CLAIMS

1. An aerofoil sail assembly for providing motive power to a cargo vessel, comprising three aerofoil sails, each of the sails comprising a leading aerofoil portion and a trailing aerofoil portion, and the sail assembly further comprising a spar, at least one of the aerofoil portions rotatably positionable, and the sail comprising a controller to control individually the angular position of at least one of the aerofoil portions relative to the spar, and the spar rotationally positionable about its longitudinal axis, and wherein the leading portion is longer than the trailing portion and a gap is provided between the leading portion and the trailing portion, and wherein the aerofoil sails are provided in a side-by-side spaced apart relationship, such that there is a central aerofoil sail and two outer aerofoil sails, and the outer aerofoil sails being connected to the central aerofoil sail so as to maintain the spaced-apart relationship, and the sails supported by a single spar.

2. An aerofoil sail assembly as claimed in claim 1 in which the controller performs automated control of the least one aerofoil portion and the spar.

3. An aerofoil sail assembly as claimed in claim 2 in which the controller may use feedback signals from one or sensors (incorporated, associated with or affecting the sail) in order to determine a suitable control signal.

4. An aerofoil sail assembly as claimed in any preceding claim in which one of the aerofoil portions is rigid with the spar, and the other aerofoil portion is rotatably positionable relative to the spar.

5. An aerofoil sail assembly as claimed in any preceding clam in which both of the aerofoil portions are pivotably positionable relative to the spar.

6. An aerofoil sail assembly as claimed in any preceding claim in which when aligned, the leading portion and the trailing portion form an aerofoil profile.

7 An aerofoil sail assembly as claimed in any of claims 1 to 5 in which each portion is of aerofoil shape when viewed in plan.

8. An aerofoil sail assembly as claimed in claim 7 in which the at least one rotatably positionable aerofoil portion is rotatable connected to the (fixed) aerofoil portion.

9. An aerofoil sail assembly as claimed in any preceding claim which comprises multiple sets of leading portions and trailing potions, each set of a leading portion and a trailing portion arranged one above the other.

10. An aerofoil sail assembly as claimed in claim 9 in which each set of a leading portion and a trailing portion is at substantially the same vertical position.

11. An aerofoil sail assembly as claimed in claim 8 in which each of the trailing portions and the leading portions comprises a leading flap and a trailing flap.

12. An aerofoil sail assembly as claimed in any preceding claim in which at least one of the leading and trailing portions is pivotable through around sixty degrees.

13. An aerofoil sail assembly as claimed in any preceding claim in which each of the leading and trailing portions may be driveable on a curved track.

14. An aerofoil sail assembly as claimed in any preceding claim in which each of the leading and trailing portions is pivotable by way of toothed gear arrangements.

15. An aerofoil sail assembly as claimed in claim 14 in which each of toothed gear arrangements comprises a rack and pinion.

16. An aerofoil sail assembly as claimed in any preceding claim in which a centre of effort of the sail is located anterior of a centreline of the spar.

17. An aerofoil sail assembly as claimed in any preceding claim in which the internal volume of the spar is sized so as to allow an operative access thereinto.

18. An aerofoil sail assembly as claimed in claim 17 in which the spar is sized so as to allow an operative access within the spar for a major portion of the length of the spar.

19. An aerofoil sail assembly as claimed in any preceding claim in which the sail is a substantially rigid structure.

20. An aerofoil sail assembly as claimed in any preceding claim in which the spar supports the aerofoil portions.