to the south side of the lake crashing through the rocks at Seatoun and out in to the strait and ocean creating the modern harbor entrance. Whataitai was trapped by the receding lake levels and became stranded in the shallows. He lay there for many generations before being lifted high on to the land by a great earthquake forming the hills around the harbor at Mt Victoria.

Many similar Maori legends explain the tectonism and volcanism of other parts of NZ and the dramatic landscapes, often shaking, land sliding, flooding and erupting around them.

Many indigenous Australian stories are still sacred and kept secret; they can't be told to outsiders least they lose their power or scared knowledge. However some can be told and my favorite Australian indigenous landscape story is more closely related to soil distribution than the NZ tales I share above. Indeed it is a Tasmanian Aboriginal legend and tells of the distribution of Red Ferrosols (Australian classification) across the island. In this tale the great ochre pits in the Gog Range are the scene of a theft of precious red ochre, the life blood colour for Aboriginal art and body painting. However the theft is spotted and the thief perused by the keepers of the ochre pit. As they chase him across the island the thief tries to placate the pursuers by dropping lumps of the red ochre for them to stop and collect. But the red ochre forms irregular patches of ground and explains the spotted distribution of red basalt and dolerite derived Red Ferrosol soils around the island.



Illustration 3. 'Spirit of the Land, Painted with the Land'. Colin Clayton, painting, 1998

To celebrate this beautiful story I commissioned a painting called ‘Spirit of the Land, Painted with the Land’ using soil types from the University of Tasmania farm near Cambridge. The artist is Colin Clayton a fine arts student of the university (illustration 3). I guess I made an error as we did not use Red Ferrosol clays in the work as they were not present on the UTAS farm. I would also prefer we commissioned a new work (or set of works) to be completed by an indigenous artist(s).

Currently in Tasmania we are trying to develop, with Soil Science Australia’s assistance, a project which celebrates Aboriginal landscape story telling through the use of soil, ochre and other natural pigments. This project is titled ‘E(ART)H Project’ and interested readers can find out more at www.earthproject.com.au