

**1 Introduction**

*Definition: 'A single plane surface which may have built-in dihedral, may deflect to give dihedral in flight or may be bowed by means of a line. It may, or may not, have a keel. Keels are usually at right angles from the face of the kite and form a bridle attachment point, but may protrude from the back.'*

This definition includes, I would estimate, over 95% of the world's kites. Trying to give reasonable treatment to flat kites in one chapter is possible because:

- a) Kites will be dealt with in less detail than some other chapters e.g. sled kites.
- b) Some flat kites have been dealt with in other chapters.
- c) Some types will have a sketchy treatment (e.g. Phillipine kites), as much as a result of limitations in my knowledge as rarity in European skies.

But the aims of the chapter remain the same, i.e. to inform about the types of kite that might be seen in the air and to explain their background.

Picking up point b) above we have:

START WITH All flat kites

REMOVE Deltas – covered in Chapter 7

Sleds – covered in Chapter 8

Eddys – in the Golden Age of Kites (Chapter 3)

Some kites mentioned in the history chapter (Chapter 2) and the Bird Kites chapter (Chapter 5).

RESULT Flat kites dealt with in this article.

When point c) was first written I was able to virtually ignore kites from Cambodia, Indonesia, the Phillipines and other Asian countries on the grounds that there was very little material which I knew of which was available in English, and anyway the kites were not seen in England. Since that time, kites from Cambodia and Java (Indonesia) have been shown at festivals and the available bibliography is now much better.

I haven't integrated these countries' kites with the rest of the chapter –Malaysia is there because of personal contacts– but I have set out a bibliography at the end of the chapter ([1] – [4]). There follows an interesting comparison which I intend to follow up in a later article.

I've talked to Orlando Ongkingco and reproduce (Illustration 1) an illustration from his book [2]. The native Filipino kite is the Spanish named Gurion which is equipped with hooks for fighting. Please recognise the common wing shape to all these kites –the Spitfire wing or the date-stone wing– which is found with slight modifications all over Asia. I'd like to add Laos and Myanmar to the display but don't have information.

Orlando believes that kites came from Malaysia in the 12<sup>th</sup> century. He is also one of the very few non-Chinese fliers from Asia who thinks that kites originated in China.

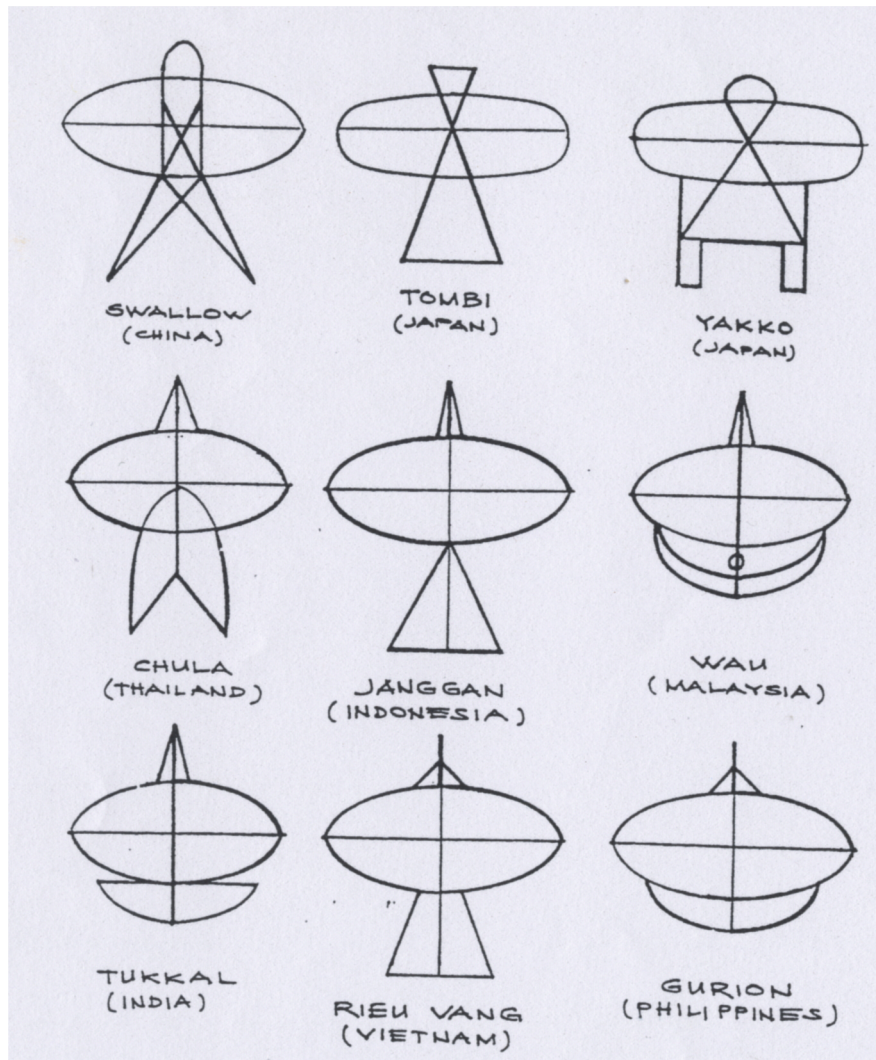


Illustration 1: Shapes of Indonesian Kites

I have divided flat kites into three main types:

Flat kites with a single spine (e.g. Indian fighter) in section 2  
Flat kites with multiple centre crossing spars (e.g. hexagon) in section 3  
Flat kites with a grid of spars (e.g. Edo) in section 4.  
This classification will not work perfectly, so we have to have:  
Snake kites in section 5  
Oriental winged creatures in section 6  
Play sails in section 7.

## **2 Flat Kites with a Single Spar**

In my view the world's first kite was a single leaf used to lift a fishing line (see Chapter 1). Leaf kites are still found today in various parts of Indonesia, still used for fishing, but leaf kites are also found elsewhere, e.g. Martinique. Japan has an interesting two leaf design (Hosking [5] p.60) made from Japanese white bark magnolia.

This section is divided into; Indian Fighters, Japanese, Malaysian, others with a bamboo bow, European descendants of the Malay, Diamond, Eddy.

### **2.1 Indian Fighters**

Perhaps the nearest kite to a single leaf in structure and, apparently, a very simple kite is the Indian fighter. A 'classic' Indian fighter is shown on the right of Illustration 2 — see also Illustrations 3 and 4. It has a bamboo spine, a tapered bamboo bow as a cross spar and a paper cover. The term Indian fighter is often used to describe kites which differ slightly in shape and may come from the Indian subcontinent (including India, Pakistan, Bangladesh, Nepal and Afghanistan); Malaysia (Illustration 5 shows the Layang-Layang [birds] flown by children); China (the book by Ha and Ha [6] calls it the Rhombus Kite); Hong Kong, where kite fighting is popular; Singapore (both adults and children fly the Indian fighters); Indonesia (probably the world's third largest producer of Indian fighter kites where 5 million a year are made by one manufacturer).

This book is arranged by similarity of form rather than national differences. But there are some remarkable examples of the latter, such as the Brunei fighting kite (Illustration 6). Brunei, bounded by Malaysia and Indonesia, has a population of about 300,000 and is about 90km. at its longest, yet its kite differs from all other fighters in having the wing spar curved to follow the start of the trailing edge. The only explanation I've had is that it might reflect extremely flexible bamboo found in Brunei.

Back to fighters in general.

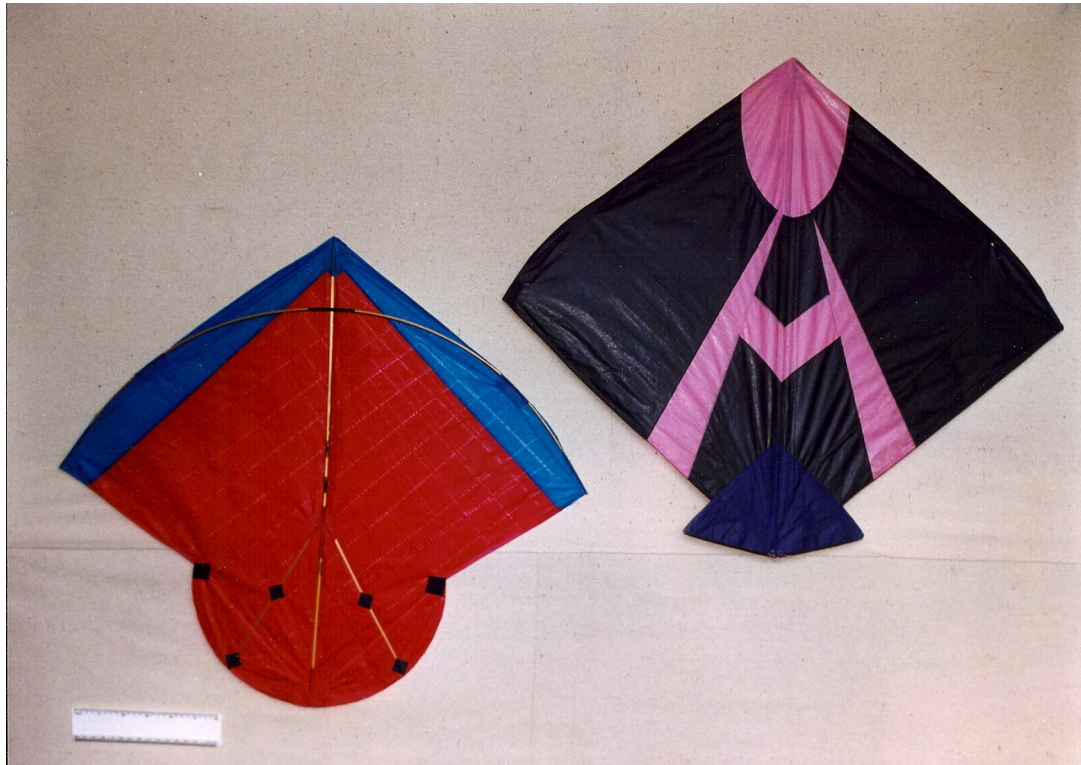
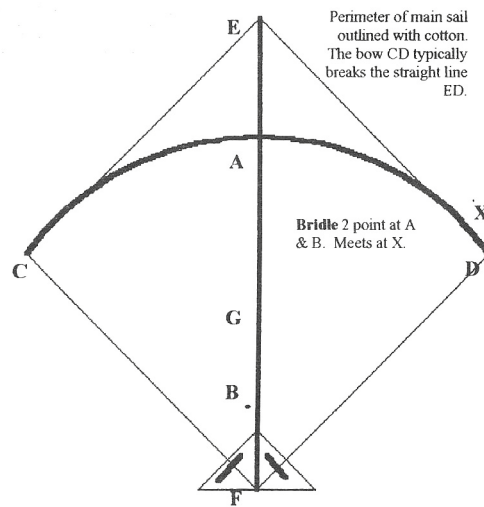


Illustration 2: Indian Fighters



**Bow arrangements.** Kites with fibre glass bows don't break the line ED. Kites with fibre glass bows and ripstop covers often have a straight pocket for 50% of ED.

**Tail Arrangements.** No tail, i.e. CFD unadorned. Paper tassel at F (sometimes also at C & D). Larger unreinforced tail - a triangle apex G found on small Pakistani versions. Semi-circular—see Photo 2.

**Bamboo** sometimes has dark marks where it has been straightened. **Paper** sometimes has shiny parallel lines where it has been rubbed to increase strength.

**Ripstop** pockets allow the kite to be rolled up.

**Afghan Kites**—often larger with elliptical flaps attached to CD and DF.

**Japanese Hata**—larger, double paper, no tail and tassels at wing tips.

Illustration 3: Indian Fighter, a.k.a. Patang

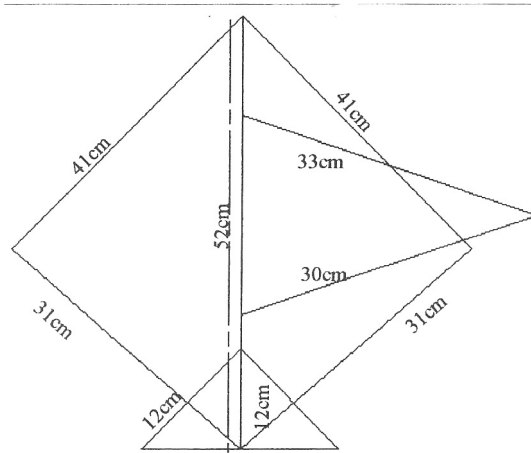


Illustration 4: Classic Patang



Illustration 5: Malaysian Bird Fighter Kites

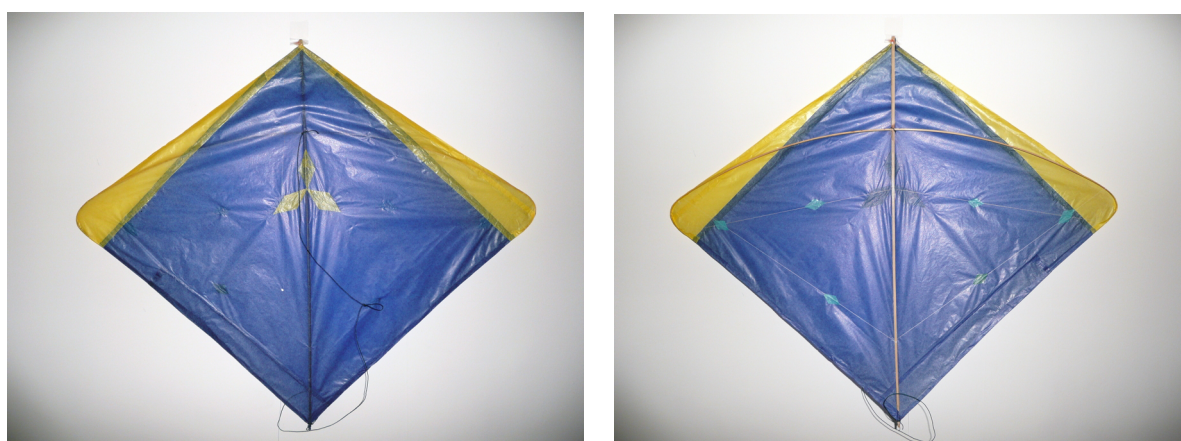


Illustration 6: Brunei Fighting Kite

Illustration 3 shows some of the variations; what all these kites have in common is the use of bamboo and either paper or plastic sheet. The widespread nature of the design suggests that it is an old one. The use of paper shows that the age is limited to about 500AD. There is no natural substitute for bamboo, which has limited the copying of the design in the West until thin fibreglass and carbon fibre became available in the last 30 years.

The essential feature of the Indian fighter design is that it is steerable. How is the kite controlled? Under line pressure the wings of the kite flex upwards and backwards; the resultant shape is stable flying in a straight line following its nose in any direction. If the line pressure is reduced there comes a point when the kite,

being flat, spins in the wind with no directional stability. So all (!) you have to do is wait until in one of the spins the kite is facing the direction you want it to go, pull on the line, the wings go back and the kite tracks following its nose. It is a real skill which almost anyone can master — if they start off with enough kites.

As their name implies these kites are widely used for fighting. I am told that in some Indian languages the word for flying a kite is the same as fighting a kite — either at one of the great festivals where perhaps a million city fliers go onto flat roofs and engage in a general melee or in some cities where there are club contests between expert fliers at above 1500ft. Kite lines are cut by the use of ‘sharp’ line (called ‘manja’) where the standard cotton line has a coating of ground glass.

In all the countries mentioned children re-cycle vanquished kites and also fly simplified versions of the fighter. Millions of kites are made in the Basant spring festival in Pakistan. In 2006 kite flying was banned in Lahore but has subsequently been reinstated. The ostensible reason for the ban was the number of deaths and injuries caused by cuts from the line. Although manja is used to cut lines this is usually a short section near the kite and most line is innocuous. However, the classic manja is being replaced by so-called ‘chemical line’ which is not only sharp but much stronger and as it doesn’t break so easily, is more likely to cut people. With reports of Chinese plastic kites making inroads into the traditional market it would seem that the world’s major usage of kites is changing.

Indian fighters were known in England by 1906 at which date they were sold under the name Vakarta in Gamages store in London. They were marketed by a Colonel Fink as a game where two teams tried to cut their opponent’s kites. He entered them in a competition and was mortified when they got low marks for flight stability and portability. He complained that the kite had flown steadily but when, at an onlooker’s request, he showed their manoeverability (which we know would have involved spinning them) this was the moment when another judge saw them as unstable. And again, how could his kites not be portable when you could carry them in an envelope? In the end, the editor of *Flight* closed the correspondence.

But they were slow to appear in the sky in England in my time. I don’t remember one until the early 1980s although there are legendary stories of early Blackheath festivals in London where Asian fliers appeared, cut every fighter out of the sky and withdrew — playing no further part in the meeting.

In the USA western versions of the kite came on the market in the late 1970s — the Vic Fighter Kite and the later, larger and more elaborate Grandmaster. Those kites used mylar as the cover, bows of man-made material and spines of spruce or cedar. More recently kites with thin carbon fibre spars and with lightweight ripstop covers have appeared. Such kites have a price much higher than the 5p. which would get you a serviceable kite in Asia.

While kite fighting is seen at some UK festivals there is a thriving competitive scene in the USA which uses touching or tail cutting rather than run the risk of losing the kite by cutting the line.

