

Soaring Philosophy 101

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My main goal in this paper is to offer you some basic tools to help you as pilot in command, to help align your thought process in a manner conducive to achieving a Silver badge cross-country flight. While there are a variety of methods, I hope that you find some portion of this useful. I did not write this with the intent of trying to make any of it gospel, but instead to stimulate you to ask more questions. There are numerous thoughts on why some pilots are drawn to cross-country flying, while others are loathe to try it. My intent is simply to point out how I think and to share with you what I believe are some of the main issues that pose stumbling blocks in the beginning of our cross-country soaring careers.

The obstacles precluding us from actually attempting our early cross-country flights are mostly mental. There are certain physical, financial and other associated issues that must be considered, but mainly the perceived worries of landing out, or not returning to our home base and its associated security serve as the larger hurdles. What I truly hope you view this information as, is simply Soaring Philosophy 101. The strongest case I will make is for you to evaluate yourself, your skills and your decision-making capability. My goal is to have you leave this talk having answered a couple important questions:

1. Is cross-country soaring for me..?
2. What do I need to work on to become a safe and competent cross-country pilot?

If I accomplish these two things, I think you will find that an exchange of ideas and experiences are what help us become better in every bit of our soaring. Friends sharing every part of planning and accomplishments are necessary for our sport to begin to grow again. I hope that we can all contribute in some way to that endeavour.

Flying / Planning Topics

1. Pilot Ability: Thermaling practice, Situational awareness, Cloud analysis skills
2. Weather: Trend cycles (building /dying)
3. Route planning: Does the selected route align with the actual weather?
4. Outlanding worries: Decision heights for outlanding commitment
Fear of failure, analysis of FoF versus self-preservation
5. Unnecessary worries: Is the PiC fully able to focus on the task at hand, and commit?
6. Flight success: Determined based on decision-making, not mileage?
7. Goal planning: Set goals based on skill level, successful completion of goals and decision-making signals green light for bigger goals.
8. Triangles, triangles.

Pilot Ability

Thermaling: When we fly, are we practicing or just boating around having fun? When I say practice, I think that we have to continue honing our thermaling techniques beyond merely staying in the air. I turn better to the right than the left, but I work on my left-handed thermaling skills each time I fly a practice flight. My goal is to equalize my thermaling ability. When you practice, do you find a thermal and milk it till it dies, or

do you find a thermal, evaluate it, sample it's lift band, and use that as comparative analysis for the next thermal? My following suggestions for practicing thermaling skills are some of the issues we can all work on to become more adept in the air.

Assume a cumulus marked day. We arrive under cloud and begin a logical search for lift in the most expeditious manner, ie. go to the windward and sunward side of the cloud immediately. Once in lift, try to recognize the stronger lift areas and quickly work to centre in those areas. The goal while practicing should be to try to utilize your time in the glider to the maximum extent possible to increase your skills, therefore you should try to work as many thermals as possible. This means leave thermals before you get to cloudbase. Try to find a thermal, centre it, evaluate it, take a sip and move on... this is the basis for cross-country... find a thermal, centre it, work it, leave it. Easy to say, hard to discipline yourself to at first. You will find you are working more, but you will also find that there is tons of lift on a decent day, and what you really find is that your confidence will go up to a point where you don't feel "lucky" to have found lift — you feel confident that you used your skills and made good decisions. Learning to evaluate where the best height bands are and to work those banded areas are very important aspects of this sport.

I will point out that your first first attempt at a Silver Distance badge flight is tried on a day where winds will be less than 10 knots. This reduces the chances of thermals being sheared by the wind, as well as to help keep the lift more uniform near cloudbase — lift will generally be more aligned with what you see at the cloud than if higher winds were drifting the lift in relation to the cloud.

Often you may see a pilot struggle after sinking out of the best working altitude band while you are on thermal autopilot, wondering how much easier can things get. Oddly, many times you'll see the same pilot do that over and over again. Recognizing that there are altitude bands where it is easy and efficient to climb is a major revelation for soaring pilots. Once in the efficient area to climb, try to stay in that working band.

The situational awareness side of things is very important. Learning to be aware of your surroundings on the ground is relatively natural to us, but in the sky it's not the same. Everything is important in the air — airspace, traffic, the weather trend, wind — everything matters...this is an experiential issue, and awareness comes in time. Initially, being aware of your goal, and remaining focused on your progress and your available layers of options, is the most important part of this.

Options diminish the lower you are. Once you have broken a decision height (which you determined before the flight began) you now direct your game plan towards maximum survivability, nothing else matters. Your outlanding scenarios have been set, your job is to make a decision and commit to it... implement your plan.

