AGENDA ITEM 14.3

REPORT OF THE CATALOGUE SUB-COMMITTEE

Alan Cassidy, Chairman

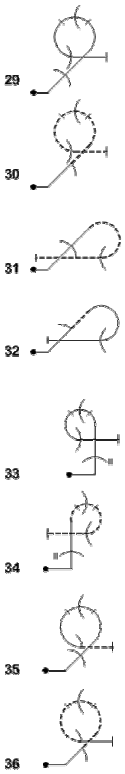
Recommendations for Catalogue Changes for the Year 2012

Abstract: New basic figures are proposed in Families 7 and 8. A new 4-part figure numbering system, introducing sub-families, is proposed for Families 1 to 8, which are more logically set out. These changes create a more flexible Catalogue more able to allow future developments.

Introduction

The Aresti System (Condensed), hereinafter called "the Catalogue", currently contains two different basic numbering systems. Family 9, Rolls and Spins, includes Sub-Families of different classes of rotation and uses a 4-number code in which the second number indicates the Sub-Family. This 4-number system makes it very easy for the Catalogue user to associate a Family 9 rolling element with its Catalogue number, and vice versa. For example, it is immediately clear that Sub-Family 9.8 contains 8-point rolls.

In the case of Families 1 to 8 (excluding Family 4 which is now dormant), however, a 3-number code is used and no attempt is made to group figures in a logical and progressive fashion. For example, in Family 8, basic shapes with major looping segments of 225°, 270° and 315° are interspersed in a manner that is inconsistent (see right). As a result of this inconsistent arrangement, a Catalogue user must look at multiple locations within Family 8 to find all figures with similar characteristics, for example horizontal 5/8ths looping segments (Half Cubans).



These 'monolithic' Families are not only disorganised, but this lack of logical sequencing creates difficulties in accepting and placing new figures. Growth, or modification, of the repertoire is to a great extent stifled by this situation. The Catalogue Sub-Committee has discussed this situation at length and these proposals, intended to come into effect in 2012, are the result.

The report proposes:

- some new figures to be added to Families 7 and 8,
- the extension of one existing figure group in Family 8, and

- a new, logical grouping of all the current and future figures in Families 1, 2, 3, 5, 6, 7 and 8.

To facilitate different areas of discussion and voting at Plenary, the following proposals are listed in this order.

Proposed New Figures

Family 7

Reversing Loops

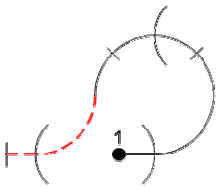
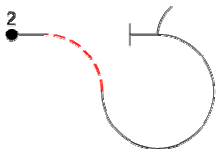


Figure 1 shows the basic form of a reversing loop. That is a loop in which one quarter of the segment changes direction. As in half loops, rolling elements may be added on entry and exit lines.



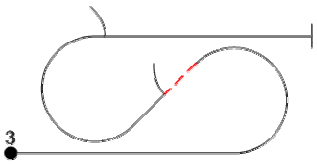
The "reverse" segment may the first or last quarter. The current proposal does not include an option for the roll centred in the larger segment to be a nett 180°, but this may be the subject of a future proposal. Figure 2 shows another one of this set of figures. Some of the reversing loops with a minimum of inverted flight may be suitable for Intermediate national sequences.

The proposed versions of this basic shape will fill 8 rows in Family 7.

Judging criteria will be the same as those currently employed for existing round Loops, with downgrades if a line is flown at the point where the pitch direction changes.

Horizontal "S"s

Currently, Family 7 includes figures with a single major 3/4 looping segment, lines 7.19 to 7.22, and figures with two major looping segments, "Cuban Eights" in lines 7.23 to 7.30. Furthermore, rows 7.11 and 7.12 include "Vertical S" figures.



This proposal introduces figures intermediate between 7.19 and 7.23 which might be called "Horizontal S". These figures also offer 3 optional rolling locations, and variations arise if some of these locations are made to have a compulsory nett half roll.