As a child we used to play the game ‘conkers’ in the autumn when we threaded a horse chestnut on some string and used it to hit another similar conker until one smashed. You would go to school with a dozen and not expect to come home with more than one. This is very similar in spirit to the classic use of the Indian fighter kite. While Western versions of Indian fighters may be much better at dealing with wet conditions, and are easier to transport, their cost means that inevitably the ‘freedom to play’ in the Asian festival sense is lost. Skilled contests at 1500ft. – 5000ft. are seldom seen due to height restrictions and failing eyesight!

The bow of the Indian Fighter, or Patang in India, is usually of square section tapered to each end to ensure balance, even flexing and the precise curve required. Non-tapered fibreglass obviously has a different flexing shape; some western fighters use a second short piece of material to reinforce the centre of the bow.

The Patang is not the only type of kite fought in India; in the Punjab (which straddles India and Pakistan) they also use the Tukkal (Illustration 7).

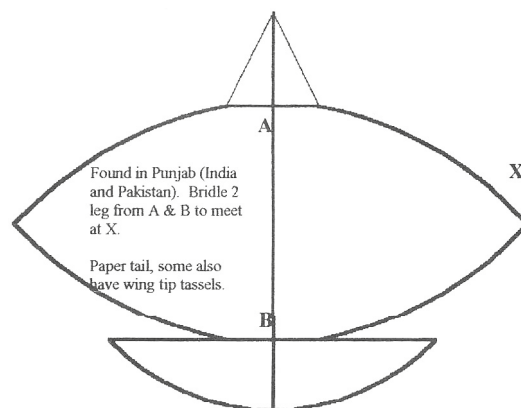


Illustration 7: Tukkal Kite

Indian fighters have been well written up in general books and in Boitrelle & Petit [7] , Crumplin [8] and Gallot [9]. See also Ben Ruhe’s bibliography in English in *Drachen* no. 1 (Fall 1998) and no. 4 (Spring 2000). While several books give detailed instructions for making one, imported kites can be found. If it is your first time try to get one with the gold paper reinforcements at nose and wing tip and get the seller to bridle it for you. You might even get a lesson. Or you might look out for one of the complex patterned, multi-coloured kites –all done with pieced together tissue paper– which are best left on the wall.

Of those adapting the original idea to Western needs, the late Tony Slater was for many years a source of great designs. His butterfly is a classic.

## 2.2 Japanese Kites

Compared to the Indian sub-continent Japan has a very wide range of single spine kite types — we will concentrate on those seen in the U.K.

Japan has several fighting kites, one of which is the Nagasaki Hata (Illustration 8) which resembles a heavily built Indian Fighter. It uses two thicknesses of paper, has no tail but has tassels at each wingtip. The kite is unlike any other Japanese design and is made using different coloured paper joined together (as in the Indian fighter, while Japanese kites are usually painted). These colours are red, white and blue — the colours of the Dutch flag: Nagasaki was the only permitted access point for Western ships in the mid 16<sup>th</sup> century. Dutch ships would have had Indian and Malay crew members. So it would seem that the Malay kite went north to Japan, and also went to India and probably via Dutch traders all the way to Europe.



Illustration 8: Japanese Hata

There are other designs of fighter kite in Japan, some of them use sharp blades on the kite or on the line rather than manja. However, the most famous Japanese fighting kite (and I suspect the most common Japanese design in Europe) is the Sanjo Rokakku of Shirone – colloquially called a ‘Rok’ in England (Illustration 9). Rok fights started in Shirone in 1649. It was originally a kite fight between local children and children of government officers. The festival has evolved into a friendly kite fighting competition between local towns (Hosking [5]; see also Streeter [10] for a slightly different view). Nowadays up to 1000 kites can be involved. The use of western made roks to fight came from the American Kitefliers Association who made the kites from dowels and ripstop and started team fighting in 1983. This attracted considerable interest. The UK rules were drawn up and popularised here by Martin Lester and Gill and Jon Bloom, resulting in a team and an individual competition running through the season from 1987. Contemporary plans are given in Illustrations 10 and 11.



Illustration 9: Sanjo Rokkaku

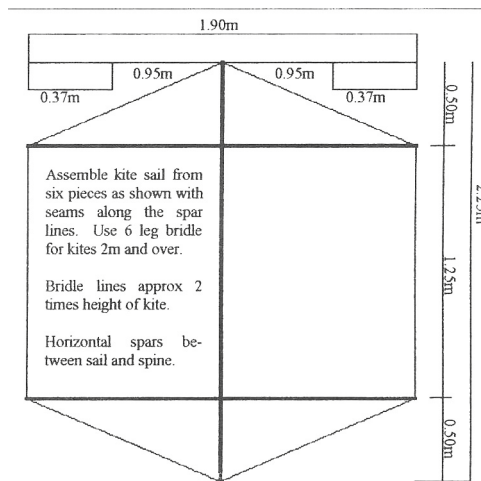


Illustration 10: Standard Rokkaku

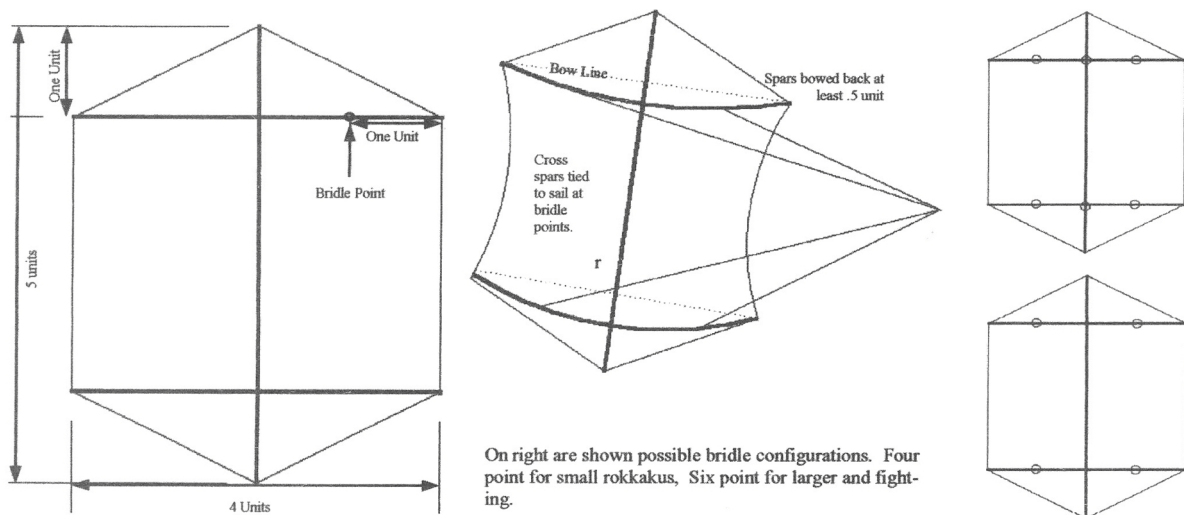


Illustration 11: Sanjo Rokkaku

Unlike Indian fighters, ordinary line is used as the greater line tension from the larger kite (most are now 2 metres) allows the line or bridle to be cut by friction. All the entrants fight at the same time; a kite has lost once it has been cut free or touched the ground. Spectators like the contests, which usually have a clear winner — although this can take some time. But for fliers the interest has waned — festivals such as Bristol and Sunderland could have over 40 kites in 1993— and in 2007 10 kites is a large field. Perhaps ‘large field’ is part of the problem in another sense. Kites cut can be lost, especially from a small flying field and fliers (who almost always have made their kite) do not want to lose it. Encouragingly, the efforts of STACK who have restarted the annual competition have led to an increase in interest in 2009 and the final fight of the season saw 25+ competitors.

But, independently of fighting, Rokks live on as serviceable fliers, which can be trimmed to make stable lifting platforms, and which provide a good surface for imaginative decoration.

Another Japanese single line kite —which however is not fully dirigible and not used for fighting— is the Sode (Illustration 12a). Illustration 12b shows a western version, which is sometimes flown with two groups of bridles, one high, one low. By altering the pull the flier can move the kite up or down. The Sode has the shape of a Japanese Happi or jacket and is said to have originated from a successful fisherman flying his Happi from his boat. It uses the curvature caused by wind pressure between the front and rear cross spars to give lift and stability.

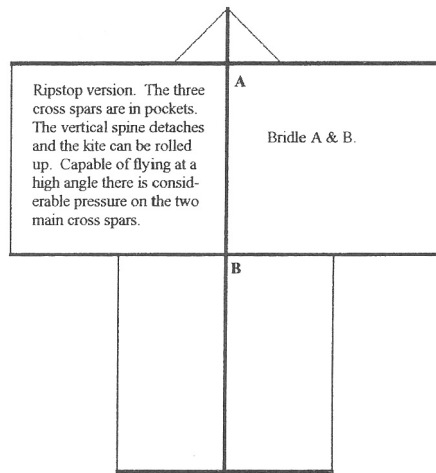


Illustration 12a: Sode

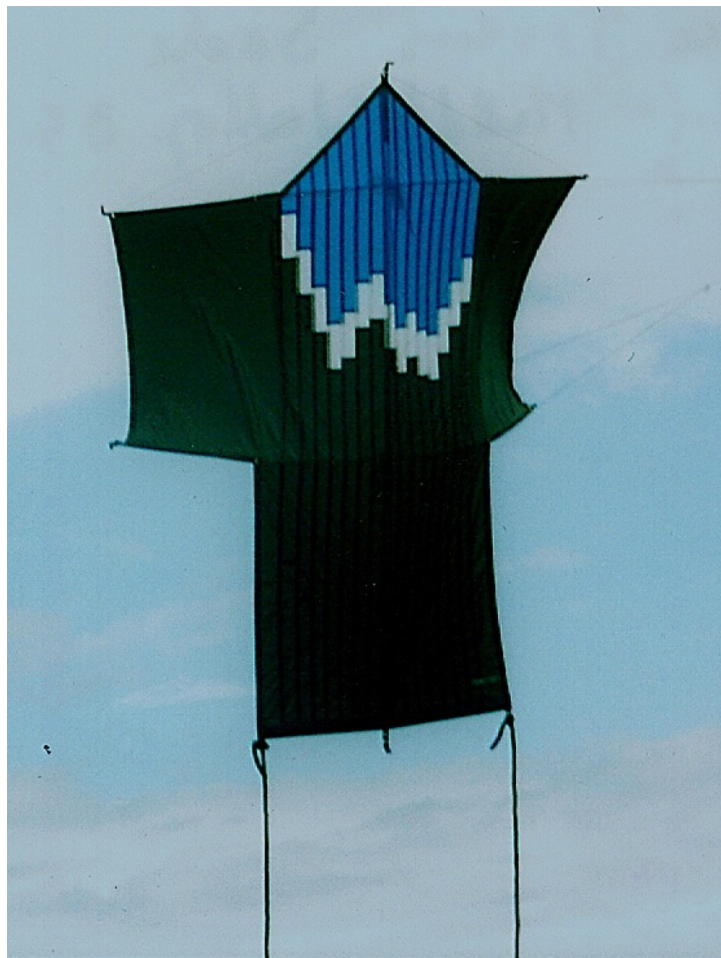
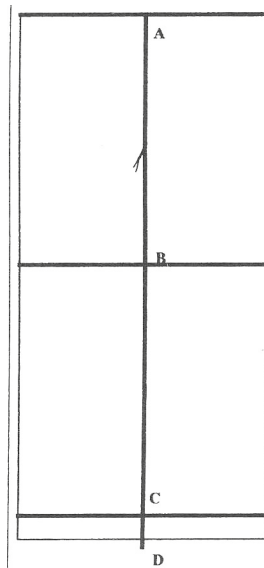


Illustration 12b: Western Sode



Again cross spars in pocket. Spine detachable.  
**Bridle** A, B & C.  
**Tail** - hairy string, rope or paper strips, attached to D.  
**Note** Trailing edge flap.

Illustration 13: Mushi (a.k.a. Managu Yuzawa)

There is a single spine kite rarely seen –my son made one 25 years ago in ripstop– called the Mushi (Illustration 13). It needed a long ribbon tail but was a good flier.

For other Japanese single spine kites see:

Pelham [11]; good for plans

Skinner & Fujino [12]; good recent survey

Hosking [5]; comprehensive list and illustrations

Streeter [10]; the classic book for the culture and the designs.

Lastly, a note on Western adaptations of Japanese kites. Some Japanese designs, e.g. the Rokkaku, have been reproduced in Western materials with very little change in spars and dimensions. In other cases, e.g. the Edo, kites are made following the general structure of the original but with changes in the sparring which might cause them to be reclassified in Japan.

However, the Western quest for novelty and the different properties of new materials have resulted in kites such as the one illustrated (Illustration 14) which achieve a low aspect ratio only found in the West. This kite is by Tal Streeter and reminds us of his Japanese influences and the shape of his first major sculpture (*Endless Column*, 1969).

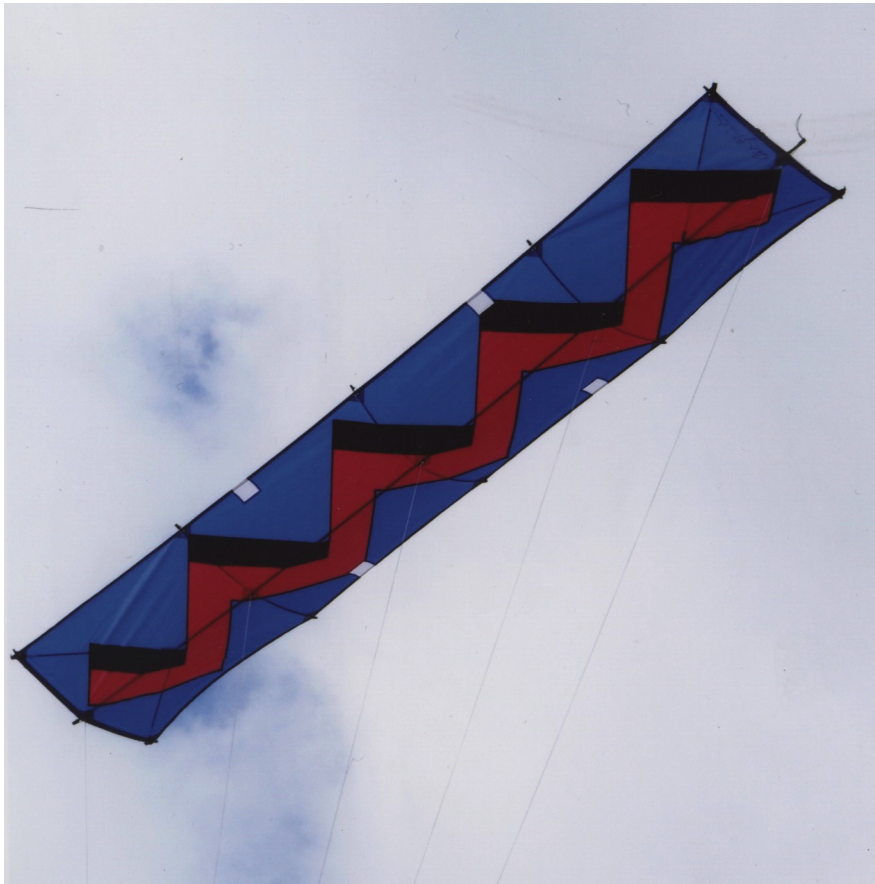


Illustration 14: Kite by Tal Streeter

### 2.3 Malaysian Kites

Wau. While Malaysia has a wide range of kite designs, we will concentrate on Wau of which the Wau Bulan (or moon kite) is the best known. The new moon has a religious significance in Islam. Illustration 15 is a fairly simple example.



Illustration 15: Malaysian Wau Bulan

Malays have a long history of kite making; they claim that they invented the kite, and certainly they were fighting kites in the 15<sup>th</sup> century. Perhaps the long history accounts for there being at least four explanations for the word Wau:

It is the noise made by the hummer fitted to most Wau types (but missing in the photo).

It comes from the Dutch word ‘wouw’ which means a large bird of prey and a crow.

The wings are a similar shape to the Arabic letter which is pronounced wau.

According to Pierre Fabre (*Kitelines* vol. 12 no.4 (Winter 1997)) it goes back to the 17<sup>th</sup> century Thai word for a kite. Surely this settles it?

There are various types of Wau distinguished by different tail shapes. One of the commonest is the Wau Kuching or ‘cat wau’. The tail is shaped like a D on its back and looks like a cat’s head upside down — I am not convinced but Malays do love cats and even have a town named after them.

The distinctive curved wing is found in several Indonesian kites, the Tukkal Kite (see Illustration 7 above) is similar, and others are shown in Illustration 1 above. But for performance the high point is, I think, the Wau wing.

Waus are not fought but the highly decorated ones, which are those usually seen, are made for competitions. (See my report on the Pasir Gudang Festival in *Kiteflier* 115 (April 2008)). These competitions, which have become more widespread in recent years, judge the kites on, in decreasing order of importance:

- Angle of flight.

- Beauty of decoration.
- Ability to stay flying and not crash.
- Noise made by the hummer.