Though I would never suggest plans cannot dynamically be altered, doing so adds layers of unnecessary risk. Know when to give up! If you break 2000 feet, you need your landing zone near you... 1500 feet... still hoping to find lift, but the odds are shrinking and you have a couple of fields picked out, 1000 feet... pre-landing checklist...gear down...flaps down... You are now committed; *do not* change your mind at this point. Clear your mind of everything else and EXECUTE, EXECUTE! Survivable outlandings are highly stressful — the first time — after that they become a part of the game. Fly enough times, attempt enough cross-country flights, and you *will* land out. The idea here is to remain calm, stick to a plan, and *trust yourself*. Even saying out loud, "I can do this" — while it seems silly — calms you. Virtually every aspect of cross-country soaring revolves around trusting yourself and your decision-making process.

Another important aspect of successful cross-country soaring is our ability to effectively analyze cloud structure and density. The difficulty in this process is learning to think and plan ahead. While climbing or cruising, we should be keenly aware of the development of clouds along our intended route. As we progress, we constantly make corrections or deviations to the direct route, based on the best looking clouds.

Sometimes the issue is to create the most opportunities for continuing the flight, in other words, sometimes it is better to take a route that gives us more average chances, than one great chance. I am always a fan of erring to the conservative side based on my desire to not land my expensive sailplane at other-than-airport outlanding sites. That being said, I have many times deviated from what I know to be the more direct route, to pursue a series of clouds that provide me multiple chances of gaining altitude and staying in the game. I make many of my decisions based on the desire to complete my course or goal. When the weather is amazing, I will try to stick to a very rigid course line, keeping deviations to a minimum, only to pursue the absolute best looking clouds and associated lift... when things turn weaker and I am away from home I shift gears mentally to begin thinking in much smaller increments... 10 miles or even 5 miles at a time.... whatever helps me get closer to my goal.

Committing to a goal, while difficult at first, becomes completely clarifying. You stop doubting yourself. What you must do above everything else is to think and evaluate. I am constantly calculating when flying. This much altitude for that much glide... this many miles left... that much time... *everything matters!* A difficult and fun part of this process is that you become totally immersed in the process of flying, navigating, analyzing the developing weather while on course and, most important, *keep an eye out for traffic!* This is pretty much the one that kills us... traffic and colliding with terrain... so it must be rigidly adhered to particularly when soaring in a mountainous place like Invermere. Radio calls are nice, but looking out all the time is the most important thing.

Perhaps the thing I'd stress the most is to adjust the way you look. When you are looking around, look for something. If it's clouds, don't just look at them, study them – are they building or dying? What sort of interval is there between when you notice them building to when you notice them dying? All this can be learned on the ground and perfected in the air, and it will make you a better sailplane pilot. Seeing other glider traffic or airplanes first will keep you alive longer... not seeing them is a recipe for disaster. Keeping most of your looking outside the cockpit and doing a decent scan is imperative to safe flight. If you lack in this area, practice diligently and get help from an instructor on how to develop a safe scan technique.

Weather

There are many books written on meteorology, and specifically soaring weather. While all these books offer great information and theory on the subject, there is no substitute for being able to look at what is actually going on throughout the course of the day. What we as sailplane pilots need to be aware of is as the weather changes, we must also change. Game plans alter with the weather. If things are better than expected, it is good practice to take advantage of the benefits, fly faster, fly farther... What really matters is when the weather gets worse, and we are out on course away from home. Never place such an emphasis on completing a task or making it back home that you allow yourself to be jeopardized by the weather.

If things are changing for the worse in a dramatic fashion, and your options are becoming limited, do not wait, ACT! Find a place to land, and get on the ground. You don't need to be stupid in this area, but you do need to be decisive. I have made the mistake of flying too close to thunderstorms, I have tried flying through what looked to be a small rain shower... I have also scared the hell out of myself with poor decision making in these areas. I now discipline myself to get away from adverse weather early. And if I can't escape bad weather, I land. You should too. Much better to wait out a storm on the ground than to hope you can avoid it in the air. Being aware of the weather trends on a half-hourly basis is very important to your safety. Always be conservative with regard to the changing weather.

Route Planning

This section should also be called dream planning. Let's face it, we all dream of making certain flights. What separates those who attempt and achieve those flights from those who don't are a couple of very specific things. Spend some time planning a flight – pick a place you'd like to go, it doesn't matter how large or small. Draw the lines on the map, plan your route, examine what terrain will affect the flights success and then calculate the amount of altitude required to fly that flight. In other words if you fly a 35:1 glider, and

your cross-country cruise speed average at 70 mph is 25:1, take the total distance in feet and divide by your L/D (40 miles= 211,200 feet divided by 25 = 8,448 feet). In still air, that's the altitude you need to make that distance, not considering wind or lift or sink. We now know that we need 9 thermals of only 1,000 feet each to make a 40 mile flight in those conditions. We can use that as the basis for evaluating the correct day on which to attempt that first flight. The next time you go fly, see how long it takes you to gain the required 9000 feet, and look out in the direction of your planned flight, to see if it actually seems do-able to you.

