

How To Improve and Get To The Next Level

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This document is a compilation of postings of recommendations presented by pilots of various skill levels. In no way is this endorsement of the techniques or suggestions presented by those pilots. This is meant to be just a quick organization of those thoughts so that others may benefit.

TABLE OF CONTENTS

How to Practice.....	3
Flying Downwind	12
Flying In the Wind	14
Shadowing Another Pilot.....	16
When To Turn Back	18
Low Altitude Thermaling	22
Flight Mode Usage.....	25
Working with a Timer.....	27
Ballast.....	33
Plane Setup.....	36
Exercise and Physical Conditioning	39
References	40

How to Practice

There are several skill sets required to reach the top, in my assessment. Feel free to disagree of course!

In order of priority:

- 1) Balls of neutronium.
- 2) Precision smooth accurate control of the sticks.
- 3) Knowing the difference between efficient flying and inefficient flying. Doing much more of the former than the latter.
- 4) Ability to set up a plane to peak performance, and knowing your plane well.
- 5) Ability to sniff a gopher fart from 300 yards, fly to it, and chase that gopher all over the field.
- 6) Knowing your limitations.
- 7) Having a good enough plane to do the job.
- 8) Ability to borrow superman for when a real launch is required.
- 9) Ability to recognize mistakes and not repeat them.
- 10) Ability to keep an awareness of the conditions in parts of the field other than where your plane is located. Included in this is the ability to tell at a glance the sort of air another plane is flying through.
- 11) Ability to quickly and accurately decide strategy and tactics when the chips are down. Knowing when to gamble, and when not to.
- 12) See (1)

In sports, as in a lot of things, you play as your practice. So instead of just kind of sport flying and just drifting around until I hit something, I say the thermal is there and go there and see if I was right. I also usually practice 3 min flights with every throw because the AULD is the task that I tend to screw up, so last year I started really focusing on it.

I also think flying with an experienced friend is helpful. This way you have a gauge as to how well you really are doing. Is it the air that is goofy or is it you? If you are down after 45 seconds you don't know if you just choose poorly or if it was a big sink cycle. If you are down in 45 seconds and your buddy is skying out, you made a bad call and you learn what you did wrong.

For me practicing DLG is mostly a launch thing. When I practice, I put my headphones on and play a 1 minute countdown on repeat. I launch, push for lift, make 2 turns in it, and push back for a relight on the 1 minute (tip catch at 58 sec) like it was a 5x2 or 1,2,3,4 task. Every launch is with purpose. I assess the air, make a call on where the air is, and how strong it is, and verify my call. After 10-15 throws, I switch to 2 minutes, then later 3 minutes. Flying by yourself or in a really small group is harder than in a contest. There are fewer planes in the air to get a read on. You need to learn through experience to identify the conditions, and adapt your techniques and strategy to it. The stronger the thermals and sink cycles, the faster you need to fly when searching out air.... You need to learn how

geography and terrain affect the conditions and where you should go for the highest probability of lift.

If you want to get better you must first define where YOU need improvements. Contest flying will show this to you faster than anything. When you are at a contest make it a habit to talk about what just happened with your timer after a round. What did they do that you didn't? Why was the lift over there? Where did you make a mistake? What could you have done better? With these questions answered then you can now practice with intent.

When I practice, I try to do that twice a week. I work on air reading skills, thermal acquisition and turnarounds. I am confident in my thermaling ability so I rarely work lift once I find it. Unless I am at a contest my flights are always less than 2 minutes. I make 6 or 8 circles in lift and try to find the best part of it and then come back to relight into the same thermal. I will do this over and over until the thermal is too far to grab or too risky, like way, way out over the trees. As the thermal gets further away sometimes I try to get a lot of altitude and then come forward to search upwind for my next ride. When I find it I start the cycle over again, out and in. This is a tool that is often overlooked at contests; use your altitude to sniff out air for your next flight.

The most used launch in a contest is putting your plane behind you for a downwind thermal. By releasing a little late and at a bit of an angle you can get your launch to finish behind you just as high as straight out in front of you. Be careful with this one though as it is prone to tip strikes.

I think you first need to look at some of your past contests and evaluate where you placed with where you want to get. Say maybe you want to move into the fly-off at a big contest. Look at the average round score of the 10th place guy and your average round score. Then that tells you how many more points on average you need to get each round. Next, look at the actual rounds and see if there are outliers in the data. Were you averaging 980 a round and then X happened? Or are all of your rounds averaging about 800 and you need to be averaging 920 to get into the fly-offs?

Doing that analysis will either hopefully show you specific areas you need to improve or maybe instead specific strengths that you can improve even more.

Things to work on:

Stop over controlling and fly smoother, especially in thermal turns.

Improve turnaround time - I need to decrease how long it takes me to setup for landing approach and catch, and not overfly tasks (5x2, 1234, etc.).

Ranging, those top 10 guys tend to fly much further chasing the lift than the rest of us - I'm starting to range further but need to push myself more.