The kites are made from a special bamboo and the curved shapes are achieved without using heat to bend the bamboo (as in China) and using bracing lines and tying (no glue). For the thickness of the bamboo used they can be quite large structures. The basic cover is a glazed tissue paper which is glued behind the frame: at this point the kite is test flown for symmetry, balance, etc. The best fliers will have the distinctive cut paper patterns in two or three colours glued to the front covering the frame — producing one of the very few kites where the frame is covered front and back.

Other frames are made up into ‘Wau Cantik’ (beautiful Kite) with very elaborate paper decoration –up to seven layers– which are entered into a ‘beauty’ competition. These, not intended to fly, take longest to make and attract the highest price. They are quite different from the cloth-covered kites sold to tourists. The cut paper patterns are traditionally always symmetrical on each wing and front and back symmetrical on the front wings. Since Islam forbids representation of a living animal, traditionally complex arrangements of plants, vines and flowers are used — but the Wau Kuching breaks the rules. Waus have paper tassels attached to the wing tips and a stylised bird head tops some.

Waus (Bulan, Kuching, etc) traditionally come from the northern states of peninsular Malaysia but have been adopted as a major cultural symbol for the whole country, for example on the back of a coin. Malaysian Airline Services has an adapted Wau Kuching as its logo. As the book [4] makes clear, each Malay state now has a dedicated Wau design. The Wau Bulan, once the state design of Kelantan, has now been appropriated as the national kite.

The kites were probably originally developed by farmers for bird scaring and indicating wind changes at night. They do this as Wau Bulans (unlike the one in Illustration 15) have a bow fitted to the rear of the spine before the main wings. The bow is at least the same width as the wings being a piece of bamboo with a thin strip of bark or ribbon in tension. Even in a constant wind the noise fluctuates as these kites have a very unusual flying pattern — they settle to a high angle and move in a horizontal figure of eight back across and up the wind. In competitions, marks are awarded for the noise made by the hummer. That of the Wau Kuching is made to give a high-pitched note to resemble a cat. Incidentally, the only European traditional kite to be fitted with a hummer was a square Russian. It has been suggested that this represents Japanese influence on Russia’s eastern border.

The popularity of Wau kite festivals in recent years has led to the kites becoming smaller (about 1 to 1.5m. high) and thus easier to transport. They are not demountable. Seen in England they are invariably flown by Malaysians. Hard to fly anyway, they do not travel well and seem unusually susceptible to warping in UK

conditions, perhaps because they are under tension unlike the heat bent bamboo of most other kites. While I have seen plans for Waus –most recently in Hosking [13]– I have never known anyone make one.

#### **2.4 Other Kites**

There are kites using the elliptical wing but not having any body shape etc. Of the Waus above, one is the Wau Barat (Illustration 16). These have 3–5m. wingspan. Flown for performance, the name means Western Kite — a recognition that the kite originated in Thailand which is referred to as being west of Northern Malaysia (it is actually North West but no matter). I don't know of such a kite currently in Thailand.



Illustration 16 Malaysian Wau Barat (Western Kite)

There are kites without the elliptical wings called Wau, e.g. Wau Ikan or Fish Kite (Illustration 17), also the Wau Ular (Snake Kite) in Section 5 below. Illustration 18 shows a prizewinning kite from a 2010 festival in South Africa. Some of the fliers are ethnically Malaysian and the kite is clearly a direct descendant of the Malaysian fish kite.



Illustration 17: Malaysian Wau Ikan



Illustration 18 [prizewinning kite from South Africa 2009]

Other kites are referred to as *Layang-Layang* (birds) in Malaysia. They vary from quite sophisticated models (Illustration 19 is a kite from Melaka) to versions very similar to Indian Fighters.

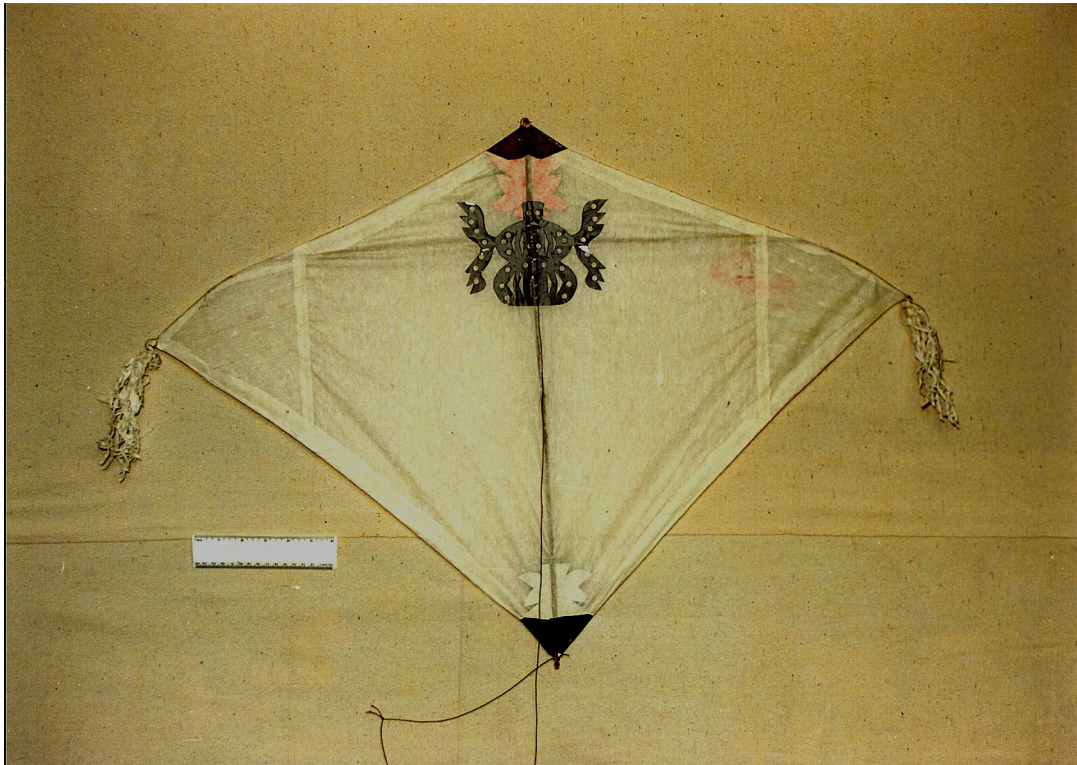


Illustration 19: Malaysian Layang Layang from Melaka

Perhaps the most important Malaysian kite has been the simple Malay (square flown on a corner with a bowed bamboo cross spar) which was the ancestor of our Diamond and Eddy (see Chapters 2 and 3). While it is claimed that the Malay archtop still exists I have never seen one live or in a photo.

The latest flat kite from Malaysia (see Illustration 20) was conceived and developed in western materials and couldn't be more different from traditional waus although it does have a distant relationship with the Malay. Designed by Ceewan, the Langkawi Pointer consists of a long central spar which adopts a curve convex to the wind once braced and two cross spars (a third can be added in the original model for light wind work). Stability comes from the dihedral of the leading edge spar, the curved aerofoil of the sail and the curve of the central spar. There is a single bridle point).



Illustration 20: Langkawi Pointer

## 2.5 Other Kites using a Bamboo Bow

Three types of kite are included here.

### Variations on the Indian Fighter design

The books by Gallot [9], and Boitreller & Petit [7] between them give a good range of kites similar to an Indian Fighter which are fought in Chile, in other Asian countries and Western variations. The Vietnamese children's kite is only known to me from Margaret Greger's writing [14]. Illustration 21 shows a ripstop version. Illustration 22 shows a KisKee Dee which requires a tail and is a West Indian version of an Indian Fighter. Made and sold for many years in the UK as the cheapest kite at a festival and often the most fun to fly. Viv Comma made them to dance and not to fight. I think he is the only kiteflier to have a street named after him (*Kiteflier* no. 78 (January 1999)).



Illustration 21: Vietnam Children's Kite



Illustration 22: KisKee Dee Kite

## Thailand

In Thailand, specifically at the Royal Palace in Bangkok, the Pakpao, which closely resembles a strengthened Indian fighter, is involved in ritual contests with the Chula (named after its inventor). The game and kite were invented for King Rammi II in the 19<sup>th</sup> century. Rarely seen in the UK, the kites have a special interest in the way that the paper surfaces are reinforced by threads –shown as lines on the drawings—which are reinforced by gold paper mounts at each intersection. There is a resemblance to the way Peter Lynn uses lines sewn to the fabric of some of his large kites as a low-weight method of increasing strength. See *Drachen* no. 3 (Fall 1999) and Illustration 23.

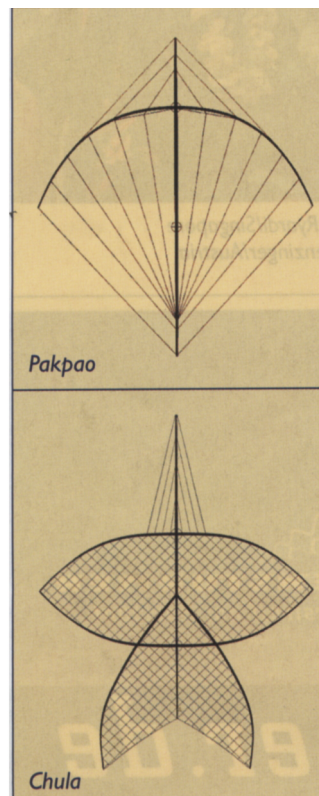


Illustration 23: Pakpao and Chula Kites

## Brazilian Pipas

Until 10 years ago European fliers believed that the Brazilian Fighter Kite was the cloth and wood Papagaio (See Bird Kite chapter) — and that might have been true 20 years ago. From various sources, including contacts at the Dieppe Festival, it is clear that although a kite similar to an Indian fighter can be found, the main fighter is the distinctive Pipas or ‘Top’ kite (Illustration 24).

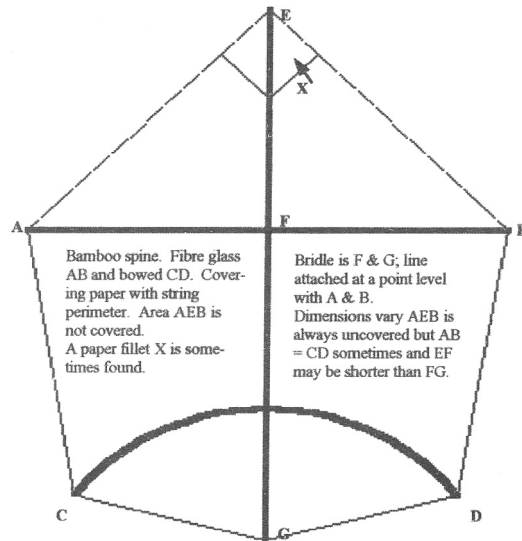


Illustration 24: Brazilian Pipas

According to Gomes [15] the kite is derived from the Japanese Rokkaku.

### Various Designs

Many small kite designs from all over the world use a curved bamboo (or sometimes reed) spar.

### **2.6 Western Single (and sometimes double) spine kites**

As already indicated, other chapters deal with the relationship between Malays, Diamonds, Woglom and Eddy up to the start of the 20<sup>th</sup> century. What of these kites today? Many are still sold for children's toys – often in plastic printed with exciting images or advertising logos. They all use tails to sort out imperfections. The Brookite Company was set up in 1906, always producing a superior product and from the start made the famous Cutter Kite (see Illustration 25) – a fabric covered diamond with a keel.

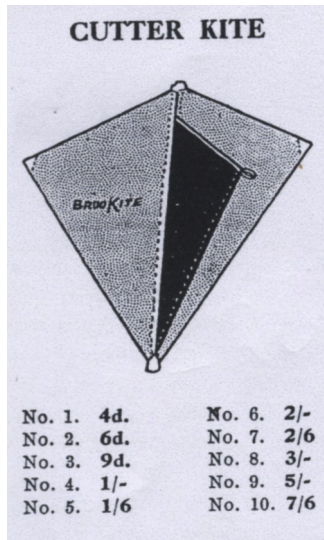


Illustration 25: Cutter Kite

The first keeled kite was by E. Boynton in 1893, followed by the Clayton Keel Kite of 1896. Apart from the Cutter, keels seemed little used by kite designers until the invention of the Delta.

From the end of the 19<sup>th</sup> century right through to the 1930's books gave drawings for fanciful flat designs, sometimes asymmetrical and all relying on tails for stability. Some books required boys (always boys) to be sawing planks for spars and wetting and bending spars to moulds formed by nails in a door. The woodworking skills were way above anything I could have managed. Illustration 25 is a more sophisticated design from Lecornu.



Illustration 26: French Design (from Lecornu)

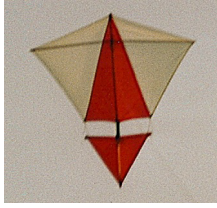


Illustration 27: Split Malay

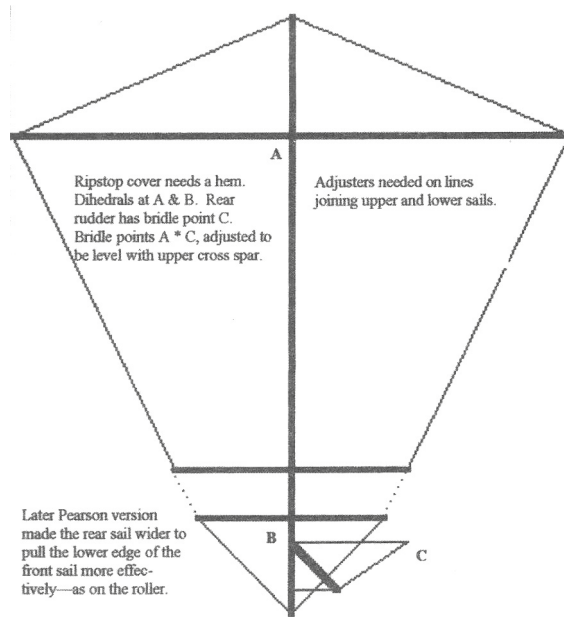


Illustration 28: Split Malay Diagram

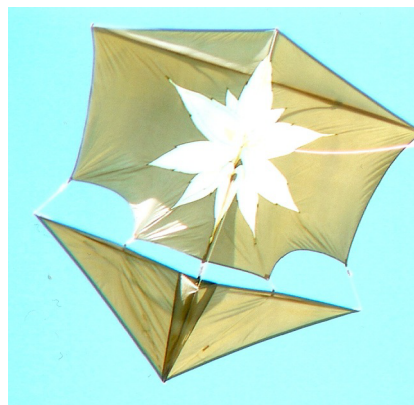


Illustration 29: Split Malay with Tunnel Rear Keel by Ernest Barton

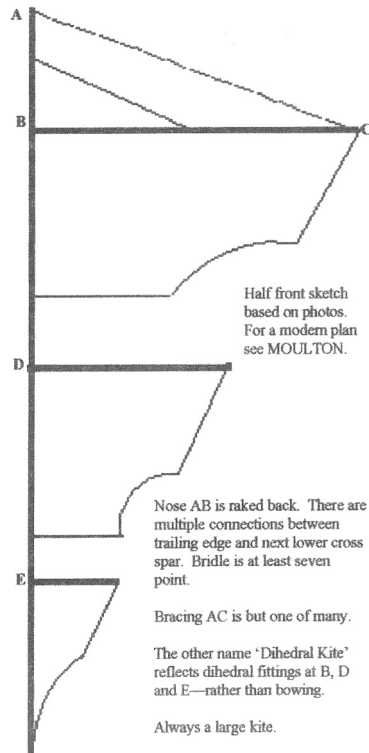


Illustration 30: Brogden Kite or Burma



Illustration 31: Brogden (modern version by Karl Longbottom)

Amongst serious kite designers development started quickly after the Eddy became known in the 1890's. Taking on board that here was a tail-less kite designers realised that increased stability could be gained by building in dihedral to the cross spar and that more lift would be got by subdividing the sail horizontally. Possibly the first development was the split Malay (Illustrations 27, 28 and 29, the latter being an Ernest Barton design with a tunnel rear keel). In 1903 a prestigious height competition in Sussex was won by Charles Brogden's Burma Kite (Illustrations 30 and 31). There is a good picture in Pelham [11] but Moulton [17] also has a plan. He points out the names Burma and Malay hint at the former's ancestry.

The Burma was a large kite (6m. long), sometimes called the Dihedral Kite because of the built in angle of the wings (rather than using bracing lines) and had a swept back or 'turned up' nose section. Although undoubtedly a great light wind flier, its complexity means that Brogdens are rarely seen today. But a descendant is.

Richard Stieff of the German toy company Margareta Steiff (better known in the UK for teddy bears with a button) designed the 'Roloplan' in time for the 1909 Christmas market. He simplified the Burma by having three or two lines of sails, each tier of the same span, connected by eight links between trailing edge to lower spar. I believe standard production finished in the 1960's although very large home built versions were produced by East German fliers after that (Illustration 32) . I have a ripstop version which needs a fair blow but then flies well – however sorting out the seven point bridle and the bracing lines is a nightmare. Part of the construction problem is that Roloplans get close to jibbed kites in the way that they behave with airflow between the wings. A recent book by Diem [18] shows the

variations on the theme of a single spine by Stieff, some of which are now starting to be seen in the sky (Illustration 33).



