Appendix 2: Comparison of 'Theory O' and 'Theory P'

'Theory O' (Measured tree was between Hikutaia - Waihou junction and Netherton)	**'Theory P'** (Measured tree was downstream of Hikutaia-Waihou junction)	**Comments**
Site is within the 12-14 nautical miles (nm) upstream range, stated in Cook's Journal	Site is only about 10.7 nm from the river entrance	A review of the methods used to measure speed and distance while under way on the water at that time indicates that the main method (ship's 'log', 'chip log' or 'quadrant')[1] would have given readings of near zero while under way on the river. This is because the small boats would have assisted by tidal surge (upstream) and tidal ebb and river current (downstream). It is therefore likely that Cook's distance measurement within the river was by estimate only. While his skill and expertise is acknowledged, it was apparently quite difficult to chart within a limited area while afloat - for example, see Cook's chart of the inner harbour/river area at Mercury Bay (Fig 2), which has major discrepancies of size and scale.
Inconsistent with Cook's chart, which shows the basic shape and layout of the river accurately, but terminates about one nm below the Hikutaia junction.	Consistent with Cook's chart - provided the chart covers the full extent of upstream travel.	Wilson's chart shows the basic layout of the Waihou, some 30 years after Cook's voyage, and the layout is unlikely to have significantly changed in that period. If Cook's chart was comprehensive (i.e. covered the whole extent of the river traveled) and the party went past the Hikutaia junction, then it should look more like Wilson's (see Fig 22). However, Wilson was working in the area for weeks, and Cook for only one day, so the latter's chart may be an approximation or 'best effort'. It is also worth noting that there are drafting errors in Cook's 'River Thames' chart (Fig 2) - particularly the mix-up in the latitude scale, as indicated earlier. So, the cutoff of the chart before the Hikutaia junction may simply be due to a drafting error or arbitrary decision.
	Neither Cook's, nor Banks', journals mention features that would have been apparent along the river, e.g. Hikutaia junction, where there was an island and pa site, and the narrowing of the river upstream from Hikutaia.	This could just be a lack of recorded detail - there were other major stream junctions not mentioned (e.g. Puriri, Komata), and Maori settlements may not have been noticed, nor recorded, if the occupants were away. However, note comment from Banks' journal above: 'As far as this [the place where they measured the tree] the river had kept its depth and very little decreasd even in breadth.'

[1] See, for example, URLs https://en.wikipedia.org/wiki/Chip_log.. and https://www.captaincooksociety.com/home/detail/captain-cook-as-a-hydrographer.