I give up too easy on some flights - sometimes it makes sense to bail and relight, but sometimes I give up too soon. This in part is related to point 1 and 2. If I'm not turning

smoothly on a given day, sometimes it hurts me more to try and work the small low level stuff, and if it's a bad day and I need a long landing approach (time and distance) to get the plane back down and land reasonably close to me, then I start thinking about landing more instead of trying to catch the low level stuff. If I can get more consistent at 1 and 2, then I think this will improve.

Air reading - I suck at this, but am slowly improving. As I am getting more comfortable flying and implementing task strategy, I am starting to look around a little more and notice things that I didn't notice before.

That is a frequent occurrence and I see many do it and fail. Then they abandon going deep...

If I'm by myself I just work on finding lift and working lift. I don't focus so much on the time as I'm really only interested in the longest flight being about 3 minutes, with another minute spent looking for more lift. The longest flight you'll have in a contest is usually 4 minutes, and if you have hooked up with a thermal you want to use the height to find another.

I also work a lot on control of the plane. Getting it to land in my hand (or at my foot) every time. I work on a quick turnaround after the catch. Unlike you, I fly when it's windy. I like to practice at the worst time of the day, like around 4:00 pm. If I can make things work in these tough conditions, then flying in calm morning air seems pretty easy.

Flying against others sets off a whole new series of strategies such as paying attention to what lift they are working, leading them into sink

I actually fly much better on my own when I really focus on what the plane is doing and where the lift is developing. The main thing is to get out there a lot and do it! Find local contests and start participating. Even an "all up last down" is educational.

Finding the worst field (preferably wet) in the morning, with cloud cover, therefore almost no lift present, is what helps me. If you can get good times under these conditions, you will probably do well during more active times of day. Flying in the wind is also a good idea. Challenge yourself.

Sometimes I fly HL on the backside of hills (not DSing). This ensures the air is always sinking. Good practice for flying in sink cycles.

It will frustrate you to fly in bad conditions, because the lift is nowhere and the times are crap. But I try to keep a level head and concentrate on flying.

The first thing you should do is to get yourself a talking timer like this one:

http://www.qualityrcproducts.com/prod_talkingtimer.html

It's the easiest way to re-create contest conditions.

Warm up by doing 1-minute flights first, and then simulating tasks like 5 2-minute flights, 3 3-minute flights, etc. Use your Talking Timer to count down the round for you. This will help you immensely in the catch-and-throw department, as the talking time will count down to the end of whatever you've specified as the window like so: 10.. 9.. 8.. 7.., which is exactly what your timer will be doing.

If you are just sport-flying, make it challenging. Never stay in a thermal longer than 2 or 3 minutes. When you come down out of a thermal, try to relight and catch it again further down the field.

And I'll second the notion to fly in ALL conditions. Windy? Rainy? Hot? Cool? Morning? Evening?

Full power launch is only for high launches. You might not need a full power launch to get back into a marked thermal. Full power means glider stress and body stress. All you need is about 100'...if you know how to find lift and stay with it.

As the previous posts mention, you shouldn't be in a thermal for longer than 4 minutes, actually 3, because the last minute should be used for marking other thermals. You should not get up too high to worry about getting home quickly.

usually just do the 2, 3, or 4 minute tasks, but sometimes I'll do the shorter times to work on ladder-type tasks. I used this setup for a while before my first contest and it helped me a lot.

As others have said, the best practice is to practice often and to do the tasks that you'll have to do in a contest. Also, for beginners, make sure that you're planning your flight so the plane always comes back to you, whether or not you catch it. Landing off the field in a contest will kill your scores faster than anything. Catching your plane by the wingtip and re-launching is cool, but it isn't a skill you'll need unless you are at the top among your competitors and are making all your tasks.

Catching by the wingtip and re-lighting in one fluid motion is very cool BUT, if you don't practice it all the time it will get you into a lot of trouble. It is almost as fast to land on time right beside you while reaching for the peg. It is most assuredly safer and more likely to succeed. In a contest one missed wingtip catch in a round will cost you much more than the land and throw method. Until you are much practiced at wingtip catches you would be better advised to practice setting down right beside yourself at the correct time.

If you are flying a 3 minute task and at 2 minutes you have plenty of altitude you have 2 choices. Keep climbing and scream down at 2 minutes 50 seconds doing rolls, loops and generally demonstrating how cool you are OR, at 2 minutes bail out and go back up wind to find the next thermal to launch into, set up a nice approach and re-launch into the lift you found. Want to guess who will score better?

Yes, you need to know how to fly in wind and all kinds of adverse conditions. With a few exceptions most of the HL contests I've been to have been in less than perfect weather. Fly in wind. Try your plane with ballast to see how it performs. Round 3 is not the time to try ballast for the first time. See what kind of trim changes affect your plane in different conditions.

