CIVILIZATION AND MOON-POWER

Before all, dwelling in cities – which is what civilization literally means − requires massive amounts of cheap and reliable transport. A household requires roughly ten kilos of raw food, and ten kilos of fuel a day. If it is to come from twenty kilometres or more away, as most of it must, we are talking very roughly of one Unit of Transport required per household, where one Unit corresponds to one 'ton-kilometre-per-day'. This is a sensible unit because an extremely fit man could carry on his back forty kilograms for 25 kilometres if he marched all day. In other words every city-household would turn its menfolk (or womenfolk in Africa where most men don't deign to carry things) into beasts of burden, leaving nobody left to create the very culture the city was supposed to promote. Horses and carts could help, but not by much when you take into account the effort needed to build roads and supply fodder. Athens and Rome got by only because they were brutal slave states dependent on constant conquest to resupply the poor devils whose backs and spirits they then broke. They deservedly passed into oblivion because they never remotely solved the Transport Problem and so instead imposed endless cruelty on their fellow men and women. Almost the first act of the Romans after they landed in Britain was to crucify some locals.

So how did mankind first solve 'The Transport Problem'? The short answer is by harnessing Moon-power. My grandmother lived at Leigh-on-Sea on the Thames estuary, where it is about ten miles across. In the nineteen forties and fifties one could usually see from there a dozen Thames Barges with their tan spritsails working the wind and tide or waiting patiently, sails furled, anchors down, crew asleep, for the next favourable stream. In 24 hours there are two tides running in the same direction for 6 hours each at an average speed of around 2 knots. So that's 24 miles a day in your desired direction. And given

they had a crew of only two men (and a boy) and could carry a hundred tons, each Thames sailing barge could transport more than a thousand fit men. No wonder London became the greatest commercial city on Earth. The tides running down and up the estuary as far as Tower Bridge were the great pulsing heart of modern civilization.

With that insight a vital chapter of history becomes explicable for the first time. Big tides are uncommon – none to speak of in most oceans, the Mediterranean or the Baltic. But in North Western France, the Low Countries, and Britain in particular, they are immensely powerful, reaching a height of fifty feet at the headwaters of the Bristol Channel. And that is most likely why civilization, stable enduring civilization, first developed there. London, Antwerp, Amsterdam, Liverpool, Rouen, Glasgow, Rotterdam, Bruges, Bristol….and their hinterlands, didn't need slaves. They flourished on Moon-power. Food and fuel, building stone and timber, sand and salt, leather, iron-work and bricks, slate, night-soil, fodder and road-stone, flax, wool and beer…..all the necessities and luxuries of a civilized life could glide long distances on tide and wind….thanks to the tidal sailing barge.

The problem with tidal waters is that they don't generally get very far inland – or stay there for long if they do. But it didn't take much for someone to think of closing a gate or barrage to hold the tide up and allow vessels to take their cargoes to the utter extremities of tidal reaches. Then of course someone had to build locks in the barrages to allow the captive barges out and back down to the sea without letting too much of the precious water out. But once you have such a lock for letting vessels down why not reverse its action and lift vessels up? Thus in 1300 near Bruges was born what is perhaps the most ingenious contrivance of the human mind: the lock. Ships could now travel up hill by the aid of rainwater – and a little horse-power. Thus the prosperous, and sustainable modern world was born – without the need for a single slave. Tides led to

barrages, to canals, to locks and so to industrial cities like Birmingham, far, far inland.

All would have been well if prosperous Tidal Man could have restrained himself . But he didn't. Temporarily provided for by waterborn wealth he bred like the proverbial rabbit. In a couple of centuries the tidelanders, and in particular the Brits, had cut down most of their trees, precipitating a catastrophic firewood crisis. There was nothing for it but to turn themselves back into slaves and dig coal from underground like blind worms. But if it hadn't been for the canals and barges, that life-giving coal would never have made it to the shivering cities. The entire South Wales Coal and Steel Industry, which once (1880) ruled the world, was entirely enabled by a pair of lock gates 60 feet high built in Cardiff to hold in the tide. They're still there.

Coal mines and rain water obviously don't mix. Steam power had to be invented to pump out the mines and with steam, eventually came the steam train with a transport capability greater than either the tidal or the canal barge. Their gentle days were numbered.

The tidal sailing barge and the canal lock were the miraculous developments which gave rise to true civilization. And if we hadn't bred so improvidently we might still be living off their backs today. Even by the standards of modern mechanized transport they were pretty efficient as the following table illustrates, where the Units are equivalent to what one very fit man can carry in a day i.e. roughly 1 Ton-kilometre. Attempts have been made to factor in the costs of crews, of forage, of fuel and of the building and maintenance along the ways on which they ran. But that is not easy to do given that governments often tax or subsidize the different factors in haphazard ways. Usage then becomes a vital factor in the relative costs of alternative modes of transport. For instance the British canal system collapsed so rapidly because as

railways stole freight away their fixed maintenance costs had to be charged upon fewer and fewer barges (Also railway companies bought up canals and vandalized them deliberately).

TABLE (2:1) RELATIVE TRANSPORT CAPABILITIES

In units of 1 Ton-kilometres per day per man required.

PORTER	1
BARROW-BOY (Wheels; common in India still)	4
CYCLE (No track costs included)	10
HORSE WAGON (forage costed but not roads)	8
TIDAL SAILING BARGE (Britain; 2.5 crew)	1200
CANAL BARGE (30 Tons; including canal costs)	90
CLIPPER SHIP (limited to trade wind routes)	3000
RAILWAY* (incl track and fuel costs)	2400
TRAMP STEAMER (incl 30 crew and 50 miners)	4000
MODERN TRUCK (2 crew, fuel and road costs)	3000
CONTAINER SHIP	8000
JET CARGO-PLANE	600

* I have everywhere converted fuel costs into manpower units by assuming a man can mine about half a ton of coal a day and that oil will be taxed until it is more expensive than coal per unit of energy stored.

In short we can see that it was the tidal sailing barge which first made true civilization possible. The North Western Europeans were blessed with this rare magic, and of course the Brits, as usual, with far more than anyone else.

This was extracted from Chapter 2 of my *'History of the Brits'* (Amazon 2020)

NB: This has been an entirely quantitative argument (see table). Some arguments are bound to be of this nature. This is why mathematics has to play a significant, sometimes over-riding role in History [Ch.4].