Illustration 32: modern German Roloplan



Illustration 33: Stieff kite made by Karl Longbottom

One of the most famous British kites of the 20<sup>th</sup> century is the Pearson Roller. Several kitefliers made copies of the Roloplan in the inter-war period; one of them John Shaw flew at the Round Pond in Kensington where he met Alick Pearson. Pearson took the design forward and by the early 1970s had developed his simplified version which he produced for sale. The ‘Round Pond Group’ (see article by Dan Leigh in *Kites* no 2 April 1996, and also *Kiteflier* no. 108 (July 2006)) were also well known for their bird kites and their split Malays. The cramped and wet site meant that kites had to be reliable at flying from hand to a high angle.

The Pearson Roller had a two piece bridle with only a rear rudder and one connector between the two sails on each side. Eden [19] has a plan. The roller shown in Pelham is not the Pearson design which is square overall and has a lower cross spar. He made them 120cm. square to economise on the use of materials — he claimed to be the first to use ripstop nylon. Illustrations 34-36 show a range of rollers. The vented roller (Illustration 34) can be a problem as the rear edge of the vent may luff (flap) — avoiding this may lead to the kite being bridled so square to the wind that you are flying a rok with a hole and a useless fin.



Illustration 34: Roller

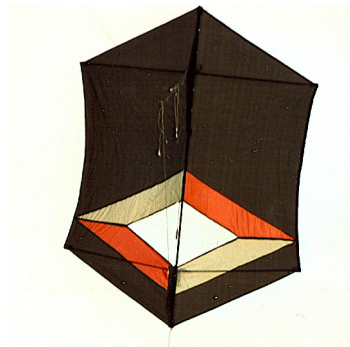


Illustration 34: Vented Roller



Illustration 36: Colorado Roller

Rollers were popularised by appearing in Pelham and by the availability of Pearsons, followed by Jilly Pelham versions in the late 1970s and early 1980s.

They then gradually fell out of favour, partly, I suspect, because of the domination of the easy to make delta as the favourite light wind kite and partly because of the development of the Genki (see below). Ten years ago they were a rare sight at a UK kite festival but they have made a come back.

Kite designers and toy manufacturers continue to provide variations on the Eddy and Diamond.

One unusual variation on the roller is the double spined Kohler or double roller (Illustrations 37a), I have only seen a photo but it does look good. A recent version of the double roller is the Dopero (DOUBLE PEARSON ROLLER) (Illustration 37b). I know that we are basically looking at single spine kites but there are so few exceptions: really only two: the roller and the flare and its variants.

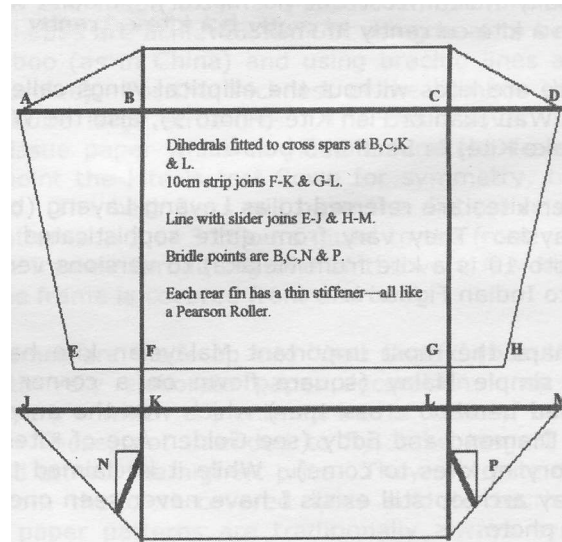


Illustration 37a: Kholer or Double Roller Diagram

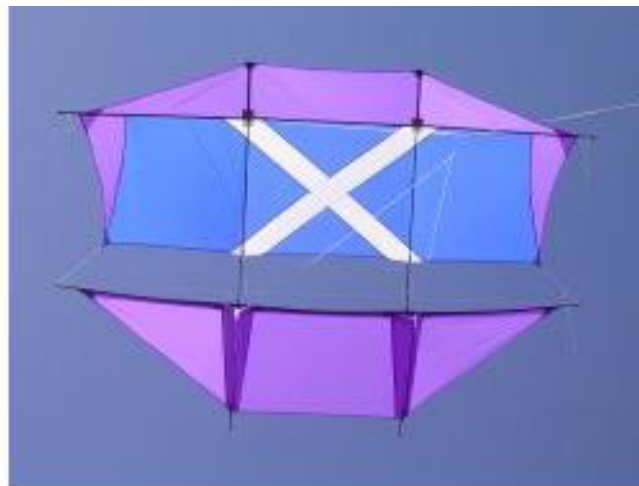


Illustration 37b: the Dopero

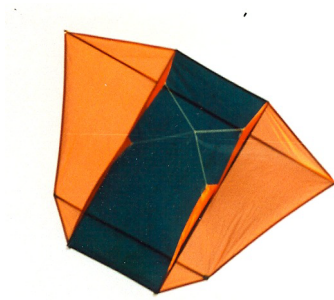


Illustration 38: Flare

Our other double spine kite is the Flare (Illustration 38). Designed by Pelham it features in the book as does the even rarer multi-flare. In Chapter 8 on sled kites I jokingly suggest that the flare might have been derived from a winged sled with an oversize cross spar. Equally it could have been a double roller with oversize fins and no slot in the cover. Flares are rarely seen now, being replaced by the higher performing Genki (Illustrations 39 and 40), although some aerial photographers still use them.

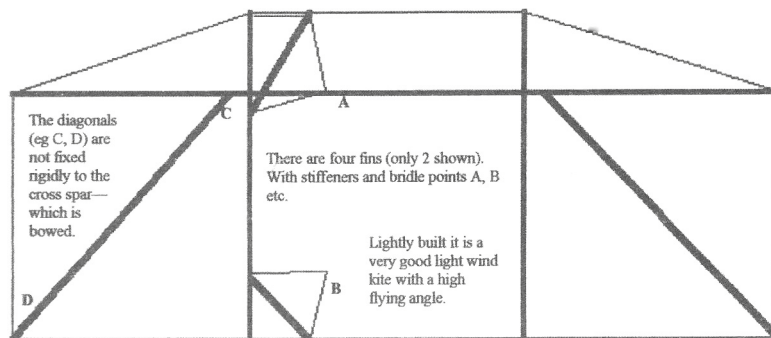


Illustration 39 Genki Diagram



Illustration 40: Genki

Genkis are a Dutch development by Nop Velthuisen in about 1983. They are essentially flares with a higher aspect ratio made possible by a diagonal spar to the

bottom corner of each wing. There was a single spine version (not seen) which basically would have the effect of a no-slot roller — and Genkis do use roller type small fins. Since Genki is meaningless in English they were called extended wing flares at one time and were christened in the newsletter of the Northern Flying Group as the ‘Windbreak kite’. Very useful in a westerly wind on a Lancashire beach. I’ve reproduced the page from their magazine of November 1987. Notice this version has three spines. The kite was sometimes called ‘The Spy in the Sky’. Hosking [13] has one.

*ex Kite Nov 87* Windbreak Kite

This kite was seen and photographed at Dunkirk by Ron Odgen who belived it was flown by a Belgium kite flyer, I scaled the photo up and made one for myself.

Flying Characteristics

As the wind rises the wings fold back increasing the lenght to width ratio and improving the stability. As the wind drops the kite unfolds more leading edge to get more lift from a lighter wind. The energy in gusty wind are stored in the fold back action and used for lift by the kite. If the kite breaks away it does not maintain a flying attitude and falls almost vertically nose first to e arth this could be stopped by No 1 A drogue

No 2 Make the double keels to the leading edge with top edge open to stop any tende ncies to stall I have not used this yet so I dont know if it would work.

Conclusion

This de sign could make a large kite that is easy to make and will fly in light to strong winds at a high e levation easy to erect and dissmantle and takes up only a small amount of space.

- Nos 2 Fiberglass Rod -----4' 6" lg x  $\frac{1}{4}$ "
- Nos 2 Dowell -----4' 6" lg x  $\frac{5}{16}$ "
- Nos 3 Dowell -----3' 8" lg x  $\frac{3}{8}$ "
- Nos 1 Alluminium tube -----4' 0" lg x  $\frac{1}{4}$ " i.d.

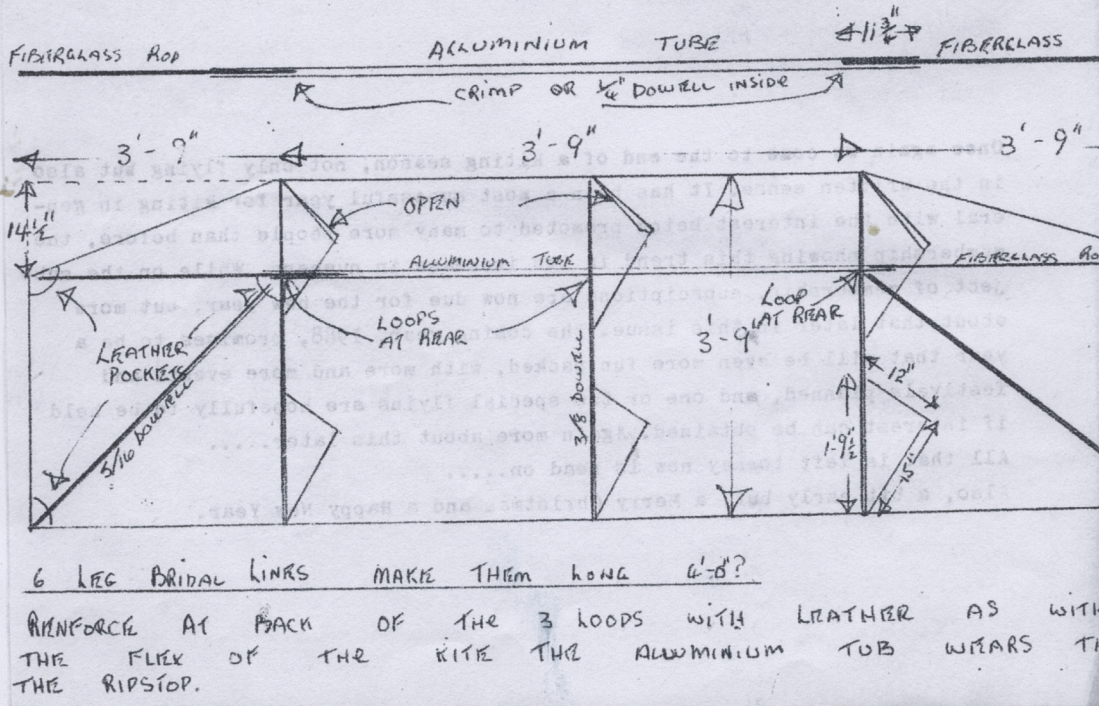


Illustration 41: Windbreak Kite



Illustration 42: Wolf Genki Kite by Phil Scarfe

Carl Crowell's 1994 Wolf Genki could, at one time, be found on the internet (Illustration 42). If you replace the fins and the centre section by a 2-cell Conyne triangular section you apparently have a kite called a Tiski-Tiski. Recently I have seen a new Dutch Genki variation about 4 metres wide with no fins but relying on curved carbon fibre and clever bridling to provide dihedral (Illustration 43).



Illustration 43: Finless Genki

A Genki with a Conyne-based centre section is called the Cranki (see Illustration 44).

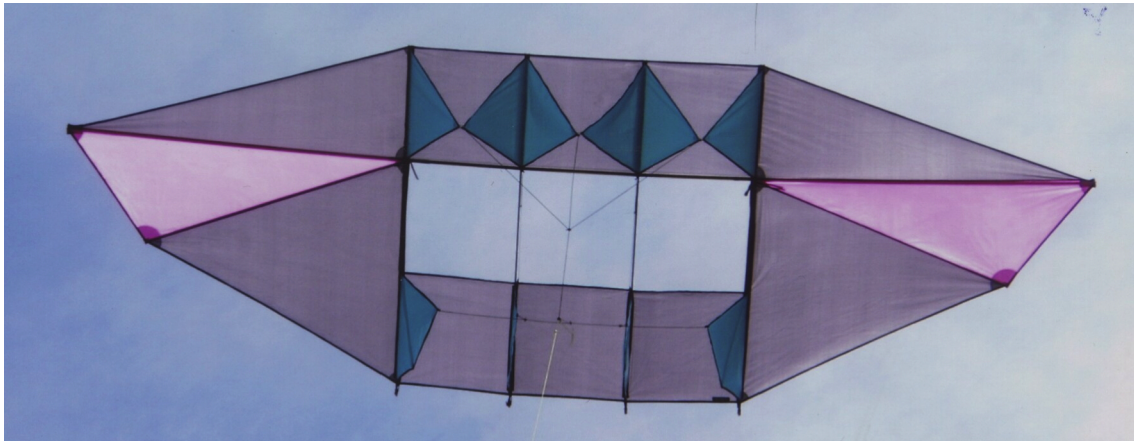


Illustration 44: Cranki kite

That is all I want to say in this chapter about Western single-spine kites. Any experienced kiteflier will immediately recall interesting kites which have been omitted. I hope that they are not too important –except the Marconi?– and in Chapter 2 there is a section on kite artists which includes the show kites of George Peters, Steve Brockett, Pierre Fabre, etc. It is impossible to cover here the innovative one-off kites designed in the USA and Europe in recent years. Some are shown in the kite artist section of Chapter 2.

But here and now enjoy Pierre Fabre’s wonderful fish.



Illustration 45 Fabre Fish

### 3 Kites with Crossing Spars

In this section of flat kites we consider kites where the defining character of their shape is given by the crossing of spars rather than a central spine. In some ways this is fundamentally a more difficult category of kite to be stable in flight as a well balanced single spine will produce dihedral from each wing which reduces the need for a tail. Most kites in this section need a tail — the Korean and some Japanese designs excepted.

The very simplest kite of this type, i.e. two crossed spars, is known as the della Porta and appears in Chapter 2. At the opposite extreme are to be found kites which while having a central spar also have a complex arrangement of further spars. I've chosen just one, a Baramon-Dako from Nagasaki (Japan) for three reasons. Firstly it is a dramatic design. Secondly if you're European I'm sure you won't know what it represents. Thirdly, the kite in the photo, owned by Malcolm Goodman, is not a Japanese original but a superb reworked version in applique ripstop and carbon fibre by Bas Vreisiwijk. Oh yes — it shows a fighting helmet from the back view of a general's head.



Illustration 46: Baromon-Dako

This section is broken down into:

- 3.1 The American Barn Door and Three-Stick Kites
- 3.2 Hexagons and similar
- 3.3 The Bermuda Head Stick
- 3.4 Circular Kites
- 3.5 Korean Fighters and a Japanese Fish

### 3.1 The American Barn Door and Three Stick Kites

The American Barn Door (Illustrations 47 and 48) is frequently referred to in books as the traditional kite of America. I have never seen an account of how this happened and it is interesting given that to the end of the 19<sup>th</sup> century the USA population was dominated by European immigrants who had a tradition of Arch Tops and Malay types. Where did the Barn Doors come from? The farm barn referred to in the name of the design was German (or Dutch).

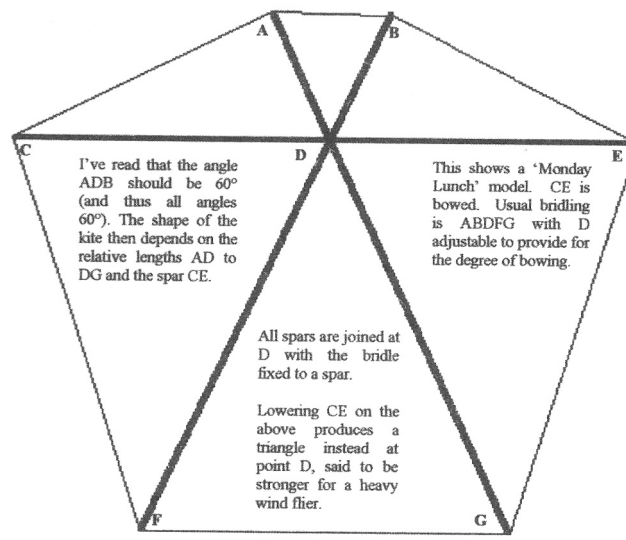


Illustration 47: Barn Door



Illustration 48: Barn Door

They were used from 1885 by Alexander McAdie for lifting equipment at the Blue Hill Observatory. However, they were unstable and difficult and were replaced by the tailless Eddy in 1894. I have a note (but cannot find the reference) that Woglom refers to Arch Tops as the traditional kites of his youth (1870 East Coast USA?). Was the Blue Hill application so well known that it eliminated the Archtop?

Originally, up to say 60 years ago, these kites would have had a paper cover with the edges attached to a cotton framing line which slotted into, or was tied, to each spar on the perimeter. Such kites were not demountable. Nowadays spars are fitted into pockets on the ripstop cover and all are tied with a bridle at the centre point.

The kite is easy to make, open to a wide range of decorative styles but, in my experience, requires a considerable tail. I have read that a good design properly bowed and bridled can be flown tail-less — you try!

Types of tail can be varied, with two tails used, tassels attached to the side and even the spars at A & B on the diagram, extended beyond the cover to have a hummer, paper streamers, etc. Jalbert (Hosking [13]) had a Barn Door with a fin down the centre of the face. This does not follow a spar but does have a tail attached to the rearmost point.

