

A Hundred Things

by Bryan Quickmire

Count Aresti's Ball

We start yet another orbit in the holding pattern, waiting for the signal from the ground. Two Whiskey Mike, my yellow biplane, and I are as ready as we'll ever be, dozens of practice flights are behind us. The first flight of the first contest of the new season is upon us, fifteen figures to perform in the compulsory sequence for the Advanced category. The New England Aerobatic Championships awaits our best effort.

We're holding north, across runway 14-32 from the "box" where we'll perform. The box is a block of air 3,300 feet square which extends from 3,500 feet AGL down to, for Advanced, 800 feet. Each step outside the box is punished by a boundary penalty.

Every flight is precisely described in Aresti notation on the sequence diagram held by pilots and judges. The box is divided into thirds: left, center and right. The diagram specifies exactly what figures are to be performed, in what order, in which third of the box and whether going upwind, downwind or crosswind. You do precisely what Aresti commands. There's no substituting a double Lutz for a triple at the last second!

In theory, the judging criteria for each figure are well defined. In practice, it can be quite difficult to tell exactly what a fast moving airplane is doing. On the ground five Judges and the Chief Judge are debating some aspect of the previous competitor's performance.

This delay is about to become serious. To maximize performance I carry just enough fuel for one sequence plus a meagre reserve. If they don't come to a conclusion virtually immediately I'll have to abort and land for fuel. Too bad there aren't tankers for biplanes.

"Skybolt, the box is yours. The box is free for the Skybolt." At last! Let the games begin!

We exit the hold on a downwind for the box. On base we roll inverted and pause to check straps and find loose objects and unsecured oil filler caps. Back to upright, I decide where to enter the box based upon where I think we'll be after the third figure. Then there's an opportunity

to adjust for the crosswind by flying directly towards or away from the judges, instead of promenading left and right.

We turn onto final planning the start. The start is critical because we need to be in the right place in the box, at the right altitude, at the right speed, directly in front of the Judges.

The opening figure is a hammerhead with a full slow roll on the vertical climb and half a four point roll on the vertical dive. We'll exit with a push to inverted flight.

Wait for the moment. We're almost in the box.

Now! Three crisp wing wags to the judges and I push over into a steep dive. Eyes front! Speed's approaching our 200 mph Vne. Level! Eyes right! Wait for center box, right in front of the judges. Patience!

Pull! Wham! 6 G's! I now weigh a thousand pounds. My cheeks sag. All the blood in my body tries to pool in my feet. There are no G suits in biplanes. I strain and grunt to keep enough blood in my head to avoid blacking out.

Eyes left! Look at the aerobatic sight on the left wing. Wait to be perfectly vertical. Stick forward! The pitch up stops. Draw a line straight up. Pick a visual reference for stopping the roll. Quick! No delays! Stick hard over! Full left aileron. Two Whiskey Mike pirouettes on the tail. The horizon spins around the airplane. Ease in right rudder as we slow. There's our mark. Stick center! The roll stops. The line after the roll must be the same length as the line before. We're going a lot slower now so it takes much more time. Add right rudder and forward stick to keep us vertical. Slow, slow, slow. We're nearly stopped, pointing straight up.

Now! Full left rudder! Stick full into the front right corner to stop torque and the propeller's gyroscopic precession from twisting us over onto our back. We pivot 180 degrees around the left wing tip. Neutralize everything going straight down. Wait, draw a line, speed's building, chop the throttle. Now! Stick full left! Two Whiskey Mike pirouettes on the nose. Ninety degrees of roll. Stop! Pause, two, three. Full left! Ninety more degrees until we're exactly opposite where we started. Stop! Wait for the line after to match the line before. The earth is coming up to greet us in a big hurry.

Now! Full throttle! Push! Wham! 5 G's negative! Two independent harnesses prevent me from rocketing through the canopy, making pressure bruises from

hanging a half ton of flesh and bones on three inch wide straps.

All the blood in my body fights for space in my head. The pressure builds, my skull withstands it. I feel a warmth in my brain from the onrush of blood. Bulging eyes feel like they'll pop out of the sockets. Tiny vessels in the eyes and eyelids rupture. Early in the season there's lots of bloodshot eyes and scratchy eyelids. My liver tries to occupy the space normally reserved for my lungs. I exhale slowly, continuously to accommodate it.

The wheels lead the fuselage followed by the canopy back to level flight. There's the horizon! Stop! Upside down we rush downwind at a high rate of knots.

One down, fourteen to go!

We work our way through the dance card to figure five, a Split S with an extra twist. I drive it right to the edge of the box, risking an out. Otherwise, with today's strong wind, the four point roll after it will consume a huge amount of space going downwind and almost certainly cause the following humpty to get a boundary penalty.

