

Redrawing the Economic Geography of the United Kingdom

The case for a vertical take-off and landing airliner as an essential part of the UK transport mix

Abstract

The Fairey Rotodyne was an aircraft developed in 1956 - 1962 by the UK aeronautics company Fairey, later merged with Westland. It was a compound gyroplane with propellers and a large main rotor which was operated by "tipjets" - small combustion engines at the extremities of the rotor which provided a jet thrust to move the rotor for take off and landing. The main rotor itself was otherwise unpowered and it would freewheel in flight, providing lift.

This pamphlet aims to calculate the benefits of the craft for providing an addition to the transport options in the United Kingdom.

In order to reiterate the major benefits, it is important to engage in some analysis

of existing transport modes and their benefits.

The physical geography of the United Kingdom is similar to Japan and New Zealand - a long, thin archipelago. However, the population distribution on the main island, Great Britain does not lend itself to the construction of high speed rail in anything but 3 operational axes which are economically viable.

The high quality and high speed of the East Coast and West Coast mainlines mean that a good enough quality of travel can be obtained there. Going any faster than 140mph (225 kph) is not optimal, due to the energy use and increased cost. A faster service could be obtained for the comparatively small number of customers who really need to go from London to Newcastle in under 1 hour by using helicopters or small aircraft. At a similar price point to the business class ticket on the high speed rail system, there is a niche that can be met by use of a hybrid helicopter/aeroplane which could thus also link the island of Ireland, Isle of Man, Isle of Wight, Scilly Isles, Inner and Outer Hebrides and Faroes.

Charter Services could perform multi-city stops and hops.

Travel Options Matrix

The variables we wish to examine are: speed, cost, capacity, energy efficiency and distance

High Speed Rail occupies a specific niche of the transport equation - high speed, high cost, low energy efficiency and medium capacity. The sweet spot for this mode is long distances between 150 and 600 km with large (100+) numbers of passengers.

Low speed rail is low speed, extremely low cost, highly energy efficient and is almost always high capacity. The distance of this mode of travel is anywhere from 50km to 1000km. From 50+

Minibus / Coach Travel is the lowest cost, highest capacity, low to medium speed, medium energy efficiency and very flexible. The distance of this mode of travel is anywhere from 50km to 1000km. 20+ people. Linking islands is only possible with the use of ferries.

Car Travel is medium cost, medium speed, low capacity, low energy efficiency and the most flexible of all the ground transport options. The distance of this mode of travel is anywhere from 3km to 1000km. Linking islands is only possible with the use of ferries

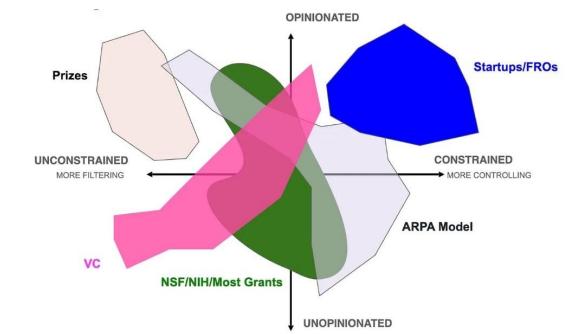
Aeroplanes are the highest speed, high cost, inflexible and need long distances

for the cost benefit analysis to make sense. They are only efficient (in both terms of cost and energy) with very large numbers of people and somewhat medium to very long distances. Apart from flights from the South of England to Scotland, Ireland or the North of England, this is not a viable option for intra-UK travel.

Helicopters are the highest cost, most flexible form of transport in the UK though of very low capacity and abysmal energy efficiency. More versatile in terms of places that can be reached and at speeds comparable with high speed rail, they are nevertheless almost prohibitively expensive for anything but occasional use. They are not a commuting option.

Within this matrix, there exists an unmet niche: that of the high speed, medium to high capacity, low to medium cost with flexibility comparable to helicopters.

Enter the Rotodyne Compound Gyroplane



Origin: Liverpool, UK 402.34kmph		
Distance (km)	City	Time (mins)
342.88	London, UK	51.13
55.50	Manchester, UK	8.28
275.72	Oxford, UK	41.12
331.85	Cambridge, UK	49.49
280.44	Newcastle upon Tyne, UK	41.82
207.21	Hull, UK	30.90
356.22	Edinburgh, UK	53.12
159.71	Birmingham, UK	23.82
352.41	Glasgow, UK	52.55
438.84	Belfast, UK	65.44
382.23	Norwich, UK	57.00
416.92	Ipswich, UK	62.17
405.99	Portsmouth, UK	60.54
277.00	Dublin, Ireland	41.31
127.00	Sheffield, UK	18.94
290.60	Bristol, UK	43.34
310.38	Bath, UK	46.29
408.67	Exeter, UK	60.94
312.85	Devizes SN10, UK	46.66
164.58	Doncaster, UK	24.54
161.56	York, UK	24.09
481.41	Deal CT14, UK	71.79
334.00	Cardiff, UK	49.81
117.89	Leeds, UK	17.58
259.14	Durham, UK	38.65
283.76	Swindon, UK	42.32
277.49	Swansea, UK	41.38
252.06	Peterborough, UK	37.59
393.31	Southend-on-Sea, UK	58.65
447.04	Canterbury, UK	66.67
567.05	Aberdeen, UK	84.56
777.14	Thurso, UK	115.89
603.63	Inverness, UK	90.02
522.62	Fort William, UK	77.94
193.47	Leicester, UK	28.85
585.20	Penzance, UK	87.27
540.46	Newquay, UK	80.60