All in all this type of three stick looks good and can be flown in a wide range of winds depending on bow, tail and spar strength. Illustration 49 shows two of a wide range of alternative three stick arrangements.

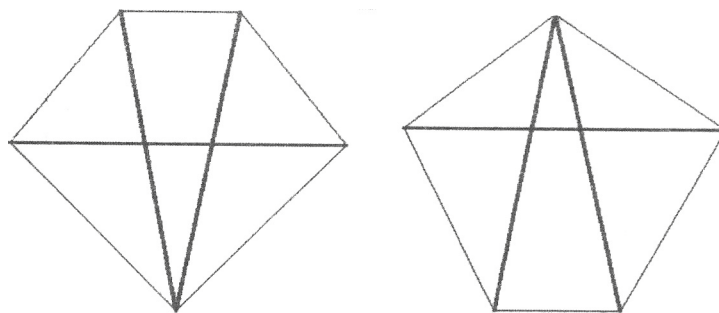
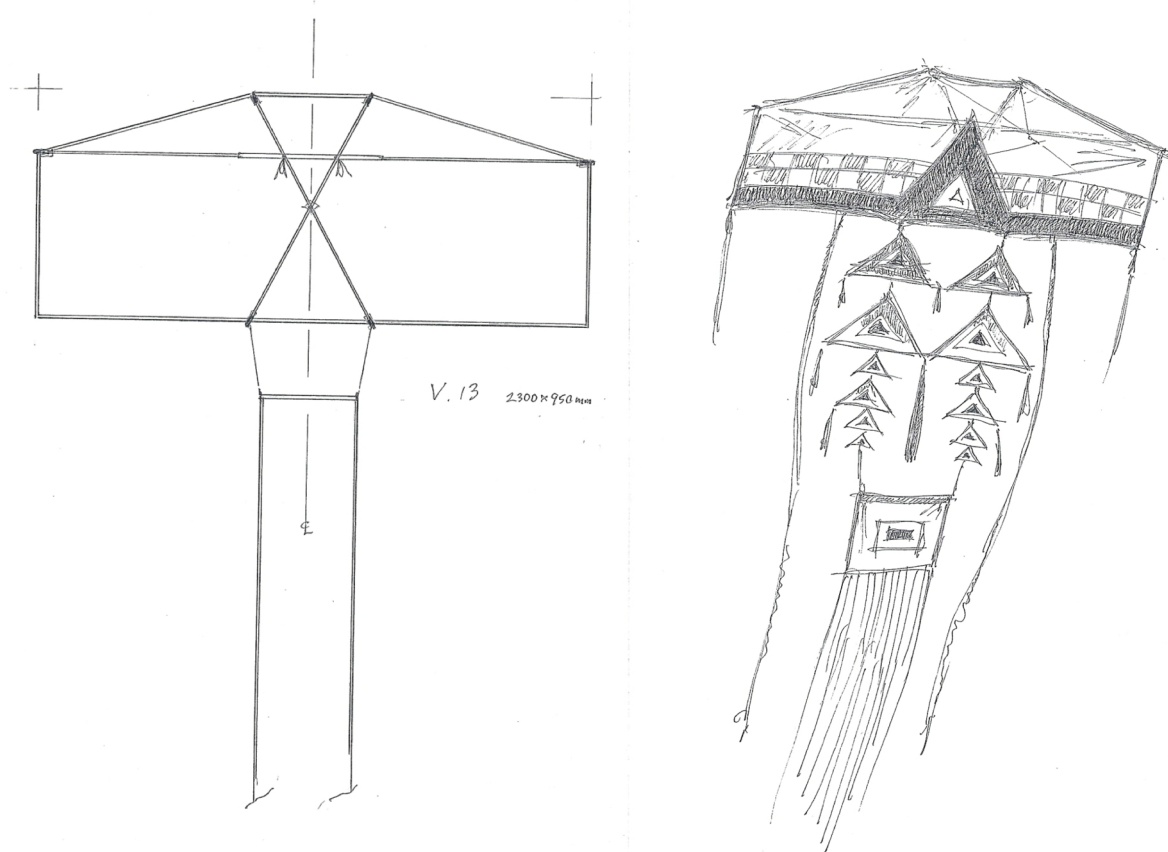


Illustration 49: Other 3-stick Designs

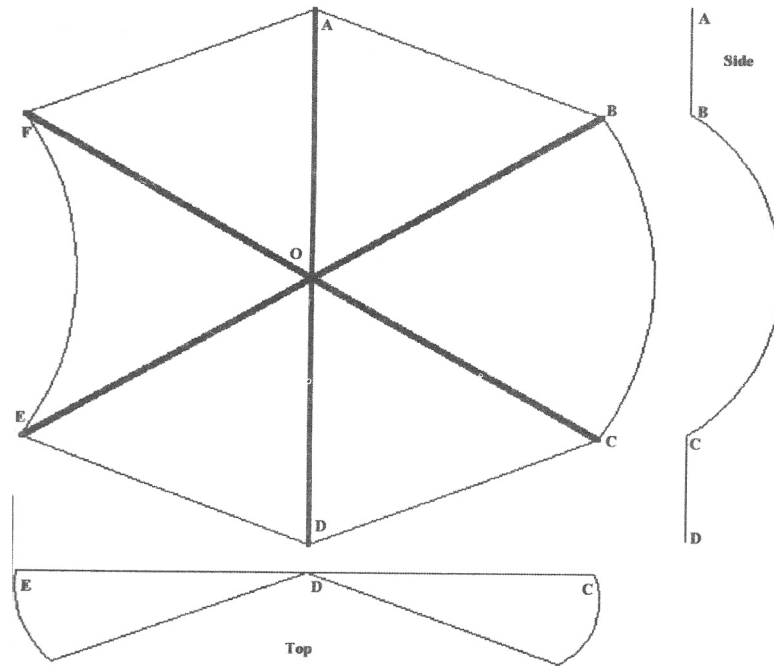
French fliers have developed several three-stick designs with the bottom corners allowed to flap. Here is a scaled plan by Ernest Barton and a sketch.



Illustrations 50 and 51: a 3-stick kite by Georges Rivals

### 3.2 Hexagons and Similar

While you could consider the Hexagonal (Illustration 52) a special case of a three-stick kite (three sticks all the same length,  $60^\circ$  everywhere) the kite has a different history and distribution.



This could be a 60° hexagonal kite flown edge first (AB) and with a tail suspended from ED. Tight cover, all edges hemmed. 3 point bridle ABO. FC bowed. THIEBAULT shows a kite where the sections BOC and EOF are slack to allow a Sode effect. Bridling two point at A & O or 3 point at AOD.

Illustration 52: Hexagon



Illustration 53: Chinese Octagon

The Hexagon was a classic Chinese shape. Illustration 53 is of a Chinese Octagon which is very similar. The interest in this particular example is that the phoenix on the face of the kite is three dimensional and the kite is aerodynamically not symmetrical – a long tail cures all.

I am told that the Hexagon is the traditional Greek kite, sometimes made with a fringe on all sides. It is the child's kite of Jordan (Illustration 54) and is well known in Egypt. Illustration 55 shows one flying over Istanbul — the bird is real. A variation in Thiebault [20] is to fly it point upwards and arrange a Sode effect on each side. (Illustration 52). But does it fly?



Illustration 54: Child's Kite from Jordan

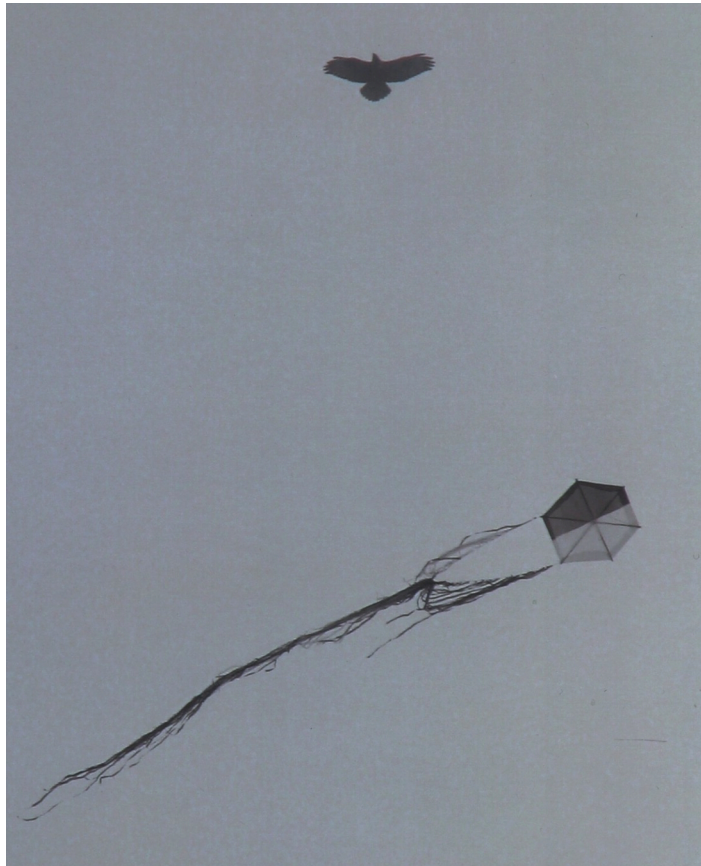


Illustration 55: Hexagon Flying over Istanbul. The bird is not a kite.

The Cuban fighter (Illustration 56) is rarely seen. Less than 30cm. in length it is one of the few fighters where a tail is essential.

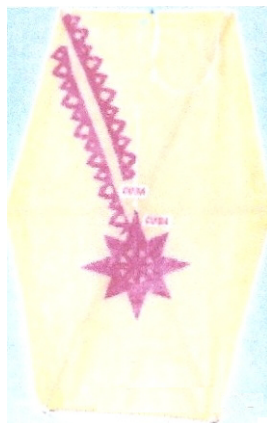


Illustration 56: Cuban Fighter

### 3.3 The Bermuda Head Stick Kite

The basic Bermuda three stick kite is shown in Illustration 57. As such it could be seen as an upside down barn door verging on the hexagonal. Or not, as the case may be.

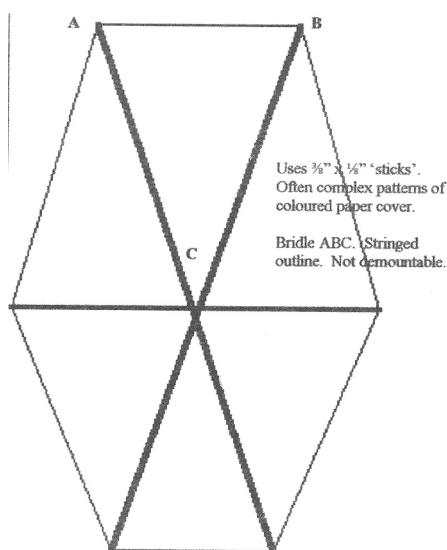


Illustration 57: Bermudan 3-stick Kite

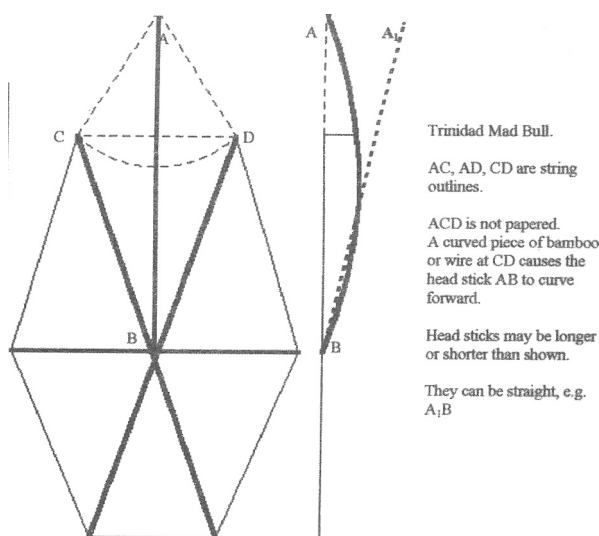


Illustration 58: Bermudan Head Stick Kite

The design becomes truly remarkable when a head stick is added (Illustration 58). This projects forwards from the plane of the kite face and may be of varying lengths, straight or curved back. It provides the basis for a wide range of streamers, tassels and buzzers. Sometimes two head sticks are fitted to provide more scope. Colour is provided by the use of complicated patterns of tissue paper. Kites such as these are found spread through the West Indies. Construction may involve wood or

reed rather than bamboo. They can be quite heavy looking frames but the winds are strong.

Bermuda Head Stick kites featured much more in kite literature 20+ years ago. There was a small specialist book by Frank Watlington [21] memorable for its advice to add some cayenne pepper to the flour paste glue to keep the cockroaches away. Back in 1972 Bermuda held a kite flying endurance festival won by a local with a time of 49 hours 40 minutes. Caribbean kites are featured in *Drachen* no. 11 (Spring 2003).

Bermuda and Trinidad also make ‘true’ hexagon kites which have extensions for tassels and have unpapered panels to cope with the high winds.

Bermudan kites are included in Boitrelle & Petit [7] as fighter kites using razor fittings on their tails. Moulton [17] has a Bermudan plan with the full Watlington gluing sequences. They have also been included in Hosking [13] — who has the Bermudan and the Mad Bull of Trinidad.

In Barbados today they make a Round Kite which is actually a regular octagon with a short ‘bone’ (or spar) which projects forward (see Illustration 59). The information comes from an article, source unknown, by G. Addington Forde “Bones and Bulls”, 1986 (thank you Harry Douglas of Poole). ‘Bulls’ are the paper buzzers fitted behind the ‘node bridge’ or ‘bull head’. The bones are 50cm. long, 1.5cm. wide and 1 cm. thick. Or were; the kites seemed to be in decline in 1986.

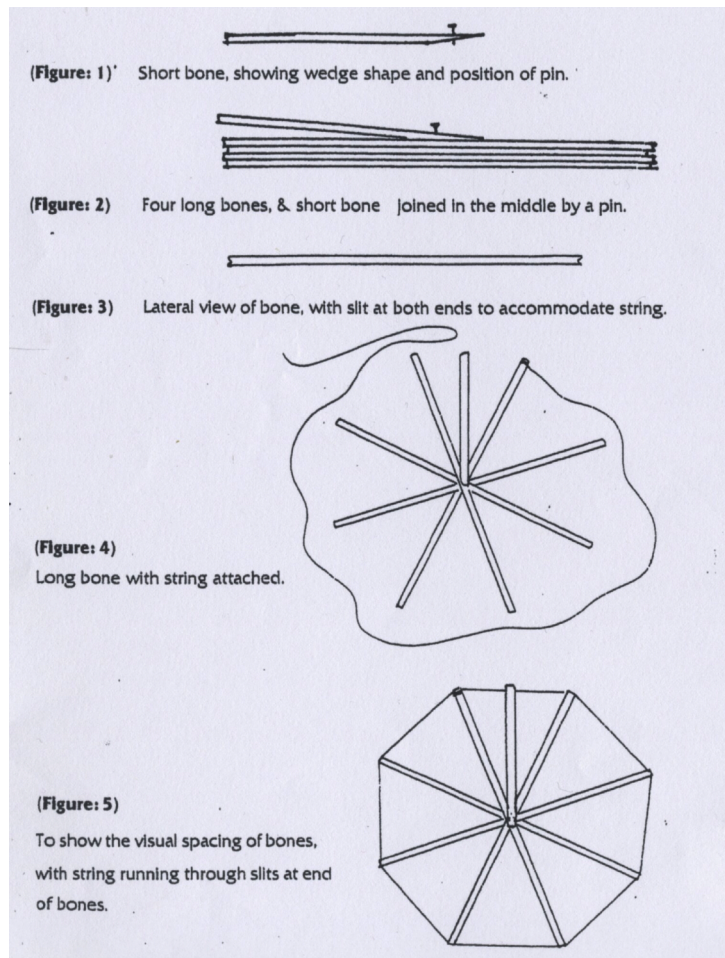


Illustration 59: Bones and Bulls

I have never seen a ripstop version of a kite with a headstick; even the originals are rarely seen but they make a remarkable kite. The unanswered question is why did the three stick and hexagon become common in the West Indies? My only response is that they can cope well with heavy winds. But head sticks are not the only heavy wind kite and yet they are confined to that area. perhaps they are simply the Caribbean development of the North American Barn Door?

### 3.4 Circular Kites

To my knowledge there are very few circular kites made — I have never seen anything of the Hawaiian Circle and Chinese Orange designs in Pelham [11]. The well known Japanese Wan Wan (see Section 4.4 below) is an oval designed to look round when bowed in flight. The circular cell components of a Chinese dragon kite will be considered in a later article.

But there is one important exception and that is the massive Barrolettas of Santiago de Secatepaquez in Guatemala. These kites are made up of two fine layers of tissue paper one coloured and the other plain. The kites are supported by a cartwheel like frame made up of 5 cm. diameter bamboo poles. Tiny pieces of tissue paper are carefully glued until the desired effect is achieved. An article by M P

Tourigny (*Kitelines* vol. 10 no. 1 (Spring 1993)) describes the current giant kites as going back no further than 1945-50; prior to that the kites were much smaller and simpler. But see Drachen *Discourse* 2008 and *Drachen* no. 9 (Spring 2002) for another view. Building is done by Indians and the design does involve Indian, Mayan and Spanish culture. The close up of the La Cultura Maya kite (Illustration 60) portrays a history of Spanish oppression and although there is some evidence that the scale of the festival was promoted externally, undoubtedly the craftsmanship and the religious/social tradition is strongly held: for example the kites are never sold.



