Cross-Country Mentoring in Condor

Cross-country soaring and cross-country racing is a very difficult skill to learn, and an even more difficult skill to teach in the real world. In the real world, it is very unusual for a soaring pilot to have received any dual cross-country instruction prior to their first solo cross country flight. Very few clubs or commercial centers in the U.S. promote cross-country soaring in any organized way (the perennial exception being the excellent Harris Hill program). Even when available, dual cross-country flights tend to be introductory in nature, rather than any serious attempt to teach cross-country racing skills. At my home club, we have three XC-capable two-place ships, and several 'XC-qualified' instructors, but club policy limits dual XC rides to airport-to-airport flying around 'the local loop. Moreover, getting an interested student, an XC-qualified instructor, and XC weather together at the same place and time is very much a hit-or-miss situation. In my own experience as a Johnny-come-lately XC racing pilot, I have tried to avail myself of every possible training opportunity; even so, I have only managed two dual XC rides (both with DJ in a Duo Discus) spaced years and hundreds of miles apart.

The situation with leader-follower XC mentoring is almost as bad. At our club the more experienced XC pilots encourage newer XC pilots to fly with us, but this too is a hit-or-miss proposition. What might seem like reasonable flying conditions for the 'mentor' might seem like impossible conditions to the 'student'. The mentor must balance their own desire to get the most out of the day against the generally slower pace of the student. If there is more than one student flying with the mentor, one of them almost always gets left behind.

Another problem entirely is the one of experience with different types of soaring terrain, like mountains, ridge, and flatland soaring. Each type of terrain emphasizes a different set of skills, and skills acquired in one type may or may not be helpful in another. I learned to fly XC at CCSC in flatland Ohio, and the first time I went to a non-flatland site (I think it was the 2001 Region 3 contest at Harris Hill) I almost died of fright. I realize now that I could have avoided at least one landout by utilizing available ridge lift, something I was unable/unwilling to do at the time.

To summarize:

- Organized dual XC training in the U.S. is essentially non-existent. Where training programs do exist, there is no curriculum – it's just "ok let's go out there today and see what happens". Pre and post-flight briefings/critiques are generally unheard-of.
- Leader-follower mentor/student flights are very difficult to accomplish in any planned fashion, and generally results in a frustrating experience for the mentor or the student(s) or both.
- Experienced XC pilots have trouble getting enough training opportunities for themselves and so are reluctant to backtrack or slow down to help newer and slower pilots.
- Techniques and skills acquired at one soaring site may or may not transfer well to others, or may even be counter-productive.

So, what if there was a way to address some or all of the above issues? What would an ideal XC training environment be like?
- Instructors and students could plan training sessions in advance, based on an overall training syllabus. Maybe the syllabus would start with short flatland tasks in excellent soaring conditions in consideration of the shortened fatigue tolerance typical of a beginning student, progressing through various flatland experiences into more advanced ridge and mountain sessions. Although most sessions would be one-on-one, the syllabus would include occasional informal races ('scrimmages') with groups of students to keep everyone's interests up.
- The soaring weather would always cooperate with the lesson plan for a particular session. If the syllabus called for weak blue weather, then weak blue weather would be what is experienced. If a ridge task depended on 15kt from 315˚, then that is what would happen.
- A variety of soaring terrain types would be included in the syllabus, including flatland, ridge, mountain, and mixed types. Specific contest soaring areas could be utilized at will for contest preparation.
- Lessons would occur whenever convenient for the student(s) and instructor, and would not interfere with the instructor's own training schedule. Sessions would be held on weeknights during winter months, for example.
- Instructors and students would not have to be in the same physical location in order to fly together. Students would be able to fly with area experts without actually having to travel physically there, and

area experts would be able to spread their knowledge more effectively.

- A real-time record, including the ability to play back complete 3-D position and velocity states, would be acquired in addition to the normal IGC position/altitude file. This file (one for each participant) would be available for post-flight performance assessments and/or for use as a 'rabbit' in subsequent practice flights under identical conditions.

As you have undoubtedly guessed by now, the bullet points above pretty accurately describe the training environment available in the Condor soaring simulator. For the last three or four years I have been using Condor as my own personal training environment, using it to compensate for my lack of real-life soaring hours. Although it is hard to quantify, I'm convinced that my Condor training has contributed significantly to my rise up the contest rankings ladder, to the point where I am usually in the top five positions in regional contests and the top half in national ones. Then last winter I started experimenting with using Condor as a mentoring tool to help others get started with XC soaring or help them up the learning curve. I worked with volunteer students from Virginia, Ohio, New York, Michigan, and Wisconsin. Based on my own experiences as 'instructor' and feedback from the volunteer 'students', I offer the following observations:

- Volunteers were uniformly enthusiastic about the experience, many coming back for a second session.
- Older pilots with real-life XC experience were more positive about the advantages of flying in Condor than younger ones with no XC experience. This one threw me for a bit until I realized that the older pilots with XC experience had a basis for comparison and knew how much better Condor is as a learning environment than real life.
- Student fatigue is just as much a factor in Condor as it is in real life, with a marked decrease in student concentration and performance after about one hour of flying. On several occasions I cut sessions short after one or two turnpoints because I could see the performance degradation. As a consequence, my beginning XC tasks are shorter and easier than when I first started.
- Bad habits or 'issues' picked up in real life XC flying transfer over into Condor flying in much the same way. When I suggested to one pilot that we didn't need to stop, or that the lift value wasn't up to

snuff, they remarked that they had exactly the same problem in real life (don't we all!)
- The effects of psychological pressure and stress are evident in Condor in the same way and at much the same levels as in real life. I knew this was true of my own Condor flying, but it was also evident in all the volunteers. This observation, as much as anything else, validates the efficacy of Condor as an effective simulator.

By the time you read this article, my real life soaring season will be starting to wind down, and my Condor soaring season will be ramping up. My plan for this winter is to continue working with anyone interested in improving their XC skills, all the way from new pilots who want to find out what XC is all about, to experienced racers who want to learn how to use Condor to start their own mentoring programs. If you are interested in either category, as a potential student or as a potential mentor, please contact me at paynterf@gmail.com. Let's do something this winter besides waiting impatiently for the soaring season to start up again.