

Learning To Use Your Rudder

by Russell Bennett

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If you would like to increase your flying skills there is nothing that makes more of a difference than practice, practice and more practice. For the most part, the better fliers in a group do about the same things that the lesser pilots do, just with a little more skill, finesse and precision. However, I have come to the conclusion that there is at least one skill which the best fliers have mastered that the so-so fliers just totally ignore. This is the ability to control the rudder of the sailplane independent of the ailerons by using the left stick. This article will attempt to demonstrate the usefulness of this technique. I will give two situations where independent control of the rudder gives a major advantage over depending on a fixed amount of rudder to aileron mixing.

With a two channel rudder/elevator polyhedral ship, the right stick controls the rudder which in turn steers the plane. When a plane has ailerons, the right stick controls the ailerons and in conjunction with the elevator steers the plane. It seems like as soon as ailerons are put on a plane the rudder is almost forgotten about. Sure, if you have a computer radio, you mix in a little rudder with the ailerons, but how do you determine the right amount. It is not generally considered to be all that important. Occasionally, someone will actually take the time to try progressively larger amounts of rudder mixing in an effort to find the optimum setting. What they will find though, is that there is no one mix ratio that works best under all conditions. Generally, at high speeds very little rudder is needed. Turns are done more in the "bank and crank" style. This is why ailerons and elevator are all that is needed on most slope soarers. As the airspeed at which a turn is initiated is reduced, the amount of rudder that is needed to produce a coordinated turn is increased. This is due to the fact that the adverse yaw produced by the ailerons increases as both the coefficient of lift of the wing, and the deflection of the ailerons, are increased. When the airspeed gets down around minimum sink speed quite a bit of rudder is required to keep the turns coordinated.

Have you ever been scratching around at low altitude, flying slow, trying to stretch your time? All of a sudden, your plane bumps up and the left wing is lifted sending your plane off to the right. You immediately try to turn hard to the left to pick up the bump that you just flew through but instead of coming around smoothly, the nose of the plane comes up, it loses what little energy it had and although you got lucky and it didn't stall, the plane is now mushing around. By the time you build up some airspeed you are so low you will be lucky to get back to the circle. This is what happens when you depend on a fixed amount of rudder mixing to take care of all your needs. Try an experiment. Hold your hand out in front of you with your thumb and pinkie spread out like the wings of a plane. Assume the plane is flying slowly and it is given a large aileron input. Two things happen. The plane rolls and the plane adverse yaws. Try it with your hand. Roll to the left and yaw the nose to the right. When the two actions are, combined the nose of the plane comes up and the fuselage is going through the air sideways. When up elevator is then applied to bring the nose around, the problem just gets worse. That's why the plane loses energy

so quickly. When you become aware of what is happening you see this occur quite often as you watch other people fly.

Now let's try another turn with your five-fingered plane. This time assume that left rudder is being fed in with the left stick while the ailerons and mixed rudder are being applied with the right stick. Applying a lot of rudder overcomes the adverse yaw of the ailerons and gets the nose of the plane pointed into the turn. It keeps the nose down and thus the energy of the plane up. If you attempted to mix this much rudder in with the ailerons there would be too much throw at medium and high speeds resulting in increased drag.

Another instance where independent use of the rudder can pay big dividends is when you are attempting to core a small thermal. In order for the plane to turn tightly it needs to be banked fairly steeply. However, with most straight wing planes my experience has been that they tend to want to overbank, requiring the application of opposite aileron to maintain a constant angle of bank, this aileron though, is coupled with rudder so there is also opposite rudder being applied. What this does is similar to the first example. Bring out the hand plane again. The plane is banked steeply. It wants to overbank so opposite aileron, with mixed in opposite rudder, is applied. The effect is to bring the nose up, which bleeds off the plane's energy. The elevator pressure is relaxed to lower the nose, the radius of the circle increases, and you lose the thermal. Watch most pilots try to core a tight thermal with a straight wing plane and you will be able to see the tail dragging towards the center of the circle instead of the nose driving around the circle. I have found that I use rudder in the direction of the turn to keep the circle tight, while using the ailerons, often against the direction of turn, to maintain a constant angle of bank.

It does take a while to learn to use the rudder stick. When I first started working with it I found that I had the old disorientation when the plane was coming at me problem. I had thought that if the right hand knew which way to go then the left hand should also. It turns out not to be the case. But with practice my left hand has improved, and as a result, so has my flying.

Learning to control the rudder separately, using your left hand, will elevate your flying to a new level. It will improve the efficiency of your thermaling and allow you to stay in and work lift that was previously too small. It is definitely a skill worth learning.