Illustration 60: La Cultura Maya Kite

When I was at Dieppe 2000 an attempt was made to launch the big kite (about 9 metres high) by a mixed group of international kitefliers. The rope was massive, the tail a long length of rope with offcuts of cloth attached. No luck.

A kite which is circular but not really flat and with a simple two-spar cross is Arno Heft's Kite Basket (see *Kiteflier* no. 96 (July 2003) and Illustration 61). A real oddity and definitely not Heft's best kite. Some were to be seen a few years ago.

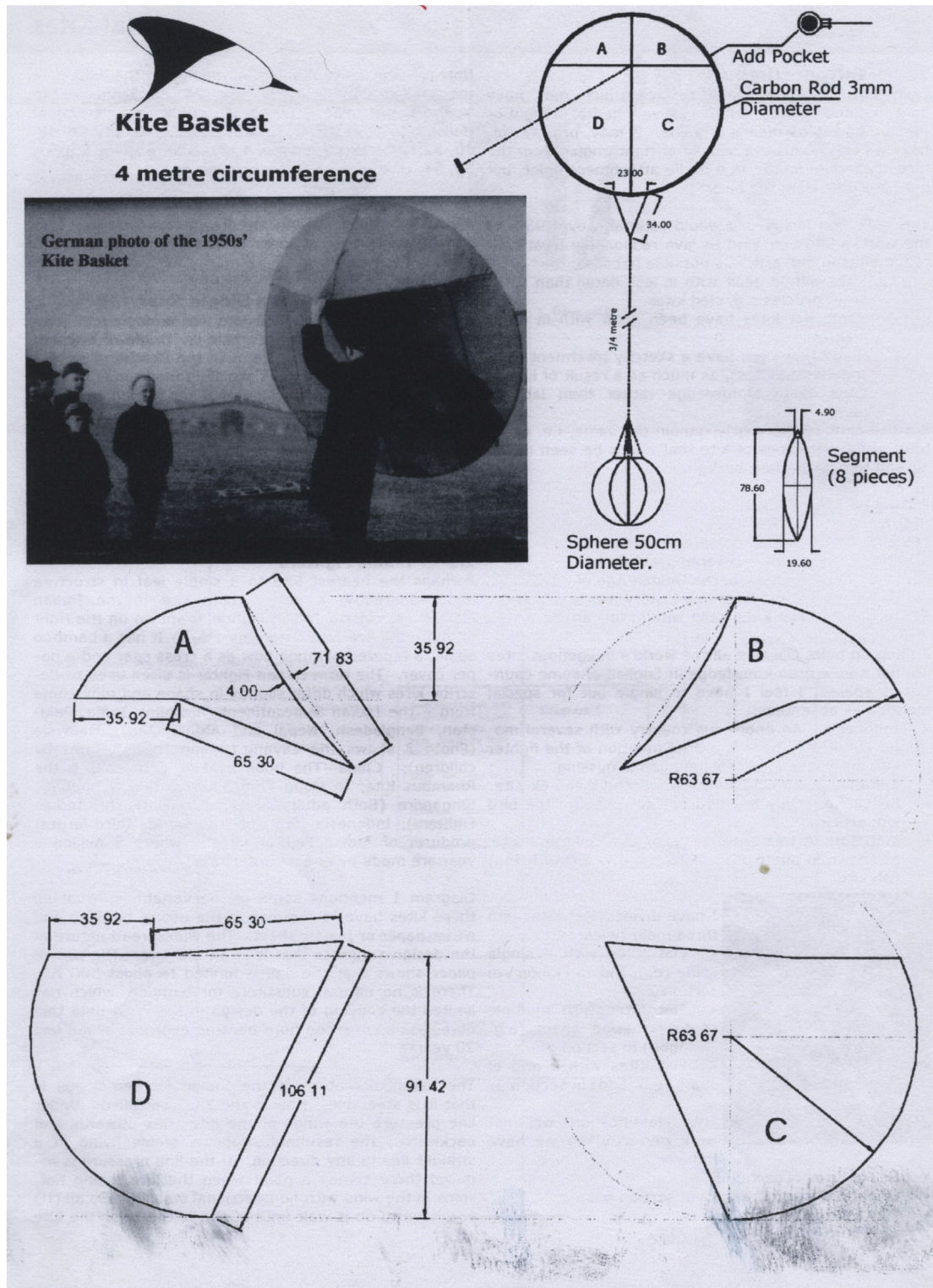


Illustration 61: Kite Basket

### 3.5 Korean Fighter Kites and three Japanese Designs

Korean fighters (Illustrations 62 and 63) have a separate section because of:

- a) The distinctive basic structure with four spars crossing the centre and a leading edge spar.

- b) The unusual use of a circular hole in the middle of the cover.

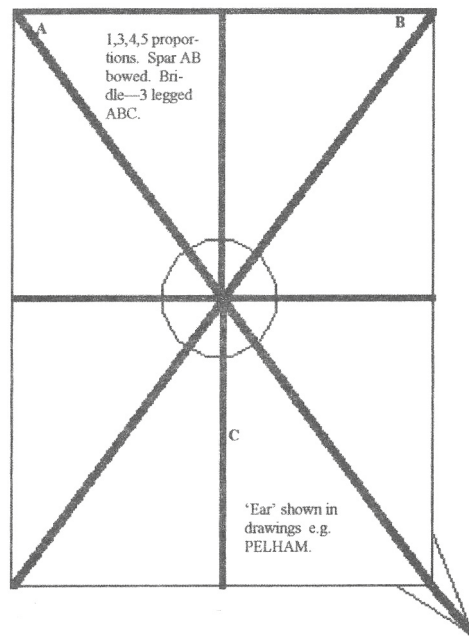


Illustration 62: Korean Fighter Diagram

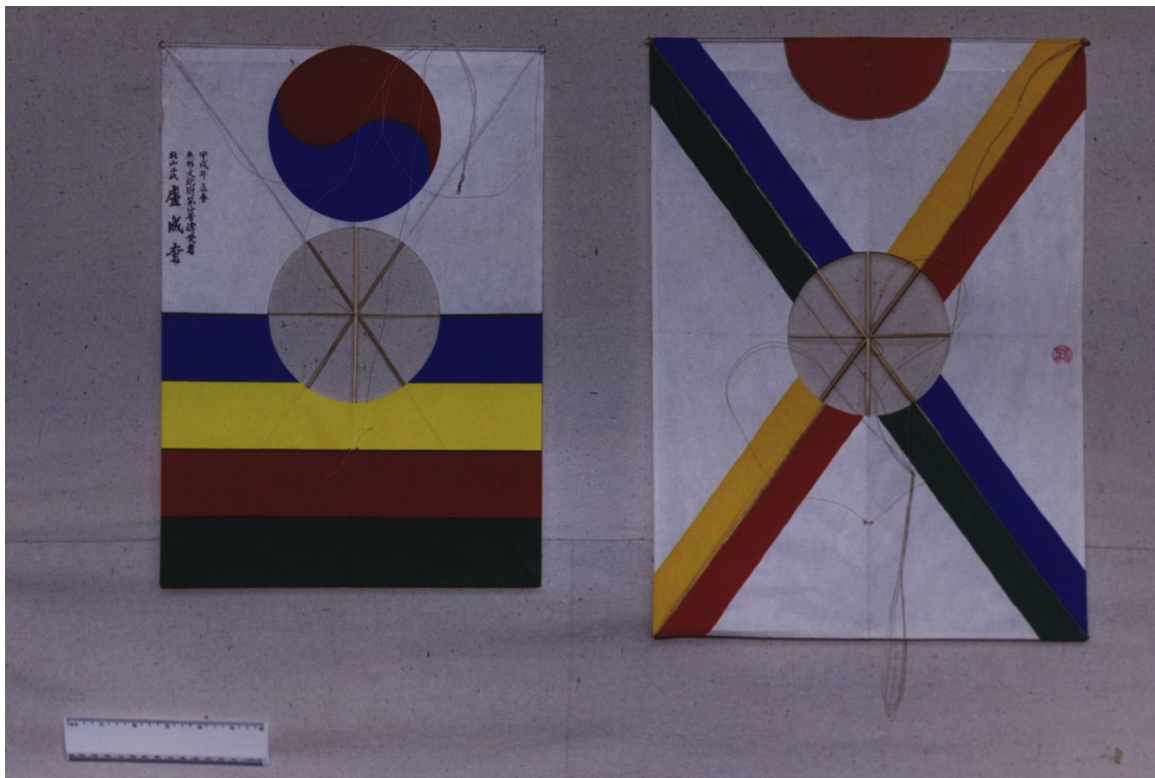


Illustration 63: Two Korean Fighter Kites

They are not the only kites flown in Korea but they are the kites flown by serious kitefighters. Abrasive lines are used as with Indian Fighters but the fights seem to be more tightly controlled.

The kites are paper and bamboo flown with the top spar bowed. The overall height is 50 to 70cm. and it is claimed that the classic proportions are: 1 unit diameter centre hole; 3 units width; 4 units length and therefore 5 units diagonal.

The first Koreans shown in the kite books (e.g. Pelham) had paper ears at the bottom corners (as shown in Illustration 62) but I have not seen them for real. Light wind variants have no mid cross spar. A smaller hole (e.g. 1/5 not 1/3) makes for a faster, less stable kite.

Crumplin [8] has a good section on Koreans. Tony Slater used to make shiny, slick Mylar Koreans. I once made a 1m. ripstop and timber version — fearsome and turned like a slug on a lettuce. But if you come across one they are great fun.

Another kite with a hole in the skin and very similar frame is the Japanese Fugu — the name of the fish which the kite depicts in a head-on view. Illustration 64 shows a ripstop version. Note the heavy bowing, the tassels and the tails. The Japanese original has a curved top horizontal spar.

There is a kite, the Nambu, which has the same frame design but does not have the central hole. It does have a buzzer on the top edge bracing strings. Instructions to make one can be found in Hosking [13]. The Saruga has a similar frame design, but a unique outline (see Illustration 65).



Illustration 64: Japanese Fuga Kite



Illustration 65: Suruga Kite

Finally we have the Tahara kite (Illustration 66) which is a high aspect ratio, lightweight version of a Nambu. I have only seen one or two, it would seem that they can be used in fighting and are excellent light wind kites.

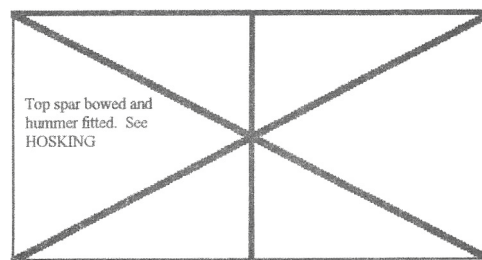


Illustration 66: Tahara Kite Diagram

## 4 Multi-Spine Kites

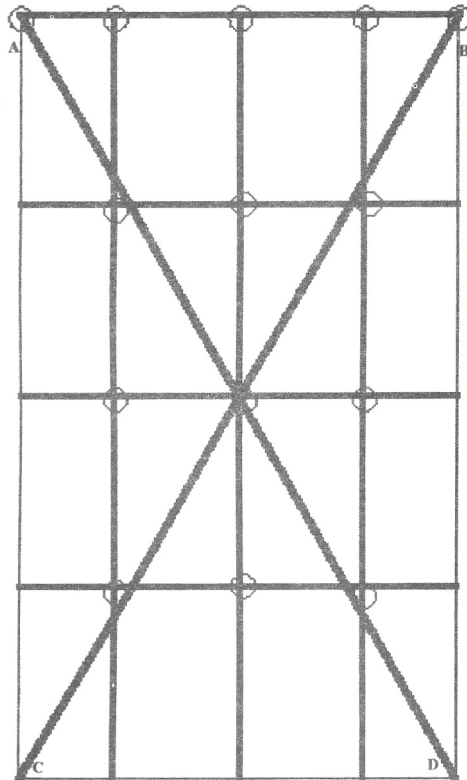
The essential feature of a multi-spine kite is that the cover is supported by a grid of vertical and horizontal spars. The great majority of such designs are Japanese — thus the originals used bamboo and Washi papers. Western versions are common due to the attraction of an uninterrupted flat surface to decorate and the dramatic effect of the multiple bridles.

We will consider the Edo and Shirone Odako and briefly mention Wan Wan, Hammamatsu, Chinese Designs and Western Designs.

### 4.1 Edo Kites

Many sources feature Edos, the comprehensive Hosking [5] is the single best source, but perhaps the easiest ‘way in’ to understanding their construction is via the very clear section in Dan Kurahashi [22].

Illustration 67 has a basic Edo with nine spars and fourteen bridles — each bridle will be twenty times the height of the kite. Illustration 68 and 69 show two Edos, the second by Teizou Hashimoto, the last of the Master Edo Kite Makers who died in 1993.



The kite has 9 spars and 14 bridle points.

Edo kites are made to fly in strong winds. Cross spars bowed.

Shirone Kite. Generally lightly made. No diagonal spars. Might have a spar at CD. No bridles at A and B.

Illustration 67: Japanese Edo Diagram



Illustration 68: Hasimoto Edo Kite



Illustration 69: Crane and Wave Edo Kite

Edos are built to take strong winds and always have the diagonal spars. Both the number of spars and the bridle points may vary but bridle points run to the tips of the top cross spar (A & B in Illustration 67).

Edos range from about 2 metres up in height. Often seen in the UK is a small (0.75 metre) childrens' version with a fabric (not washi) cover. All Edos are flown bowed. Many Edos have a hummer bow across the top.

Edo was the old name for Tokyo and had a craze for kites in the mid-18<sup>th</sup> century. The kite type was spread through Japan by merchants and also by regional rulers who were required to spend 3 years in Edo followed by 3 years in their home region. In general at this time ordinary citizens were not allowed to travel — as a result very localised cultural forms developed (e.g. styles of kite) with an overlay of influence from Edo.

The distinctive multiple bridles are usually explained as being required to spread the loading over the cover while still using a relatively light and flexible frame. Probably construction was also influenced by the size of the washi paper sheets (60 cm. by 45 cm. is typical). Kurahashi [22] writes that on some Edos many of the bridles are required only for decoration and for their stabilising function as a 'tail'. These kites are never flown with a conventional tail. A large Japanese Edo with a bold traditional painted pattern and many bridles with the hummer working is one of the most dramatically complete sights on a flying field. These kites require specialist painters and the larger sizes are beyond the resources of a single flier to construct and fly. This is one of the unique features of Japanese kites — consult Streeter [10] and Hosking [5] for more detail.

In the 1980's a group associated with Vlieger Op –the Dutch kite store– developed a method of painting on ripstop nylon and used this to develop the Hague Art Gallery; Edo kites each individually painted by an artist and flown as a 'gallery on the sky'. In 1994 Sunderland City Council sponsored the making of 22 such kites, the work of British artists but with Dutch made frames. The kites are 'Edo style' each 2.4m. x 1.4m. with a fibre glass and carbon frame (three vertical & five horizontal). They are flown off their bridles of which there are seventeen (five then four rows of three) each 30m. long and gathered into an upper and lower group. Using two hands the flier can adjust the angle of the kite and thus its attitude. Since 1998 these kites are flown and maintained by the North East Kite Fliers; a group of, say, twelve in the sky confirms the name Sky Gallery.

#### 4.2 Shirone Odako

This is very similar to the Edo (Illustration 70) but it doesn't have diagonals and is generally of lighter build. The top bridles do not include the corners as on the Edo. Vertical spars sometimes frame the design. A large Shirone with 7 spines and 8 cross spars could have 56 bridles — needed because of the light construction.



Illustration 70: Shirone Odako Kite

In 1982 a stuntman weighing 78kg. was attached to the cover and lifted by a 12m. x 8m. Shirone Odako. This is the only example of a man-carrying kite known to me. However, the fliers reported that it was a difficult stunt and involved subsidiary flying lines attached to corners of the kite. Odako simply means 'giant kite' and the kites used in the annual kite festival are approximately 7m. x 5m. The kites are fought one-to-one over a river with one team on each bank; when entangled they usually end up in the water. This destroys the cover, but the main event is the ensuing tug of war which continues until a flying line breaks. Apparently 14 teams use about 300 kites over 5 days. Spars are salvaged for reuse. There was an attempt to fly an Odako at Dieppe in 1998. Two things stick in my memory. Firstly the way an asymmetrical design was achieved by holes in the cover.

Secondly, there was some damage caused by the kite tipping over on the first launch. There was a rapid response by Dutch kitefliers who remove their boots and swarmed over the kite repairing it with gaffer tape.

A similar kite, but from Yokaichi, was bought to London in 1981 but didn't fly. Raised at Parliament Hill Fields, it was rolled up and found its way to the museum at Wroughton. There it provided living accommodation for mice.

There is an excellent photo of a Hoijubana or Hoshubana Odako with 200 bridles in Pelham[11] p.98.