The most important thing to practice is the ability to hook up with lift and then stay in the lift. You should make some attempt to read the air prior to launch and then throw/fly to where you think the lift is. Once you get a nibble or some lift indication then try to center up in the lift. If the lift is not where you thought it was then fly straight lines until you find some somewhere else. Assuming you have got the model centered in some lift then you should work the lift for a little while and try to stay with the lift as it drifts. There is no sense in hooking into monster lift and climbing to speck height. There are no useful contest skills to be gained by spending an hour doing acrobatics at speck height. So as soon as you have centered the lift tracked it downwind while climbing then it is time to work on some other useful contest skills.

So bail out on that thermal and come back upwind and look for another one. You should pay attention to the wind shifts and come upwind on the side of the field favored by the current wind direction. Try to hook up in some new lift and center up again. If you find only sink then re-launch and go where you think there might be lift. Never spend more than three or four minutes on a flight unless you are bailing on thermals and relocating new ones. Don't bother spending more than two minutes in easy lift. Fight out a three or four minute flight in spotty difficult lift if you find yourself in that situation but don't waste time doing lazy circles or skyrocketing upward in easy lift.

If you practice like that then you will get plenty of launch practice. I hardly ever do catch and fast re-launch practice and I don't think beginners should bother with that at all. Do as Denny says and make safe landings near your feet or just catch the plane by its nose and set the plane down. Then pick it up for the next throw. Wing tip catches are of no use to beginners and even intermediate level fliers. For the experts, a wingtip catch and re-launch might improve their round score from the 980s to a 1000 at best; it is virtually never the difference between winning and losing a contest. The beginner and intermediate level pilot needs only to be able to land the model at his feet or make a nose catch to be competitive. The thing to avoid as a beginner is landing 100 feet away and spending time running after the plane.

I use the timer on my transmitter to time flights. I just have a switch that I throw at some point near the end of each launch. This starts the timer and I typically try to fly two minute flights or I'll fight out three and four minute flights if the air is difficult but the longer flights are doable. I then usually catch the plane by its nose, set it down, reset the timer and throw again. I don't practice landing to a countdown. I don't think experts need much practice to do that effectively. Beginners need only to be able to land somewhere near themselves and no more than maybe five seconds over the target time.

I almost always do full power launches. You can do low power launches if you are concerned about wearing yourself out. That's never a consideration for me. I'm always full bore all the time. There is no need to do low power launches to practice low saves or low thermaling. You'll get plenty of practice with that when you launch into bad air or if you practice as I suggest and bail on lift to come upwind looking for new air.

(And what do you do if you are really high but you should land? Do you just push down the flaps or do some "crazy" stuff?) I hardly ever play around with that but when I do I just do a vertical dive with the airplane in speed camber. I might do some fast low passes before throwing out the flaps to slow for the catch.

This is one of the most important skills to learn if you want to be an expert level pilot. You find lift, center up in it, climb for a while, then bail out and come upwind to find lift for the next throw. If you have climbed above launch height then you should come down to launch height, slow the plane down to a normal thermal search speed and search the air within range of your throw. Use your air reading skills to look in the most likely areas for lift. Look for other planes in lift or read the wind shifts for clues. Now you see why I practice the way I do.

When in sink with an RC glider, you want to fly fast to get to better air sooner. The more time you spend in sink the lower you will be when you emerge from the sink. A free flight glider is stuck with whatever air it gets and needs to make the most of whatever that air mass has to offer. An RC glider has the option of leaving bad air. The worse the air is the faster you should fly. This, actually, is one of the main things that separate experts from novices in RC soaring. A novice may or may not recognize that he is in sink. If he does recognize the sink he is likely to pull back on the stick to arrest his descent. That is the wrong thing to do since it only slows the plane down and makes him stay in the sink longer. An expert will quickly recognize the sink and then, first, make sure he is in speed mode and get the heck out of the sink as fast as possible.

But of course, the best clinic or schooling you can get is to just start flying contests. From reading your posts I would guess that you are one of those guys that the experts will grab a hold of and begin teaching. The best thing is to walk up to some of the experts and start asking pertinent, intelligent questions. Do this early and often. Pretty soon one of them will make sure that you get paired off with a good timer for the contest so that the schooling can happen.

One important thing is to practice as you intend to compete.

If you're frustrated on the competition and add 110% force on launch you should do it in practice. If you find the thermal 2m above your head when landing, take it because you've needed it on the competition.

You need to push the limits when practicing to feel safe when competing. You should be well aware of your skills and the planes limitations when you go to the competition. By knowing this you can avoid pushing yourself in to those positions where you feel insecure.

I agree with what Mattias says about practicing. In the early spring I usually have a new model or two to test fly. I will throw them as hard as I can possibly throw any model in an attempt to break them. Sometimes they break. That makes me very unhappy for a few minutes. But I soon say to myself "I'm really glad that didn't happen at a contest". Poway is the second contest of the season for me. The BASS contest in Baltimore is the first. Typically I don't get all of my building done earlier than Friday night before the BASS contest so you will often see me flying and sometimes breaking new models at the BASS

contest. I try to break everything that can be broken at the BASS contest so that it won't break at Poway. Then I will usually build something new to take to Poway. I'll have my proven and trusted models ready to go and then I'll have a new toy to play with on practice day at Poway. I managed to break one of those new toys on Friday at Poway last year. Lots of guys were watching as I folded the wing on launch. I found that incident a little annoying and embarrassing but it had no effect on my contest flying since my primary contest models were still ready to go.