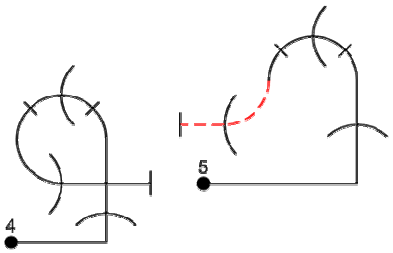
These new Horizontal S figures present very useful options in Advanced or Unlimited Free Programme design, yet simpler versions such as that shown at Figure 3 are suitable for inclusion in Sportsman Known programmes.

The proposed versions of this basic shape will fill 8 rows in Family 7.

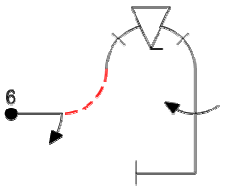
Judging criteria should be as those used for "Horizontal 8"s, with the extremities of the looping segments at the same height as the entry and exit lines.

Family 8

Reversing P Loops



Currently Family 8 includes figures in discontinuous rows from 8.33 commonly called P Loops. These all have a major looping segment of 270°. Similar to the principle of Reversing Loops in Family 7 comes the concept of Reversing P Loops in Family 8. These figures also have a 270° segment, but in this case the first or last quarter is reversed. Figure 4/5 shows a P Loop followed by a Reversing P Loop.

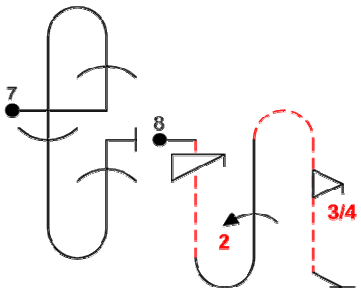


These Reversing P Loops are an extension of the existing Catalogue rows 8.49 and 8.50. Figure 6 is an example of a complex figure using three roll elements on one of these new figures.

The proposed versions of this basic shape will add 6 rows in Family 8, making 8 lines of similar figures. The current proposal does not include an option for the roll at the apex to be a nett 180°, but this may be the subject of a future proposal.

Judging criteria will be the same as those currently employed for existing P Loops, with downgrades if a line is flown at the point where the pitch direction changes.

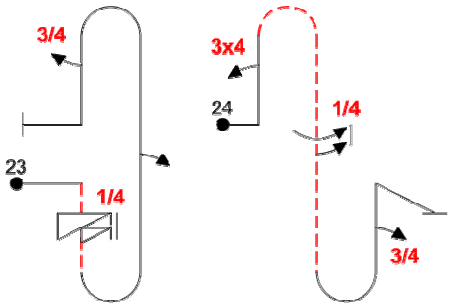
Double Humpty Bumps



Family 8 currently starts with figures informally named "Humpty Bumps" in rows 8.1 to 8.4. A proposal has been received to create a new group of figures in Family 8 which might therefore be called Double Humpty Bumps. These comprise of three vertical lines and two 180° looping segments, one at low speed and one at higher speed.

Figure 7 shows the first instance of this type of figure, while Figure 8 shows how one such figure might appear in a sequence.

The proposed versions of this basic shape will fill 8 rows in Family 7.



These figures provide the ability to adjust or correct box position on both X and Y Axes (in the case of a quartering wind, for example).

In Figure 23, note that the half roll means that the two half loops will effect a cumulative cross-box correction within the box. Figure 24 shows how a single figure could be used to correct both for cross-wind and headwind.

In view of the markedly different speeds possible during the looping segments, there should be no requirement in judging criteria for any radii to be equal, but each must be internally constant.

Revised Numbering of Families

The Sub-Committee proposes to renumber all the figures in Families 1 to 8 using a 4-number code similar to that currently used in Family 9. There are a number of reasons for this.

Family 8 currently holds 72 rows of figures within which there are a number of logical inconsistencies and discontinuities. Some stricter logic should be applied to the ordering of these figures.