#### 4.3 Wan Wan

I have never seen a live giant Wan Wan, an elliptical kite which looks circular in the air when bowed. Illustration 71 shows a small one. The kite is interesting because in 1914 a kite 20 metres in diameter and with 146m. rope tail was claimed to be the largest in the world. There is at least one photo of a very large kite indeed — which took 150 men to fly, but there is dispute about whether a kite of that dimension would fly given the claimed weight of 2500kg.

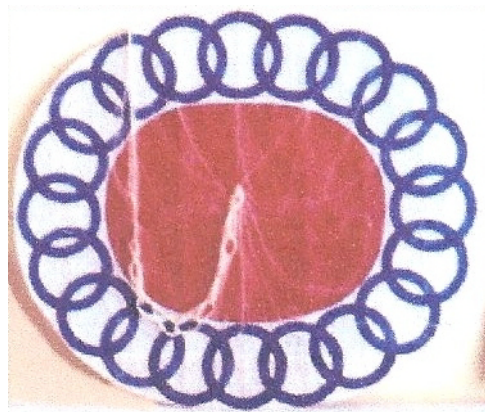


Illustration 71: Wan Wan Kite

#### 4.4 Hammamatsu Kite

This is one which I have never seen in the air. It is a fighter kite, square with a distinctive trailing edge, made in various sizes, 1.5m.–3.5m. Illustration 72 shows a small one. When assembled a spine (twice the length of the kite) is attached with rope tails as stabilisers which are used to tangle with opponents. Holes may be made in the washi cover to balance the kite or to reduce area in strong winds.



Illustration 72: Hamamatsu Kite

#### 4.5 Chinese Kites

Interestingly, given the direct derivation of Japanese kites from Chinese kites from at least the 7<sup>th</sup> century, I don't know of a single 'Edo' type, which would show influence in the reverse direction. This is even stranger given the similarity of the woven hatch kite reported in Marco Polo's famous account of a makeshift kite being used for divination.

However, the attraction of flying an ideogram has led to some multi spine kites, e.g. the Double Happiness kite by Ha [6] (Illustration 73). There is a well known frog design which uses a bamboo grid.

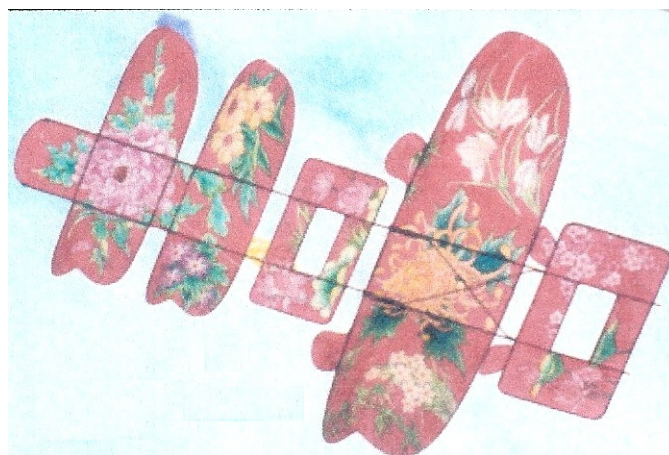


Illustration 73: Double Happiness Kite by Ha

#### 4.6 Western Kites

There are a few western designs using a grid of spars. Illustration 74 shows a turtle. The most original use of grids to allow asymmetrical kites is by Don Mock, who specialises in Native American influenced designs and is an expert in bridling.

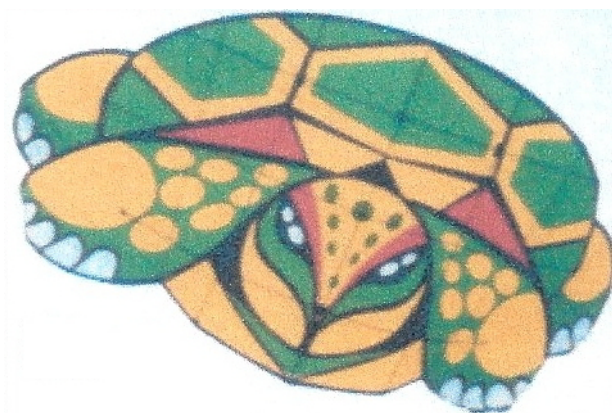


Illustration 74: Western Turtle Kite

While few other contemporary designers produce asymmetrical flat kites they are not new. Hunt [23] has several such designs including an elephant and an extraordinary fisherman with a tail formed by fishing line festooned with tissue-paper-stuffed paper fish.

### 5 Snake Kites

Often generically called ‘Thai Snakes’ (Illustration 75); I am not sure why since other old kite cultures make snake kites. Will Yolen called them Cambodian Snakes. Illustration 76 shows a small paper and bamboo Chinese snake (although it is in the form of a dragon, the Chinese use catfish and tadpole kites using the same basic configuration). Illustration 77 shows a Malaysian Wau Ular. The kite head is about 1 metre wide and uses a series of Wau crescent wing shapes. The maker was Ismail bin Jusoh, since it was the first cloth covered kite which he had ever made all the pieces and edges use glue – he couldn’t sew as stitching wasn’t needed for paper kites. Illustration 78 shows some common head designs.



Illustration 75: Thai Snake Kite

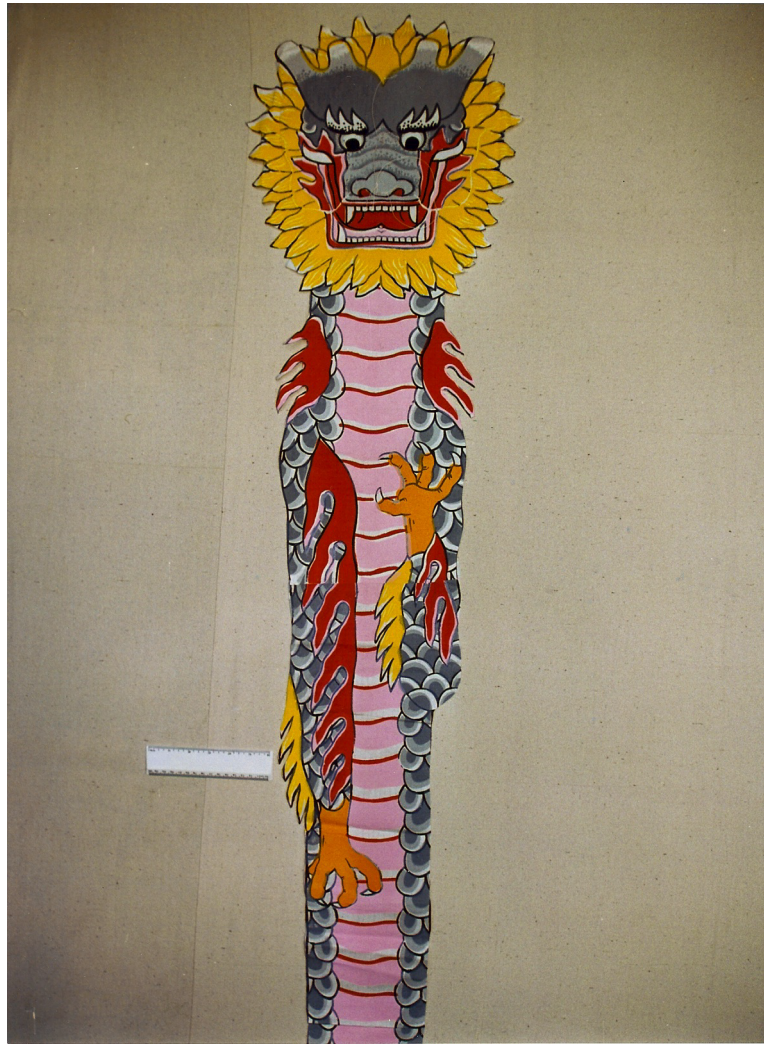


Illustration 76: Chinese Snake/Dragon

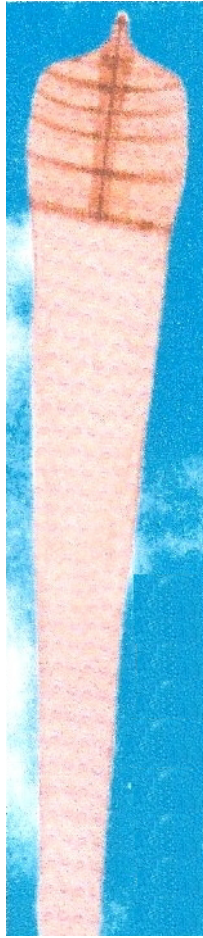


Illustration 77: Malaysia Wau Ular Kite

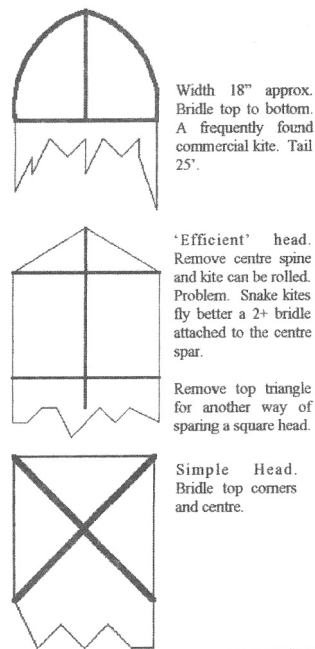


Illustration 78: Three Types of Snake Kite

At this point it should be clear that here is an easy kite to make and the main design problem is what material to use for the tail (ripstop is too heavy/stiff except for large kites) and how long you can be bothered to make it. Should you come across a long tapering banner then consider attaching a type 3 head and off you go. Long pennants were used 1500 years ago in Europe and it has been argued that they could have been the earliest European kite (see Chapter 2). But I do not know of any European tradition of this type of kite in the last 500 years.

Illustration 79 shows two ‘toy’ snakes of 20+ years ago — one the brother of the famous Zammo sled. Brilliantly printed lightweight Mylar makes superb snakes. California seems still to be a source for 1960’s type rainbow headed light taffeta and nylon snakes.



Illustration 79: Two Snake Kites



Illustration 80: Erik the Jorvik Serpent Kite

The long tails of snakes need very little extra lift so long kites are feasible. Illustration 80 shows Erik flying at Bristol in 1986. The head is ripstop, the 500m. tail tyvek. He was sponsored for the Midlands Kite Fliers by the Jorvik Museum in York. Now a trim 450m. due to an old accident, he had a brief renaissance a few years ago. And in the late 1980's there was a 1000m. French snake.

For one of the easiest kites to make you get a lot of spectacle for your trouble. Though for me the most spectacular snake is Jake the Snake, a soft cobra (see Chapter 9) by Wolfgang Schimmelpfennig.

## 6 Oriental Winged Creatures

All the kites in this chapter have been flat and essentially two dimensional i.e. although they may be deliberately bowed or take up a curved shape in flight they have a two dimensional cover. In the article on Bird Kites we considered Chinese (and other) flat bodied birds but also kites with a three dimensional body. In that article, in order to narrow the field I excluded 'creatures' which are not birds. But that left out a range of interesting kites, some of which are often seen — so here is a selection. There is not a lot to say, look to the bird kite article for background and construction. While butterflies are always soft winged, others may be either hard or soft.

### 6.1 Chinese

Butterflies Illustration 81 shows a Ha kite. These are often easier to fly than birds. Some are identifiable insects others have brilliant colours to show in the sky. (Indonesian butterflies have realistic eyes, antennae, legs and tongues, but since the colours are painted on opaque cloth very often look a disappointing dark silhouette in the sky).



Illustration 81: Butterfly Kite by Ha

Insects. There is a whole range of wonderful dragonflies (Illustration 82).



Illustration 82: Green Dragonfly Kite

Fish and suchlike. I know two main types of fish kite — one which is a representation of a ‘goldfish’ viewed from above. With long flowing fins and a tail the body may be (as with birds) two or three dimensional and silk or paper used. Illustrations 83–86 give examples. Then there is the two fish flat kite representing man and woman (Illustration 87). There is a very realistic crab (Illustration 88).