One common thing we were all taught was to draw rings around the airports showing altitudes inside which we are safe before can progress to the next waypoint. Those are great for 1-26's, but in a single place 15 metre ship of medium performance it's just not practical. The first point is that 90% of the area inside those rings are places you don't want to be anyway. I suggest drawing your intended course line on the map, breaking your course into smaller goals, and then establish the altitude required for each leg of the course. I will cover this with a demonstration of the way I mark my maps.

The real issue here is to do some homework. Don't simply run off and try to go somewhere. Plan a flight, think it through, perhaps drive the route if possible. Better yet if the terrain is difficult, is to take a powered flight over your intended course. Pictures help, and the more knowledge about the route you have, the more at ease you will be with your plan. The best plans are thought out well in advance, and when you actually accomplish the flight, it's almost a relief that it finally happened – now you can get on to thinking about a *longer one!* We actually have to have several flights well-planned to take advantage of the weather that the day presents to us. It is no good having a plan to fly south, if clearly the weather to the east is far superior making a run that way more do-able. Again, what I am stressing is that cross-country flights are planned. They are intentional. They should also serve as great sources of pride for our soaring community, and good ones should always be shared.

Outlanding Worries

Outlandings will always be a part of the game in cross-country soaring. You can do many things to reduce them but they will always be around. Familiarity with the local area combined with prior planning lowers the worry of an outlanding. If you can plan flights using airports as your outlanding sites, then you will be comfortable in your attempted flights. But there are times when events conspire against us, reduce our options, and force us to commit to landing in a field or other off-airport site. The thing to focus on in this situation is to clear your mind of everything except the basics. You should *never* start a cross-country (any flight, actually) with the thought in the back of your mind, "I hope I don't have to land out". Fly, *expecting* that it will indeed happen. You are then psychologically prepared to commit to a well-planned landing when you get low rather than delay decision on the inevitable and make unsafe choices.

The heights at which we make our commitment to land is an age old argument. Everyone's skill level and risk tolerance and landing skill level is different. In the beginning you should be very conservative in your decision making – 2000 feet agl is a hard number then. Once below it, you shift gears into full-blown survival mode. At 2000 feet have landable fields within sight. At 1500 ft, one should be closeby. At 1000 feet, game over, now we land. That's all, no self-doubt, or worse yet, self pity. We have a plan. We trust ourselves. We have examined our field, we have our plan in mind, we commit to our plan and we follow through. In even the worst of outlandings, unless we stall and spin, the odds are very highly in our favor that the worst we will do is damage our beautiful glider. (By the way, *never* let your concern for your equipment outweigh your concern for yourself.)

We will have to deal with an outlanding at some point in our cross-country careers – I happen to think it is a respected tradition – and experiencing it sooner rather than later is actually a good thing. Not that I suggest running out and going to deliberately land in a field somewhere, but I will tell you that I believe you will be a better pilot after you have landed out one time. You will trust yourself more and that worry in the back of your mind is gone. You will know in your heart that you are the pilot-in-command of this elegant machine, and that in a pinch, she will respond to your commands. While decision-making is everything in a

sport of high risks, and potentially deadly outcomes for poor judgment and mistakes, I find that those risks are the very things that truly draws me to this amazing sport. We can safely manage risks with good decision making, knowing our personal limits, and solid planning.

One comment on the *Fear of Failure* and how it can paralyze us. In this sport you will have to face your fears. If you allow your fear of failure to overcome your desire to succeed at your plan, you will never accomplish a goal. If you logically and intentionally deal with those fears rationally, by breaking them down and understanding those fears, you can succeed. Landing out is *not* a failure! It is the proof that you tried and believed in yourself enough to commit to something amazing. Most people will never experience this the way a Sailplane Pilot will.