Mattias points out a good reason why I don't try to land to a timer when practicing. When I start to get low on a practice flight, I am always looking for a "low save" opportunity. I'll be skimming over trees and bushes and making dangerous moves just to see what I can get away with and if I see some lift that might get my model back up to altitude you can bet I'll be doing that, I won't be landing just because my timer happens to be approaching a particular time.

Like Mattias says: If you push the model to its limits during practice you will know what it can do during a contest.

Actually Macready took it one step further. His speed to fly makes allowance for how strong the next thermal is going to be. On a strong day, his inter-thermal speed is much greater than even the best speed to fly. It's calculated on the idea that you can afford to fly fast and loose a lot of altitude, if you are going to climb quickly in the next thermal.

These are two different things.

What I was talking about in my original post and is explained in Hugh's link, is the speed to fly. This is independent of how much lift you think you will find. It's only about the air you are flying in right now.

What's normally referred to as the Macready speed to fly does consider what lift will be found at the end of the glide.

The two speeds are different. On a strong thermal day, the Macready speed-to-fly would be higher than the speed to fly described in the links.

The Macready speed is the one that is used for cruising between thermals.

The speed to fly would be used for final glide when you trying to stretch the glide as far as possible.

As far as flying goes I don't do much to "get ready" for a contest but I always fly contest style when I am flying by myself. I will hold my plane until I feel/see where I think the lift is and then try to fly right to it. Once I find lift I love to see how many times I can get back into the same thermal, gets quite challenging when it moves way downwind or gets behind the tree line. I circle a few times to find the core and then head back for a quick relight to hit it again.

Lastly, see how many times you can get into the same thermal. Launch, find a thermal, do 2-3 turns to ensure you are in lift, then return, catch, re-light, and go back to the same thermal. Repeat this as many times as you can before the thermal is too far downwind.

I've been practicing like that: I get to the field, do a couple of tosses and try to determine a flight time that is achievable but not easy to make. Then I set my Talking Timer to that time and start launching repeatedly, trying to make that exact time on each flight and re-launch as quick as possible.

If I land early I either wait for the end of the assigned time or, if there's still 20s or more to go, re-launch and try to land at the end of the remaining time.

If I'm consistently missing the assigned time, I lower my target. If I'm making the time too easily, I increase it. If 2min is still too easy then that's not a good day to practice thermal flying... I go back to a 1min target for my flights so not to waste time floating on thermals that are just too easy to find and concentrate on landing at the tone, and turnaround.

Ben already posted about the Talking Timer above... my suggestion is similar to his except that I don't try to simulate a task, I just try to achieve a challenging time (depending on the weather) and do quick turnarounds. I repeat this 10, 20, 30 times in a row! What I don't like about simulating a task by yourself is: 1) you don't have an opponent to compare your results to and 2) you inevitably will do a pause at the end of the task.

When repeating over and over the same thing I found out I have enough discipline to work hard on making the assigned time. Having a friend doing the same thing with you also helps a lot.

I think my method can be naturally extended to all total time tasks. The only thing missing would be practicing reading the air, especially for tasks with limited throws.

For that, set a target a time that will be very challenging according to the conditions, give yourself a minute or so to look around and decide when to launch and try very hard to make the target time. In practice I think only being in a competition puts enough pressure on you (on me at least) to actually force yourself to make a long flight. When practicing, I don't have enough discipline for that... I very often tell myself "this time it didn't work, let me land and try again"...

One thing I practiced this year that helped a lot is launching with the intent to put my airplane in a specific spot in the sky, like where the thermal is. Sounds obvious but I see so many people in a contest that chuck up their normal straight launch and then drive the plane to the spot where the thermal is only to get there so low that it is hard to work.

The most used launch placement in a contest is downwind and the hardest placement for me is to my left (left handed). For placement to the right or downwind I just over-rotate a

bit and give it a late release. For placement to the left I had to change my grip on the radio a bit to allow my thumb to bump the aileron just after release. This one took a long time to get it right but with some practice I turned my weakness into strength. If the thermal is upwind I just launch with no elevator preset. If your radio allows you may be able to setup different launch presets that give a bit of rudder or aileron to go left or right on launch.

Flying Downwind

How do you practice/overcome the fear of losing a plane?

Stay in that thermal longer. I assume that some pilots in that round stayed in the thermal longer, got more time on that 2nd flight, and outscored you. If you could have stayed in that thermal longer you either could have matched them or maybe outscored them. Something you have not mentioned and that is, find some way to "know" where there will be lift on your way back. Say for example if a pilot was not willing to ever work a thermal as far as the other pilots who are outscoring this pilot (could be any reason: eyesight, plane design, personal preference whatever) then he might find some way to find a thermal on the return and work that to make the time.