Some years ago, the current Rows 19 to 22 were added in Family 7 and this required re-numbering of all subsequent figures.

By grouping figures in logical sub-families, each catalogue number will carry more inherent information about relationships between figures. Grouping figures in all Families according to some logical subordinate classes will enable future additions to be made without extensive re-numbering. It should in future be possible to add new figures without changing the code numbers of existing figures.

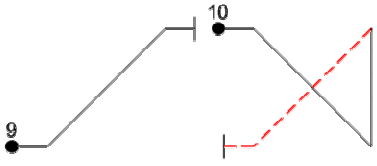
Although this is a major revision that will require all sequences carried forward from earlier years to be re-drawn, future development of the Catalogue will be much simpler than it is now. The intention is that this major change now will enable the Catalogue to achieve much greater stability in future.

New Numbering System

Currently all basic figures are numbered in accordance with the system **[f.r.c.]**, where **"f"** is the Family, **"r"** is the Row and **"c"** is the Column.

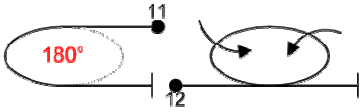
The Sub-Committee proposes to renumber all figures according to a system **[f.s.r.c.]** where **"s"** represents the Sub-Family value. Sub-Families are derived according to a logical process within each Family and Sub-Family numbers do not necessarily start at 1 nor are they necessarily continuous. This principle has already been established in Family 9, where the Sub-Families are not continuously numbered, jumping, for example, from 9.4. to 9.8. for reasons that are self-evident.

Family 1



The figures of Family 1 are to be assigned to Sub-Families based on the number of internal lines within the figure. Thus Sub-Family 1.1. will have a single line, 1.3 will have three lines and so on.

Thus Figure 9 will have the number 1.1.x.x while Figure 10 will be of the form 1.3.x.x.



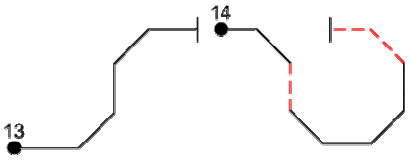
Family 2

The turns and rolling turns will be grouped in Sub-Families

based on the extent of the turn involved. 90° Turns will be Sub-Family 2.1. while full 360° Turns will be in Sub-Family 2.4.

Figures 11 and 12 will be from Sub-Families 2.2.x.x and 2.4.x.x respectively.

Family 3

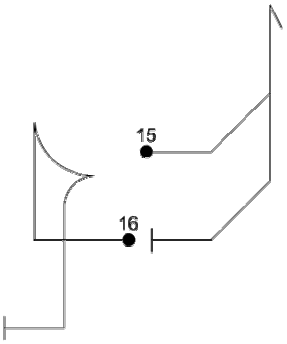


Figures in Family 3 are defined by the number of corners within the figure. Hence, Figures 13 and 14 would be from Sub-Families 3.4.x.x. and 3.8.x.x.

Family 4

Family 4, formerly Spins on plain down lines, remains unused. It may be revitalised in future if a suitable new family of figures is proposed.

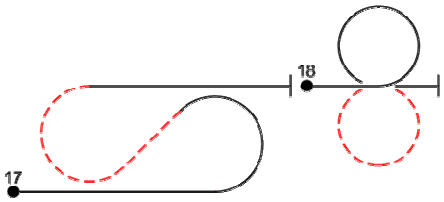
Families 5 and 6



Stall Turns and Tail Slides would be classified in sub-families according to the number of internal lines. Currently, all Tail Slides have just two lines. A number of Stall Turns were recently added which have 3 or 4 internal lines. Similar additions may be made to Family 6 in future and thus would be created Sub-Families 6.3 and 6.4.

Figures 15 and 16 would be from Sub-Families 5.4.x.x. and 6.2.x.x.

