Exceptional Kites—George Webster

1 Introduction

We are now near the end of the articles that I hope will form chapters in a book. My approach has been to classify kites by type (e.g. Deltas, bird kites) and not by country of origin. It always seemed inevitable that there would be designs which are currently being flown but which don't fit the classification – I've called them exceptional.

There are, of course, some good kite types which have been omitted because they are really very similar to an included kite or because I just don't know about them.

There are some intriguing new designs from the Sauer sisters in Germany…….

Perhaps I should have something on miniature kites and paper kites……

Anyway at the moment there are three exceptional kite types

The Chinese Dragon Section 2
The Rotating Kites Section 3
The Circoflex Section 4

2 The Chinese Dragon

Called Centipede kites in earlier books and more usually called 'dragon-head centipede kites' in China, nothing is more spectacular than a big one flying well (see photo below). Typically there is a 3D dragons head, either bamboo framed with a paper/silk cover or carved polystyrene (or a mix). Functions vary but include rolling eyes, whiskers, flowing beards, smoke/fire breathing and impressive horns.

The body of the kite is a series of discs, each sized 18"-36" with an overall length… I've seen 150 cells but I've seen an illustration of one 350m long, probably with 500 cells. Discs are framed with bamboo, each disc has a pair of balancers, which may be a single horizontal spar with an overall length of the disc's diameter x 4. The tip of each balancer comprises tassels or feathers which provide stability and which can be trimmed to balance the individual disc. Balancers are set below the mid point of the disc. Various systems of connecting the discs are in use; often three lines are used, the centre taking the considerable pull of a long dragon with two lighter lines to hold the discs parallel. The best source of data is Ha and Ha.

Dragon, or centipede, kites are really a train of disc kites supporting the spectacular head. As such they are the most dramatic example of a train seen in the West. You will sometimes see lions and tigers made up of 5-7 cells, stabilised by floppy feet. I have seen an illustration of a Great Wall of China kite, 100+m long, with each cell representing a part of the Wall; also a train of asymmetrical mythical figures. There is a V formation of flying geese with one at the point and four in each line behind. A kite which has just arrived in the U.K. is 'Two dragons and a pearl' The sequence from the ground up is: tail of the dragon, body, head, pearl, head of second dragon, body tail. There is also a double dragon – 2 heads and side-by-side cells. Of course the Chinese produce miniature dragons, a bijou version about 6ft long seems to fly very well.

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Although kite books from Pelham onwards have included plans very few are made. By far the most spectacular western versions are those designed and made by Iqbal Hussain in Switzerland. Humorous kites are unusual, dramatic and well crafted ones more so. I like the crocodile head with each cell a handbag and the chicken (which sometimes lays eggs) with cells of frying pans with 2 or 3 eggs. There is also the cow's head with cells depicting burgers, packets of fries and, of course, sauces. The latest illustrates the Pied Piper of Hamelin story with the Piper, limping boy and pairs of rats.

Difficult to fly – remember you are launching a train and not a kite with a tail – fragile and hard pulling in the larger versions; but nothing else gets such an aah! Or spontaneous applause from a crowd.

3 – Rotating Kites

3.1 There are three distinct types of rotating kites, in addition to several kites that have a rotating propeller/sail incorporated in the design. Of the latter type most common are windmills, which may have flat or 3D bodies. In the 19th Century at least one kite (see Bio in Pelham p 30) had a propeller fixed to the bottom edge at right angles to the axis of the kite (unlike the windmill where the sails are parallel to the axis) that was designed to help stability. Stability control would come from the faster rotation as wind speed increased. I don't know whether it worked and what would be the effect of a single propeller spinning in one direction; contra-rotation seems the thing to aim for.

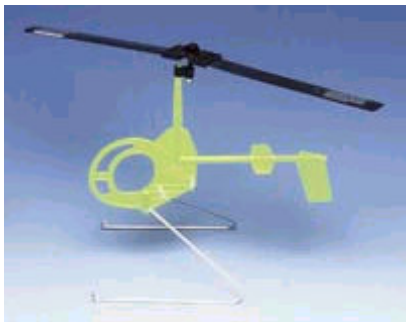
The three types of kite where the whole thing, or at least the parts providing lift, rotate are:-

The Rotary Wing (3.2)
Kites rotating around an axis in line with the wind (3.3)
Rotor kites (3.4)

3.2 Rotating Wing Kites

Whereas aeroplanes have fixed wings, helicopters have rotating wings. In a fixed wing the body is pulled through the air by an engine and the airflow over the wing provides lift. With a helicopter the engine driven rotary wing provides lift and forward movement - hence the distinctive forward dip of a helicopter in fast and level flight. Kites of course use the wind not engines and those that obtain their lift from spinning rotors are akin to the autogyro. Not seen nowadays these were propeller driven aircraft with a rotor not fixed wing developed in the 1920's and 30's.