Well, for one simple thing, practice landing your plane at some distance downwind of yourself. Pick an area off field that is nice, go out past it, and then bring it back to land there.

One loses a plane by either irretrievably putting it in a tree or not finding the tree, by physical destruction, or by losing sight. If you can still see it you can still fly it. It is up to you where you put it down so practice putting it down in an area that is easy to find that is not on the field. Do that a couple of times and I think you will stop worrying about the field boundaries so much.

Another thing you could do is get together with someone and have them spot your plane for you. You look away, read signs, whatever, then look back and find your plane. Learn to fly your plane without seeing it, and learn to pick it out quickly when you lose it. Those skills may help because often when one loses a plane, one doesn't get to see the final landing, or one loses sight and picks up the wrong plane, or similar occurrences. And sometimes one needs to run across the field while flying, to get a better line of sight or to set up for the next flight.

Realize that once you know you are going to land out, and then you have the freedom to fly in any direction at all. After all, landing out is likely to make it a drop round so what do you have to lose? If you think the lift is deeper then go deeper. Or off to the side. You don't have to come right back when you know you can't make it. Now if it is marginal, it is worth coming back. If you only need a little help/luck, then come back. But if there is no way no how, then it might be worth just looking for lift out where you are. If you find it THEN you can come back! That's Hero or Zero. But then again, you have nothing to lose.

In a contest setting, you only have two choices...go where you know the lift is: planes circling and going up or go where you think the lift is.

To be a better contest pilot, you should make the right decisions. Maybe you should go for the 900s and not the 1000s. In the 5x2 for example, why not wait a couple of seconds to make sure you are going to lift before the launch. It's better to be a little out of sync with the other pilots anyway. How many times have you missed your first 2, then taken all the

rest because you knew where to go. Don't worry about 2sec. turnarounds; make sure you have a battle plan. If you follow this, you will likely raise your scores significantly.

If you can launch high, you have more options. You can always get to the lift on the other side of the field after making a bad decision. Look at the top pilots in the top 10; they all have VERY sturdy launches (180-210ft). So, do whatever you can to launch higher.

You can be competitive at 145-155ft of launch, but you're going to have to work much harder when you realize you made a mistake and should have gone left instead of right. You'll come in lower in the thermal and be required to work harder to get your time. So, practice the low-level thermaling.

You have to fly smooth no matter what. So always practice that.

Air reading takes practice and time and talking to top pilots before you get it. I still don't get it.

So, the take home message is practice everything, especially launch, because it gives you the most bang for the buck. Winning RC sailplane contests has always been about the initial launch height, plus the air reading, and landing.

Flying In the Wind

To be a better windy weather pilot, you have to fly in the wind. Those days that you say are too windy to fly DLGs are the very days you should be out there.

You have to visualize the thermal.

Pretend it's smoke or colored air rising. Define the shape, size, and strength with your glider, this is your ruler. Use the wind speed around you to visualize how fast it's drifting downwind.

In the find-a-thermal, mark-a-thermal, and return game, having this info is paramount. If you visualize the thermal, when you relight, you'll know exactly where to go.

Remember, it's always a little further than you think. That's the beauty of Bruce's drill...you'll learn this fast.

The out and in exercise is good because you know you are headed to lift and it will teach you to trust that it is there and keep going and going and going until you hit it. The thermal may have moved left or right as well so you practice reading your airplane and interpreting what it does in relation to the thermal.

Also practice launching high and flying high. I see a lot of guys that can't recognize lift at launch altitude. They will fly right through it and may miss the only thermal for that flight. IMO the worst time to be complacent is at the beginning of the flight when you may be the highest you are going to get.

When you can get into the lift quickly and climb quickly, the flight will be a lot less stressful making it easier to plan for the next flight.

Being able to work a low thermal is an important and necessary skill, but no less important than being able to recognize and work a thermal at altitude.

For camber vs wind speed: It depends on the thermals and a person's flying style. For me I tend to find the thermals to be smaller in windy conditions more often than huge and if I need to thermal tight, I use more camber and a higher bank angle. Because of the wind I will be flying slightly faster to avoid stalling but it seems to work ok. During windy conditions there still can be huge thermals that do not require tight turns so when I am just flying around in big circles I use my middle camber position as I believe it to be more efficient.

If I find any thermal in wind (does not matter big or small) I take a couple of turns and evaluate whether or not I am climbing fast enough as I drift downwind to have enough altitude so I can return. If the angle from the horizon to my glider is getting larger (my glider is going up more than it is drifting) then I feel ok to continue circling and drifting. If the angle is getting smaller then I have to decide if I think from past experience that I can

make it back through the wind to myself. If it looks questionable it is time to seriously consider heading back. If the angle remains the same and I think I can make it back the whole time I may stay in the thermal unless another thermal is spotted up wind and low enough that I might be able to catch it at the altitude I am likely to be at when I get to it. Obviously the stronger the wind the less time you have for this evaluation and decision making. I have been in contests with the wind averaging about 18 to 20mph and if you took a turn and you did not climb like you thought you would the result was a definite land out. I was taking the time to run to the upwind side of the launch area and would drift back without circling to the downwind side of the launch area to maximize time aloft, then run back upwind and repeat.