Illustration 83: Goldfish Kite

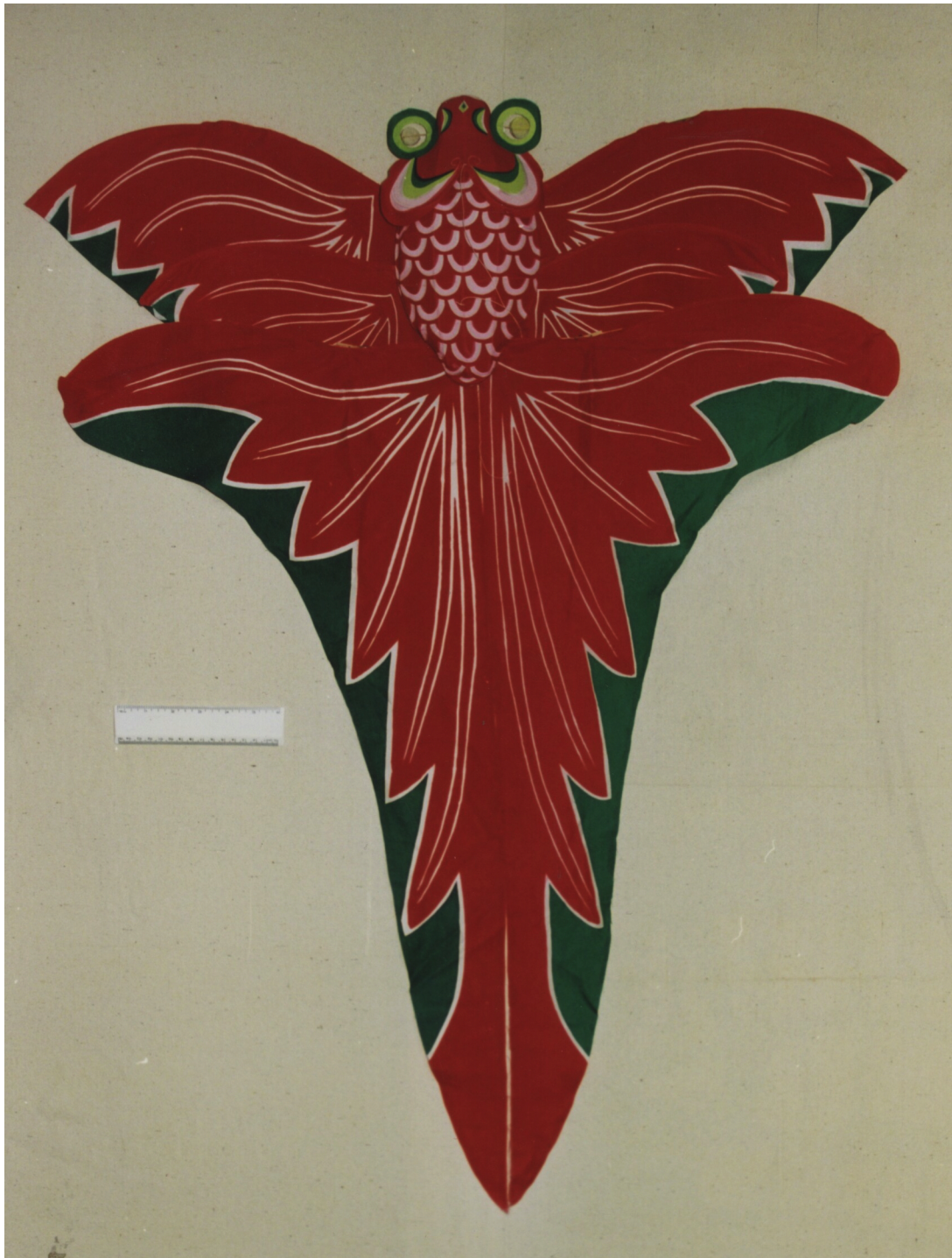


Illustration 84: Another Goldfish

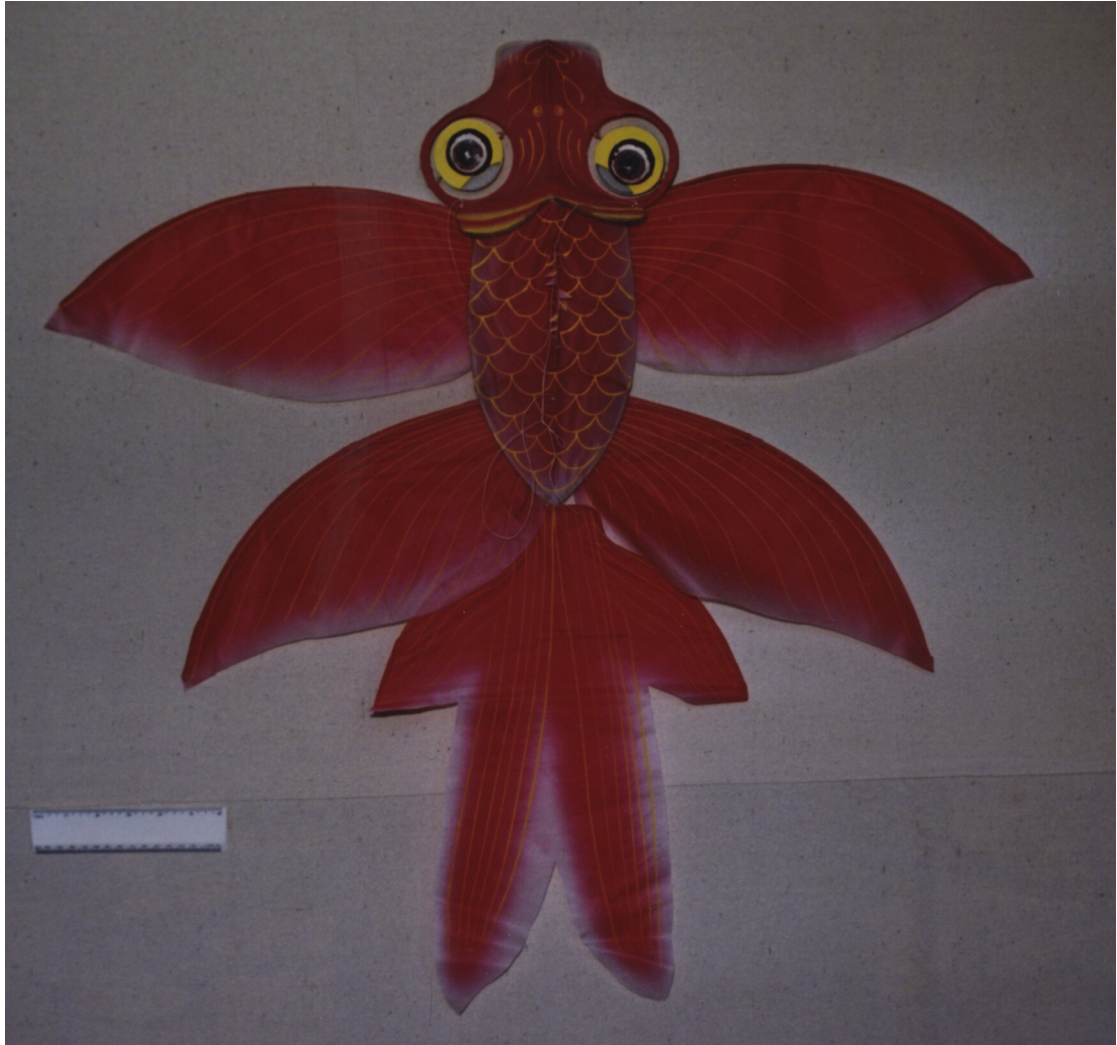


Illustration 85: Fish kite

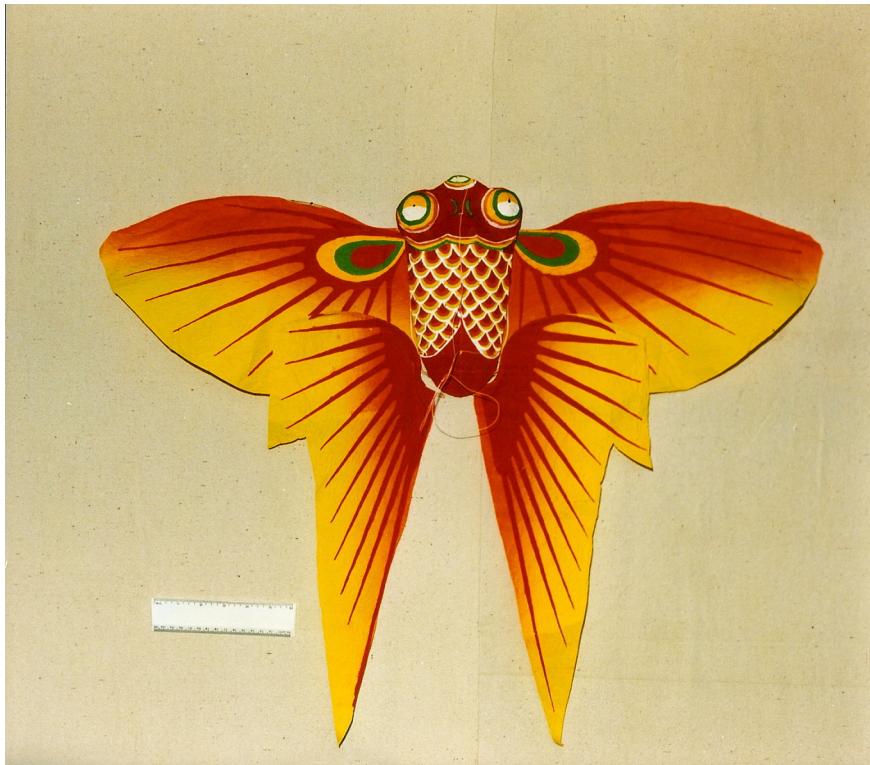


Illustration 86: Another Fish Kite



Illustration 87: Fish Kite Representing Man and Wife

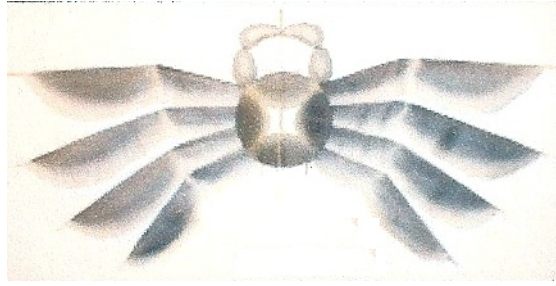


Illustration 88: Crab Kite

Others. There are, often asymmetrical, figures usually with wings bearing them literally and figuratively across the sky. There were some attempts twenty years ago to produce ‘modern’ images. Illustration 89 shows a paper Kangaroo which I have never tried to fly. The ‘joey’ is removable and non-flying.

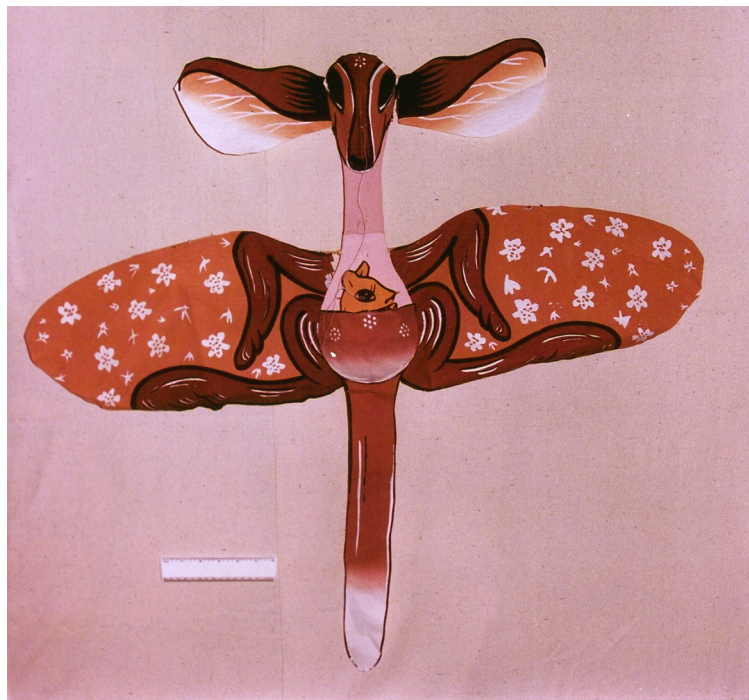


Illustration 89: Kangaroo Kite

## 6.2 Japanese

Washi paper does not drape and Japanese makers do not use silk, with the result that their designs do not include butterflies or fish where floating and flapping wing surfaces are required. They do represent carp in three dimensional windssock banners. But washi paper, which can be quite stiff when painted, together with the use of a Yakko type wing means that there are several excellent cicada, bee, horsefly, etc designs. Illustrations 90 and 91 show a Sato bee front and back. The latter shows the exceptional precision of the frame made by Sato San from bamboo 100–400

years old called susdake which is smoke-darkened bamboo found in old farmhouse roofs. Note the hummer.

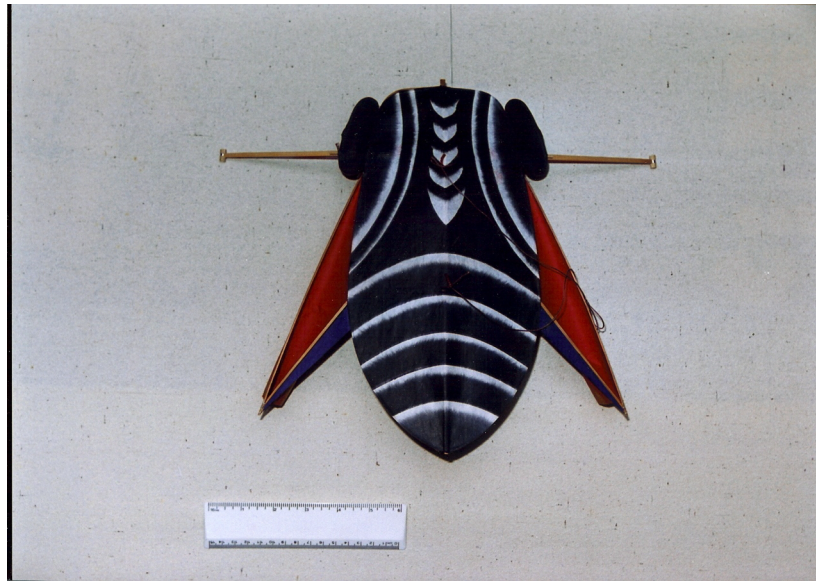


Illustration 90: Sato Bee (front view)

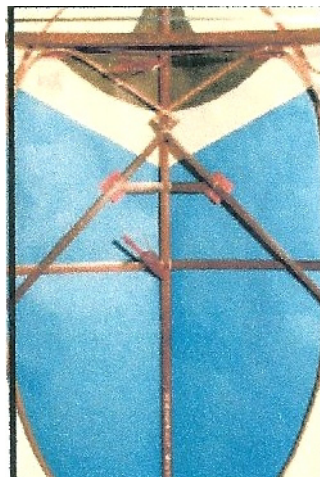


Illustration 91: Sato Bee (Back View)

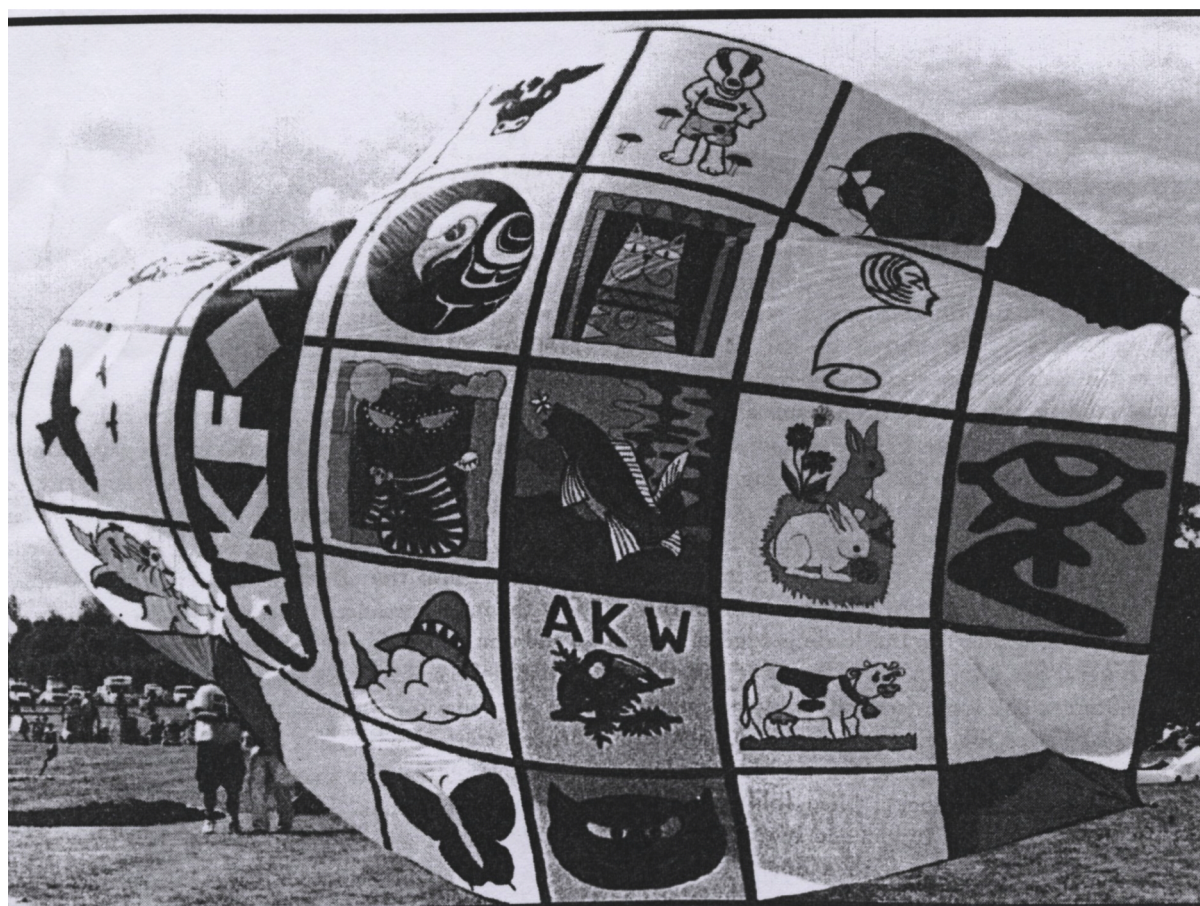
Lastly there is the very strange Vietnamese fish (Illustration92).



Illustration 92: Vietnamese Fish

## 7 Playsails etc.

A playsail is a fairly large sheet of fabric, say 3m. high by 5m. wide, with two long loops of line each attached at the top and bottom of one side. Two fliers, by adjusting their hand holds on their loop can determine the angle of attack of the sail which –when reasonably adjusted– flies. Associated in England with George Peters, but invented by Australians Richard and Kathy Dovey in 1981, playsails make good club projects where members each make a square and the squares are sewn together e.g. the Avon Kitefliers Playsail (Illustration 93). Martin Lester is a member and his shark can be seen just below left centre. They are a lot of fun — large ones in a strong wind may need several fliers to each side. Are they kites? Surely yes – even though they are not single line kites. They can fly at a respectable height as Illustration 94 shows. Probably this is the minimalist kite. It is closely related to the kite spinnaker used recently with yachts. A similar idea is to get your sail higher than the mast head.



Avon Kite Fliers magnificent Playsail at Bristol 1995

Illustration 93: Avon Kite Fliers Playsail

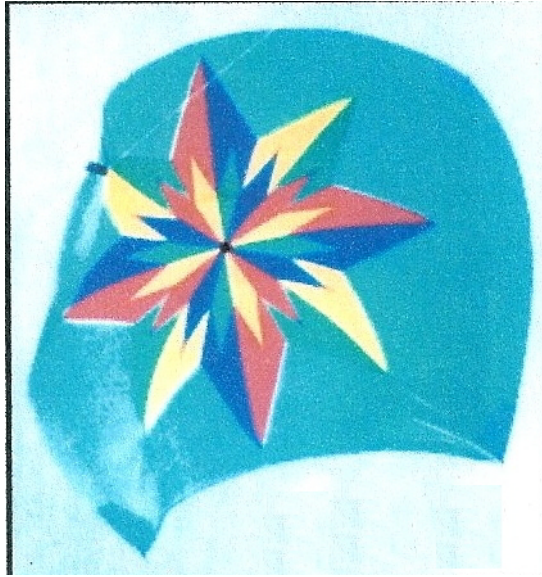


Illustration 94: Playsail

Are there still more minimalist kites? Well there are kites seen in Dieppe, but I don't have an illustration, which can best be visualised as a playsail in shape with areas of ripstop applied in perhaps a random pattern. Well designed and carefully bridled I find the effect very interesting.

## 8 Bibliography

- [1] Sarak, S. and Yarin, C. (2003) *Khmer Kites*.
- [2] Ongkingco, O. (1990) *Phillipine Kites*.
- [3] Puspoyu, E.W. (ed.) (2004) *Kites of Indonesia*.
- [4] Muzium Layang-Layang (2002) *Traditional Kites of Malaysia*.
- [5] Hosking, W. (2000) *Kites of Japan*.
- [6] Ha, K. and Ha, Y. (1990) *Chinese Artistic Kites*.
- [7] Boitrelle, K. and Petit, L. (1998) *Cerfs Volants Traditionels*.
- [8] Crumplin, G. (1995) *Not an Indian Fighter*.
- [9] Gallot, P. (1989) *Fighter Kites*.
- [10] Streeter, T. (1974) *The Art of the Japanese Kite*.
- [11] Pelham, D. (1976) *Kites*.
- [12] Skinner, S and Fujino, A. (1997) *Kites – Paper Wings over Japan*.
- [13] Hosking, W. (2000) *Kites to Color the Wind*.
- [14] Greger, M. (1984) *Kites for Everyone*.
- [15] Gomes, E. de S. (2005) *The Traditional Brazilian Fighting Kite*.
- [16] Lecornu, J. (1902) *Les Cerfs-Volants*.
- [17] Moulton, R. (1978) *Kites*.
- [18] Diem, W. (2008) *Der Drachendesigner Richard Steiff* (in German).
- [19] Eden, M. (1998) *The Magnificent Book of Kites*.
- [20] Thiebault, A. (1982) *Kites and other Wind Machines*.
- [21] Watlington, F. (1980) *Bermuda Kites*.
- [22] Kurahashi, D. (2000) *Japanese Kites — Concepts and Construction*.
- [23] Hunt, L. L. (1971) *25 Kites that Fly*.