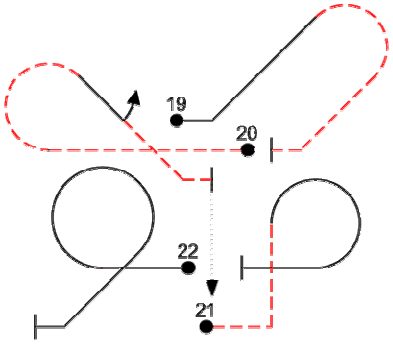
Family 7



Half Loops would become Sub-Family 7.2.x.x., full Loops Sub-Family 7.4.x.x. and so on. Family 7.5.x.x. would include Horizontal and Vertical "S"s; Sub-Family 7.6.x.x. would contain figures with a 3/4 looping segment; Family 7.8.x.x. would contain both Horizontal and Vertical "8"s.

Figure 17 is from Sub-Family 7.5.x.x. and Figure 18 from 7.8.x.x.

Family 8



Under the proposed re-numbering system, figures in Family 8 would be grouped into logical sub-families according to the extent of the major internal looping segment each contains, starting with 8.4.x.x. for Humpty Bumps which have an internal segment of 4/8ths.

Next would come figures in 8.5.x.x. with internal segments of 5/8ths, such as Half-Cubans and the vertical "keyhole" shapes. 8.6.x.x. would contain P Loops etc with a 6/8ths segment; 8.7.x.x. "Q" Loops with a 7/8ths segment and so on.

Figures 19 to 20 are sequentially from Sub-Families 8.4, 8.5, 8.6 and 8.7.

Summary of Proposals

This report is forwarded to Plenary with a request that the proposals be voted individually as follows:

Proposal 1. To incorporate in Family 7 the new figures described above as Reversing Loops;

Proposal 2. To incorporate in Family 7 the new figures described above as "Horizontal S"s;

Proposal 3. To develop the existing rows 8.49 and 8.50 into a larger group to be known informally as "Reversing P Loops";

Proposal 4. To incorporate in Family 8 the new figures described above as "Double Humpty Bumps";

Proposal 5. To re-order existing figures in Family 8 in accordance with the logic outlined above and shown fully in the following pages (in both Power and Glider figures).

Proposal 6. To re-number Families 1 to 8 inclusive according to the logic outlined above and as shown fully in the following pages (in both Power and Glider figures).

Proposal 7. The notes about judging criteria included with each new figure description should be referred to the Judging Sub-Committee for approval prior to Plenary.

Proposal 8. Proposals 1 to 4 should be referred to the Glider Sub-Committee in order that additions to the Glider Aerobatic Figures might be selected.

Revised Family Pages

The following pages of this report are the proposed new pages for inclusion in **Part III** of the Catalogue. That is, the re-arranged and additional figures from Families 1 to 8. There are no proposed changes to Family 9.

Consequent minor changes to **Part I - Description of the Catalogue** and **Part II - Method of Evaluation** have been agreed by Sub-Committee but are not provided here in full. If any Delegate requires to see these changes, a separate document can be provided by the undersigned.

Rationale

Many of the proposed new figures fill places available within the existing repertoire. They therefore make the Catalogue more complete without introducing any new ideas about figure construction. The double Humpty Bumps proposed in Family 8 are an extension to the current repertoire that will find use mainly in the construction of Unlimited Known and Free

Programmes, yet they are analogous to the existing "N" figures in Family 1 and do not therefore represent any especially new challenges to pilots nor to aircraft designers.

The proposed re-numbering system will create a one-off requirement to re-number all figures in Free Programmes if older designs are carried forward to 2012. However, this is a small price to pay for the improved arrangement of figures and the potential for future flexibility for the addition of new figures in many Families. Sequences will **not** have to be re-designed, as Super-Families, Families, K-factors remain unchanged.

The Catalogue Sub-Committee is unanimous in recommending this major revision, which, will lead to greater clarity and longer-term stability in the document.

Thank you for your attention.

Alan Cassidy
Chairman
21 June 2011