One thing to keep in mind is that if you are fairly sure that the thermal will increase in intensity as it drifts back (say into a line of trees or a hill) then you might hang in there and use the stronger lift to get you back into a position to return successfully. This is a calculated risk that has worked quite a lot but also has ended up with folks landing out and in the trees...

When coming back, realize that if you are the only one out there and nobody else has preceded you, then you don't have a solid read on the air. Assume the worst, and come back expecting it. Then, if you encounter a patch of particularly good air, you can pull up, go to cruise camber, and get some more time. But otherwise keep on coming until over the field or at least until it is a CERTAINTY that you will make it. I have seen I don't know how many people pull up and slow down a little short, and then not quite make it. Better in a winning situation to get back over the field and then stretch what is left. It is a safer strategy at that point.

In line with this it is a good idea to practice reading the air in speed mode, and even when pushing faster than that. Then when you encounter lift while blazing back, you can pull up and make use of it rather than punching through and missing it. But when you leave that lift, leave with speed!

Shadowing Another Pilot

One of the more reliable and most easily recognized signs of a thermal is another glider that is going UP. This has been true for me in full-scale, F3whatever, and DLG. If I need lift, and there is someone's airplane going up, that's where I'm headed. I look for the airplane going up, and I care not about the skill level (real or perceived) of the pilot.

Your chances are close to zero 9X+% of the time. If you've ever tried it then you will understand.

Can you launch as high as Oleg, Bruce, Phil, or the usual top 10 expert? If you can, and you have a \$1000 glider, then you have a chance of sticking with them. I suppose this is only from my own experience, but during my 7 DLG contests, most of them major or semi-major contests, I've tried a handful of times to "shadow" those guys and have never been able to keep up, even when I've been able to get similar launch height (twice maybe). Now you can go in the direction they go and if they hit lift early enough in their flight, you have a good chance of getting in the bottom of it. But if it's a bit later in their flight, then they will likely be twice your altitude, and you are going to be returning home, or just too low to get into that lift. I've been down this road too many times.

Now as for following the general group, that's where I usually get help with lift. I wish for better, and work hard at Launching to have a good chance to really go long. IMO there's just no substitute for a high launch, unless you are a Joe Wurts. Joe still launches well though. There's no substitute for skill either. And I believe, as I think most will agree that nothing helps as much as flying in a well attended contest.

IMHO, shadowing is something one might do when one either has no idea what to do, or when one needs to cover a specific pilot for some reason. It is not a strategy to decide well in advance. If one is shadowing, one is automatically saying one can launch at least as high as the one being shadowed, can go as far, and can't read the air.

There is nothing wrong with shadowing. What you need to think about is WHY the top guy you are shadowing went the way he did. What were the ground signs just before launch, what were the streamers on the corners of the field doing? Pay attention to this, it's important.

I just finished solidly mid-pack at Wilson. Maybe half the time I had a good read on where I thought the lift was. I did OK in those rounds, the rest, well I just followed the crowd, but from a slightly lower launch height (hey, I'm getting old and decrepit), and whoops, now I've got another throw-out.

At least a couple of times I had a solid read on some lift way down wind and went for it. Bingo, it felt great to sky out way out over the beans, might even have been one of my 1000's.

OK, long story short, try to figure out 'WHY', and then go for it. Pretty soon people will be shadowing you.

I think shadowing can be used to good effect, initially, when flying at an unfamiliar field. If the locals are all headed towards the same area when there is no solid "read" prior to launch, there's probably a good reason for it.

A lot of VERY good pilots shadow each other. Just look at the fly-off at the Bruce.

In the last AULD round all the pilots launched and covered each other to the same patch of sink. I was following, but I was lucky enough to realized the bad air in-time to just burn off in the opposite direction and managed to get a sniff of lift to put me in the high 2mins and the only other pilot who got out the sink was Craig Greening who managed to work some lift for the 3:00, this was the flight that put us in the top 2 of the fly-off.

In some events such as the German Open, where at least 50% of pilots in each group are amazing pilots then there is a lot of "covering" going on.

In contests with smaller flight groups and a bigger spread of pilot abilities, then it is often better to do your own thing.

Before the round I got nothing. With no plan I will head to a hunch or the spot where lift has been forming. As I head in that direction if another plane is taking the same path I go into shadow mode. For me that means heading in the same direction but not flying in the same air. If you follow right behind someone you will get exactly what they get but if you get off to the side quite a bit you have the advantage of reading their plane and your plane. From this you can tell who has the better side and make corrections. Even if I am going to a thermal way off the field if another plane is on the same path I will always fly in different air, same coming home, and make corrections to the better side. This is where a good timer comes in, always keeping an eye on the other guy in your area and suggesting corrections.