In the Second World War German U-Boats experimented with a man-carrying rotary winged kite which was kept aloft by the boat's speed. The Bachstelze or Wagtail flew 300m high and improved spotting. But problems with quick retrieval led to only 200 being made.



Commercial rotating wing kites are produced, invariably helicopter-shaped but I've only once seen one flying well.

3.3 Kites rotating around an axis in line with the wind

Box kites can be made to rotate either by having stub wings angled to give the propeller effect or by having the whole frame twisted to provide rotation. The most successful commercial version is the Windy Kites Clarkes Revolver. Nicholas Wadsworth has produced several good designs (see next page), sometimes flying two counter-rotating off the same line. I have seen bigger German arrangements of counter rotating boxes

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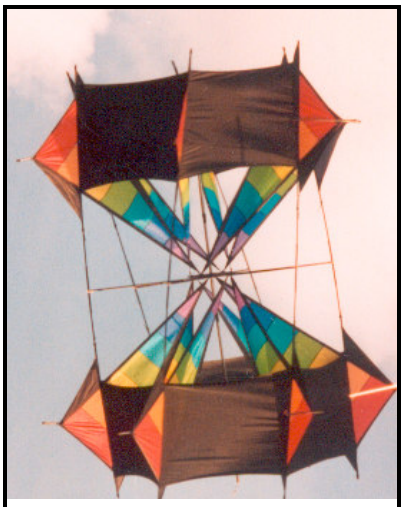
flown in frames. John Eaton has produced a superb dramatically coloured box (photo 4).

3.4 Rotor Kites

The simplest rotor kite is a vane free to rotate at right-angles to the wind (diagram 1). The idea goes back at least to an American patent by J. Donaldson in 1948 and every few years since then it seems a 'new' rotor kite has been marketed – including about 10 years ago a double rotor where the kite had an aeroplane fuselage with rotors at a dihedral replacing fixed wings. To the best of my knowledge, and unlike other kites in this section, rotor kites exist in their own right and are not a scaled down or wind-driven version of anything else.



4 John Eaton Spinning Box

In the U.K. undoubtedly the most common rotor which has been marketed over more than 20 years is the UFO Sam kite, patented by the late Ken Sams. Great fun and mysterious for those who don't understand how they fly, they tend to suffer from two common problems with rotors:

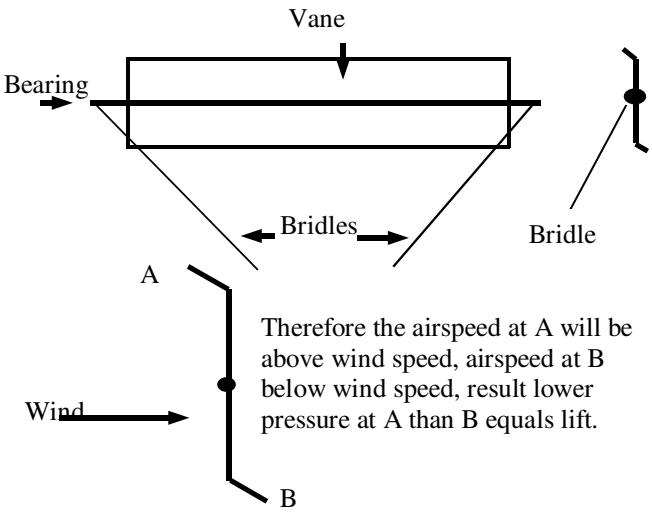
- fragility
- the difficulty of providing a cheap light axle and bearing which can cope with rapid revolution

Sams wrote an interesting book 'Flying Toys' (Sally Milner Publishing 1991) with instructions for a variety of 'UFO Gliders'.

There isn't really a mystery of how they fly (diagram 1). The basic theory of lift states that as air flows over an aerofoil it takes longer to flow over the top surface compared to the airspeed on the underside. Increased speed means reduced pressure and the pressure difference results in lifts. In the case of a rotating wing designed to rotate as shown in the diagram, the speed at A will be higher than the airspeed at B and therefore we have lift.

I don't know of a 'hand crafted' rotor kite now although there was a Dutch model about 15 years ago.

Diagram 1. The Principle of the Rotor Kite Front



3.5 The Circoflex

Tubular lantern kites are a traditional Chinese design that flies bridled from a point on the leading edge. Newman and Newman have a plan (p 98) and an illustration of an American battery of 8 on a frame. Far more frequently seen are cylindrical drogues with a stiffened leading edge and a 3 or 4 point bridle.

The kite developed by Ton Oostveen & Helmut Schiefer in 1996 marked such a break from those designs that it is by general consent a new design of kite. If you were determined to look for an ancestor it would be Le Cornu because of the bridle/flying angle arrangements.