Two Whiskey Mike is all heart but an airplane as big as a Skybolt needs more than heart to compete in the Advanced category. We must supplement the engine with copious quantities of altitude and we need a refill right now. Going through the bottom of the box is a tremendously expensive proposition. I waggle the wings to signal an interruption, climb for altitude, reposition and resume.

A simple half roll on a 45 degree climbing line leaves us inverted, ready for my least favorite figure, an inverted spin with one and a quarter rotations. Several years ago Two Whiskey Mike and I had the classic "little problem" during an inverted flat spin. We came as close as you can to becoming a smoking crater. Ever since, I've had to deal with a real, visceral fear as the rate of rotation speeds up and the world becomes a blur.

Bring back the throttle to decelerate, feeding in forward stick to maintain our altitude. Will we spin left or right? Where are we in the box and where do we need to be? Mental gymnastics compete with dread for mind share. At just the right moment I force the stall to get a clean break. As Two Whiskey Mike falls on me, I feed in rudder and we start to spin, upside-down, faster and faster.

My body is overcome by self preservation instincts. A great mental effort is required to avoid stopping the spin prematurely. While battling these demons I'm also trying to keep track of our heading, looking for clues in the confusing blur, needing to lead the recovery so we stop exactly 450 degrees after we started. Even five degrees off will cost points.

Now! Opposite rudder, give it time to take hold. Rotation's stopped! Neutralize rudder immediately so we don't start to spin the other way. Yes! Bang on! The demons lose! Stick back to do the vertical dive required before pulling back to level flight.

While diving I steal another glance at the Aresti diagram on the panel to confirm the figures leading up to the rolling circle.

The rolling circle takes the basic concept of a horizontal circle and weaves in slow rolls. The nose is expected to prescribe a perfect circle, at a constant rate of turn. The rolls are supposed to be at a constant rate and evenly spaced throughout the circle. Altitude must remain constant.

Today's roller is truly beastly: three slow rolls in a full circle, starting and ending inverted. Four rolls would be substantially less difficult because it's easier to eyeball references at 45 and 90 degrees than at 60 and 120 degrees.

Keeping the nose tracking through each roll requires left rudder transitioning to down elevator then right rudder then up elevator then left rudder. Meanwhile we're trying to keep to keep the ailerons in a fixed position.

The stick churns and the pedals pump. The nose slews around. The wings keep rolling. This is most unnatural! Rollers in general, and this one in particular, don't score well - there's far too many elements to find fault with.

Two more figures, three sharp wing wags and we're done. Whew! Now all we have to do is land.

Competition aerobatics are not done with subtle control pressures. Full control deflections are often applied, generally quite rapidly. The aircraft will go through it's entire flight envelope, from maximum positive G's to maximum negative, from Vne to zero, or even backwards in a tail slide. The concept of stall speed is meaningless because of the attitudes and G loads. Angle of attack is the critical factor. We can be flying at thirty miles per hour or stalled at a hundred and thirty.

I always have trouble transitioning from this environment to the landing, where more conventional piloting is required. The adrenaline coursing through my veins doesn't help. My landing is not picture perfect but it is adequate. We taxi to the fuel pumps to reload for the next flight. Then we'll wait, assisting on the judging line, looking to see if the scores are posted or doing Aresti's dance.

Competitors can often be found performing the Aresti dance. Sequence card in hand they whirl and twirl in an imaginary box, striding upwind, downwind and crosswind, visualizing the figures, picturing airspeeds and altitudes. Bodies arch, pretending to be inverted or going vertical. Minds eyes imagine how the wind will blow them, identifying the landmarks they should see. A casual bystander would think a contagious nervous disorder was running rampant.

The contestant's briefing was at seven this morning. We'll probably fly the freestyle around sunset, nearly twelve hours from now. Freestyles are designed by each pilot, albeit constrained by Byzantine rules. Tomorrow there's another briefing at seven, followed some hours later by the Unknown, a one-off sequence only unveiled at the contest so it cannot be practised. The Unknown is usually considered to be the work of a twisted mind, bent

on tormenting innocent competitors with unimaginable figures in impossible combinations.

A coworker, upon learning I was taking a few days off for these championships, said cheerfully: "Have fun!" Fun? Not for me. This is far too complicated, far too intense, far too all-consuming to be fun. It's like playing chess in four dimensions while Sumo wrestlers jump on you or swing you in circles by the ankles.

Competing in Advanced is a real character builder. Tremendously satisfying? Absolutely! Enjoyable? Sure, mostly after the fact. Fun? No. Addictive? Yes!