When To Turn Back

For points, it is only necessary to land inside the boundaries. Anything of your airplane across the line, no matter how small, is "inside".

I don't use anything like "half launch height". It becomes a game of chicken with me, staying out longer and longer as I become used to a site and the conditions of the day.

Soaring is all about risk assessment and risk taking. I was definitely beyond return distance once last weekend, but snagged a boomer at about 40 feet and got up and away. Risk taken, risk rewarded. I've seen many a top competitor do something similar, lose the bet, and still go on to win the contest.

You must be able to get a good launch; there just is no substitute for altitude IMO. I would say at least in the 150 ft range. More is better. I don't know how high I launch anymore because I got such a bunch of bad vibes from my altimeter, that I no longer will use it. Also I know that at a contest I throw higher than I can during everyday flying even though I think I'm throwing "about" as hard as I can all the time. It seems to me the more tired my arm gets, the higher the glider goes, "go figure".

The DLG you are flying has a lot to do with your launch and in general how well you can fly. The plane's condition and set up can also be a big factor. At the 2008 ECHLGF (my first contest) I first saw Oleg's planes and was surprised at all the white splodge on his wings where he had filled dents to keep the accuracy of his wings. He gave up looks for performance. Lesson learned.

I generally fly for fun at the contests, so I don't really "practice" during my weekend etc flying days. I can see, if you want to fly with the best, and be a top competitor then I think you need to practice contest type things, like turnaround time, strategy, and any number of flying skills. You can also learn a lot by just being at a major contest and listening to what goes on, on the field. I'm repeating myself from some other post or thread, but one thing I try to always do when competing, is to watch at least the end of the previous group where I am next to fly or timing for someone. That way I will know something about where the lift was and I can throw and know where to be looking for lift before my task starts.

IMO many lessons are best learned by making mistakes during a contest. Those lessons will tend to stick with you. You will also learn where the Poison Ivy is if you land out of bounds. 🤔 My lesson from the Wilson Contest. Every contest, I repeat over and over, "I will not land out of Bounds " Well if you really push that going way out, it's unlikely you will get back every time. I see the Best of the Best landing out too.

There are a very few DLG fliers who seem born to the sport, and do well right from their first contest, but that's by far the exception, and I think they will be missing all the fun that those in the lower half of the standings enjoy competing against the guys you get to know who you spar with from contest to contest while working your way up into that top 1/2 and better.

Lots of flying DLG in different conditions can also help you at a contest. Usually you will have a little rain and a lot of wind at our contests, so don't just do your flying on the best days, it's usually a lot of fun to go out on those 15mph days and fly with ballast. I know that I now fly more often with ballast than without, sometimes even on the almost calm days. I have always had my problems during contests coming back from a windy, way downwind. A

lot of work on back from downwind and Ballast, and I'm doing well except turbulence still will get me on occasion.

Those that never risk landing out, never really learn how to come back from downwind well, because they never have to! Sometimes in practice, just head out beyond the point of no return if you think there might be lift there. Then you'll be flying in a condition where you KNOW you have to do well to get back. It is a bit different when the pressure is on that way. Get used to it.

I've seen so many fail at getting back from downwind, for all the wrong reasons. Put it in speed mode, and get it moving immediately. Even if that takes a short shallow dive to get started. Keep the nose down most of the time so the plane is really covering ground. In other words, keep it moving. Trying to float it back is a sure way of losing. Get it back, then transfer the speed to altitude and float what is left. That is a good approach.

I couldn't agree more. In large contests, there are always "FORE SURE" thermals that are past the point of no return. I never go out past the point of no return without a reason to do so, but I do it often. If you don't, and you're not comfortable doing so, you will never stand anywhere close to the podium.

Realize that when coming back from downwind, you are coming back through air that has blown by you and likely that you have flown through. You know more about that air than about any other random patch of air, statistically speaking. Read the air.

I think you hit upon one of the big hints that you often don't learn, but from experience. If you have had to fly any sort of sailplane without any wing glide path controls or flaperons, you would understand a lot more about keeping the energy of a glide. I tell even the experienced guys who try my DLGs, to push down, never pull up or add camber. That is like putting the brakes on. Even if you bobble the nose a slight bit, DLGs are so light that they slow down nearly immediately, and then land right where you did the bobble. I find that if you speed up, even if you are zooming 1 ft off the deck, that ground effect, or really low wind area, can keep you aloft for a lot farther than you think. You don't bleed energy. Once the plane is on the "step" in whatever neutral camber or reflex you use, it just speeds along.

I always push it down when coming back. If you get any sort of lift or assistance coming back, it just means you made it without the real worry.

Yep, Chris mentions something important here. There is a wind gradient. The lower you are, the less wind you have to fight. Pushing low in reflex can really make the last 100 yards something to see.

Those at the very top tend to be slightly more conservative, because they have everything to lose. Those below them have everything to win.