According to an article in American Kite (Summer'97), the kite stemmed from a problem Oostveen had had in 1993 flying a 9' rok supporting a 21' windsock (with a message on the hazards of drunken driving). He started to develop a better bridling system for the windsock that led to an ability to fly independently. He could also shorten the resulting tubular kite from 24' circumference and 14' long – ultimately to 7.5m circumference and 50 cm long. There was rapid development during the summer of '96; the kite was then taken to the Dieppe Kite Festival and was clearly the outstanding kite of the show. The design was registered in 1996 but the inventors have made the construction and dimensions generally available (see diagram 2). Details can be found in Moulton & Lloyd '97 and Kite Passion No 3 March '97.

Presumably because there is a restrictive patent

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I've not yet seen commercially produced Circoflexes but they do appear at kite festivals in various sizes and proportions. For me they are at their most dramatic in Silver and Gold where often the bridles can't easily be seen and they are startling and mysterious. However I remember a green ripstop Circoflex on Saturday evening at Portsmouth 2002. All the other kites were down except this one high above the funfair area. Not many looked up but those that did might well have wondered about the upright green ring steady in the sky

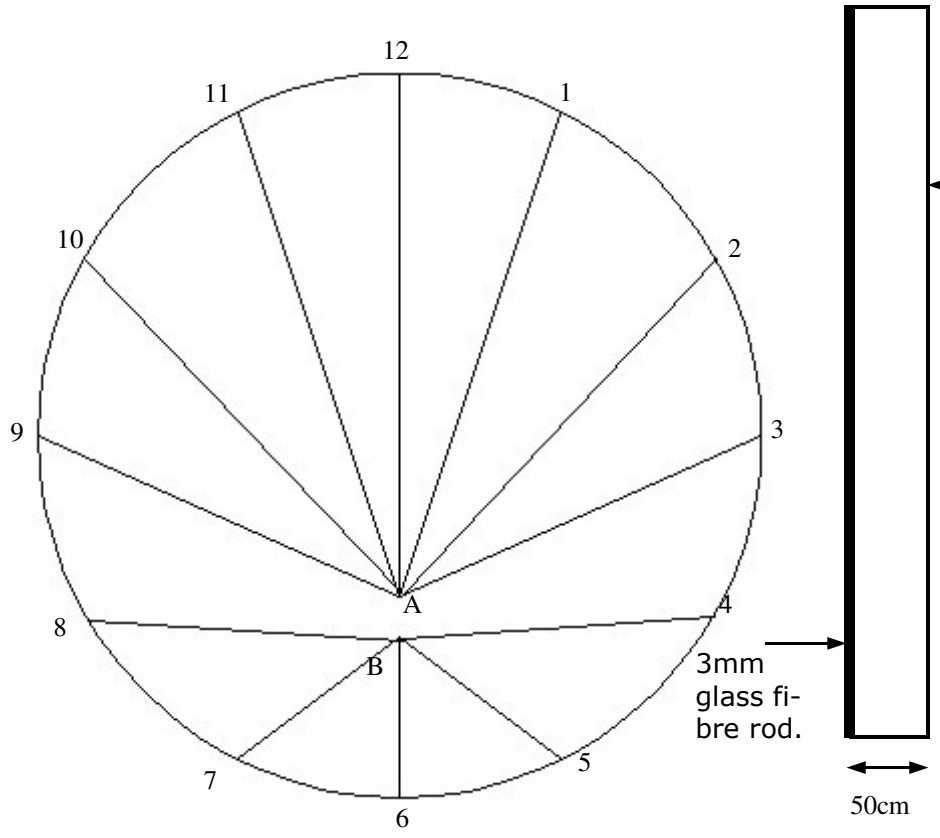
Bibliography.

Ha Kui Ming & Ha Yigi "Chinese Artistic Kites" 1990
L S Newman & J H Newman "Kite Craft 1974 (reprinted 1998).
R Moulton & Pat Lloyd "Kites", second edition 1997.

Thanks to Carolyn Swift who read my writing and Jon who reworked the diagrams. Dragon kite photos courtesy of Malcolm Goodman.

Diagram 2. The Circoflex Kite '750'.

750 is the circumference. Not to scale.



Bridles	
No	**Length (cms)**
1	176.2
2	160.7
3	136.8
4	107.6
5	79.8
6	66.8
7	79.8
8	107.6
9	136.8
10	160.7
11	176.2
12	181.5

The twelve bridles are attached at the 'hour' points 1– 12. Not shown is the bridle point which is on a short line connecting the upper and lower sets (A to B) so as to keep all 12 taut at a point 25% of the diameter. This should be 30cm in front of the face. The bridles are attached to loops to spread load.

The slightly pulled in rear edge is vital. The kite will fly at about 5° from vertical.

There are a number of web sites—a search for Circoflex in Google.com will find them. These have lots of construction hints and tips.