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“The moving story of river boundaries”

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The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.

The moving story of river boundaries

Paul Bishop

My thanks to Rob Wheeler for his comment on rivers and boundaries.¹ My original query² was asking a slightly different question (namely the extent to which problems of ‘fit’ when converting from Cassini grid to the British National Grid were accommodated in rivers, lakes etc) but it is worth amplifying a little on Rob’s comment. Rob’s description of the ways of handling changes to riverine boundaries is called the ‘doctrine of avulsion [abrupt changes of course, either natural, such as meander cutting off, or artificial, such as engineered river straightening] versus accretion [the slow lateral movement of a river]’. This doctrine means that when a boundary-marking river changes its position by the slow lateral movement associated with sediment deposition (accretion) on the insides of river bends and the corresponding erosion of the outside of bends, the boundary moves with the river. The boundary stays where it is when the river changes course abruptly by avulsion, either natural or artificial. Good examples of the latter abound on OS maps.



The River Kelvin where it marks the boundary between Baldernock Parish (to the north) and Cadder Parish (to the south). The parish boundary coincides with the “Centre of Old Course of River” (as the map is annotated). Local landowners straightened and embanked the river in the late 18th century to alleviate flooding. A small part of Baldernock Parish thus lies south of the river (WNW of Cadder House). (Lanarkshire six-inch First edition sheet 1, surveyed 1858, published 1864, reproduced from NLS website by courtesy of the National Library of Scotland).

The boundary in the figure above coincides with the centre of the river. This centre-line definition indicates that the boundary is relatively old because from about the nineteenth century onwards riverine boundaries were in general located along the river’s thalweg (the line of deepest water), reflecting the

¹ *Sheetlines* 103, 62.

² *Sheetlines* 102, 29.

nineteenth century growth in trade and ship navigation along inland waters during the colonial era. The boundary between Scotland and England – of some interest of late with independence referenda being in the air – is likewise an ancient one, lying in the centre of any river that marks the border, such as the Tweed. The logic of a centre-line location was to give each ‘state’ equal access to the river’s waters. Other parts of the river may be used to mark the boundary, including the water’s edge on one side, giving one of the ‘states’ access to all of the river. A boundary may even coincide with the top of one of the river banks, which gives one ‘state’ access to the whole river plus the land between the water’s edge on the ‘far’ side and the bank top. This latter is how the border between the Australian States of Victoria and New South Wales is defined.

The way in which an historically more recent riverine boundary will be handled over time is usually laid down in that boundary’s defining treaty and many treaties invoke the doctrine of avulsion versus accretion. Equally, a treaty may not invoke the doctrine and specify that the location of a riverine boundary on a particular day is where the boundary will stay, notwithstanding movements of the river. A striking example of such an approach is provided by the border between Thailand and Myanmar in northern Thailand.³ As Donaldson has noted, the border “is now marked on the ground by pillars following a twisting course that snakes from one side of the river to the other. ... The boundary pillars mark an older course of the Mae Sai which the two governments agreed was the last conclusive definition of the boundary even though the river itself has long since shifted from this course”.⁴



The Google Earth image of northern Thailand at Mae Sai, showing the border between Thailand and Myanmar in yellow marking a former course of the Mae Sai River. The border has stayed where it was set by agreement, even though the Mae Sai River has moved slowly by accretion away from those locations (courtesy of Google Earth).

³ John W Donaldson, ‘Paradox of the moving boundary: legal heredity of river accretion and avulsion’, *Water Alternatives* 4 (2011), 155-170.

⁴ Op. cit. p. 155.