Unnecessary Worries

Many times you'll see a pilot come to the airport to fly for an hour or two. He's in a hurry because his son has a baseball game at 3 pm that he can't be late for. His wife calls while he's rigging to remind him to pick up a jug of milk on his way home. The dog barfed on his new Lexus' leather interior – whatever. Soaring is a Zen thing. Soaring is a focus thing. Cross-country soaring is *really* a focus thing. After a couple hours in a glider by yourself, concentrating on actually going somewhere, you'll be amazed at how tired you are when you complete your flight. Soaring is pure endeavor. You have to clear your mind of everything that isn't pertinent to the flight and simply immerse yourself in "being the bird". I obviously say some of this with tongue in cheek. But when I'm on a big flight I think, I calculate, I evaluate, and I tell myself to go on. Many times I talk to myself out loud. Positive re-affirmations work in soaring. They remove self-doubt. I can. I will. Little things take you a long way. I was taught to plan solidly, and then focus wholly on the task, and put everything else away for the moment. I think this is the best advice as a sailplane pilot I ever received. I hope you do it yourself.

Flight Success

One thing we all need to do in soaring is share our accomplishments. Flight recorders are great tools for doing so. The biggest thing I advocate in soaring is to evaluate your flights based on your decision-making process, not the mileage or the height or the speed.

If you evaluate your process, separate your bad decisions from your good decisions. Talk about those mistakes; you can use the mistakes as building blocks to become a well-rounded competent soaring pilot. Too many times I see a pilot let their ego or bravado get in the way, and the outcome can be bad. The mistakes I am talking about is when someone pulls off something truly dumb and gets away with it. In their mind, they can convert their bad decision making into a success. Many times, they only share the exciting part of the flight and they embellish it, so that other pilots in turn may view it as a success as well. This behavior encourages others to attempt to keep up with the dumbness, and perhaps further the behaviour. Bad decisions work their way into our process in subtle and insidious fashion and we all need to be careful to evaluate our decision-making with each flight.

It's very important to share our failures. The ones I got away with are called experience. But still, bad decisions should be shared. Flights must be evaluated as a process and the more we can share our flights and evaluate them, accepting critique when warranted, we will all help each other to learn and be safe and proficient in our quest to fly further. Again, risk tolerance increases with experience, and what may seem risky to you I may not have the same level of concern over. But even this bears discussion as sometimes the risks we downplay are the ones that can kill us.

Goal Planning

I add this topic mostly to point out that it makes little sense to jump into deep water without starting in the shallow end of the pool first. If we set reasonable goals for ourselves, we can use those successes as the building blocks for setting bigger ones in the future. If we set goals too high and fail repeatedly we tend to lose interest as no one likes to end up a loser all the time. To stimulate a positive mindset, we can and should

set goals that are achievable given good planning and some effort. The FAI badge program is an excellent endeavour for those very reasons. The Silver badge in particular is a realistic goal for almost any competent and mid-level skilled pilot on a reasonable day – it's a great place to start. The goals are designed to develop your skills and judgment in an incremental fashion, with small easily digested steps.

Perhaps the single most important issue surrounding this entire discussion is knowing when to call things off and head back home. Call it the art of throwing in the towel. When we have done all the hard work of planning a flight, and declaring it, filling out the paperwork, and finally jumping in and getting on our way, sometimes our judgement can be clouded. I will stress again that your survival is more important than *any* goal. If you don't like what you see, go home, go land, do something, trust yourself and your plan. This is a difficult part of our sport because no one else can be with you to make your decision. You alone have to do it. There is never a time to be brave in this regard, and there will always be another day to try again.

Sometimes when we fail in accomplishing our primary goal, we can still consider the flight a success, based on secondary goals being met, those goals are decision-making, trusting yourself and having a solid plan, as you become a decisive, proficient and an improving soaring pilot. I cannot stress this area enough.

Triangles

I love flying triangles. Even the smallest of triangles force us to begin to flying a heading for at least one third of our flight away from our trusty home airfield. Even if you stay well within gliding distance, simply turning the nose of the glider away from the runway is a healthy thing for a soaring pilot with plans to become a cross-country pilot. I began my sailplane cross-country life by planning and practicing a small triangle. It is an effective learning tool. I hope you see fit in your soaring to give this a try, it will give you a great building block tool to work from. If we can use GPS to establish very reasonable tasks, it is easy to establish cylinders or rings around the turnpoints. By varying the diameter of the cylinder we can extend or shrink the task very easily. This minimizes task planning, and allows us to build on familiar successes. If we believe we can accomplish our flight based on pieces of a flight having been accomplished previously, it makes it very reasonable to envision going just a little farther with over the same general areas. I recommend this approach over others as it allows us to remain within gliding distance of airports many times when we are able to plan triangles that fit a specific geographic region. The beauty of this approach is that you can plan one flight and continue making the triangle incrementally larger while maximizing your time spent over familiar terrain. Familiarity is a comfortable thing, particularly in the early stages of your cross-country career.

My first training flights for cross-country flying in sailplanes were layed out as triangles and they form an excellent opportunity to obtain the Silver distance badge, with their obvious ability to allow you to capture and reduce known risks.