It's a relative thing. The top fliers IMHO tend to cover each other more, on average. They tend to take fewer chances going out after air that may not be there. That is, until someone else goes there first. Now of course there are exceptions to this, and those without launch height cannot play that game.

Now once they are out at lift, the story changes. Top pilots tend to do better in those situations where things are iffy and where skill is required to make it back to the field.

They've had lots of practice at it. They have a better idea where the limits are. So they may push the limits there a touch farther. This is particularly true when another good pilot is making it work out there. So they have to make it work also or they get a drop round. And then sometimes it doesn't work out.

All IMHO, of course!

That starts with plane setup. It is a combination of camber setting, elevator trim, and CG, such that the plane maintains a high rate of travel in a fairly flat glide. A touch faster (more down trim) and the plane goes into a shallow dive. The camber setting is optimized for the flattest glide in this setting. That is usually flat on the bottom of the airfoil, but for some wings it may be a touch off of that. The CG is set such that the plane is at least slightly stable in this configuration. If the plane has too much stability, then gusts of wind upset the glide path too much. Not enough stability, and the plane tucks too easily in a moment of inattention. Of course where the CG needs to be is a function of the skill of the pilot and personal preference for stability margin. And the tightness and repeatability of the elevator setup.

For some newer plane designs, one does not really have to ballast to high wing loadings to get a plane to move pretty well. Zone, Edge, Steig, Stobel V3, FW5flo, these should be able to move at a relatively low wing loading. So for planes such as these IMHO one ballasts more for turbulence level than for speed. More turbulence -> more ballast. One wants enough ballast so the plane can punch through stuff without getting bogged down. Sometimes a little ballast goes a long way.

Then, there is the most important part of all about punching upwind - don't dawdle. When you decide to move, MOVE! Don't be a pansy about it. Put the nose down, put it in speed mode, and get it covering ground fast. Then level out the glide but keep the speed. One will cover far more ground that way than what most pilots appear to be doing, which in the end is some variation of floating it back, trying to maximize duration in some sense. Forget about duration, concentrate on speed. Otherwise you'll stay up longer and land out. When one is safely back across the field boundary, and (if you don't have experience) NOT BEFORE, then pull up, pop cruise camber, and stretch the flight if desired. Be safe or be sorry.

Of course, if you hit good air on the way and you need the air or the time, or are practicing, go for it! That is part of where learning to read the plane at high speed helps.

Then there is terrain. Suppose you have a slight mound in the field at one point. Don't approach the downwind side of that mound, but instead approach beside the mound and move over in front of it in passing. One gets a slight boost compared to other approaches.

Suppose there is a mowed field line near your approach vector, and the wind is blowing slightly into the corn? Then put the plane just in front of that corn line and ride the line back. One gets a small boost from it.

Go faster in sink. When a gust hits the plane, pull up quickly (as close to zero delay as possible - and of course you know it is coming because it passed by you first) and briefly. When a lull, speed up ground coverage. This extracts a little dynamic energy from the air. Thanks Charlie! Being slightly on the stable side of neutral makes a little of this happen automatically. Too much though and one gets mired in the air. But in the end, the pilot on the sticks can do it better than a CG adjustment can do it.

Try to take a path that avoids being directly downwind of trees. Their wake tends to suck you in, and their turbulence hurts your plane's performance.

Watch for the wind shifts. Go with them a little. At least that biases towards better air.

Watch the other planes coming back. If one has a good glide, take their path. If one has a bad glide, be somewhere else!

If you see an expert running off in some direction that did not occur to you, perhaps they've found something to save their bacon. If you have no other hope, perhaps it will save yours too.

When you run out of altitude, level the bird off and use ground effect. When it starts to get too slow for speed mode, drop to cruise. Then to float. But NEVER give up!

Of course, if there is no chance at all of making it back, then there is the HERO option to consider. You've got some altitude and therefore some time to find some lift. In practice, sometimes going deliberately past the point of no return in the hunt for lift helps keep one calm in such situations as you've been there before.

Of course, if you don't think you will make it, START RUNNING! Don't wait until the flight is over!

Etc. USE EVERYTHING TO GET BACK!

Watch a few experts come back from "impossibly" far away. See how they do it. See what the ones that make it do differently than the ones who don't.

First, don't pull up too much but diving through is also a waste. The idea is to keep the airspeed within a reasonable range, too slow you do what you describe and too fast and it is the equivalent of diving so steep that you are wasting energy from high drag.

Second, If you don't level off in ground effect, where are you going to go? within 1/2 wingspan of the ground is a great place to level off or hit the ground. I don't think you understood what GT was trying to impart.

Not pulling up when approaching the ground will likely end up with a high speed landing that could have been stretched out a tad by pulling up and using ground effect.

Those that are afraid to put the nose down and end up flying at or near min-sink speed and even though they may stay up in the air a little longer, they end up landing short (downwind) because they should have been flying at best L/D adjusted for wind speed to cover the most ground. There is no reason not to take advantage of lifting air on the way back instead of just keeping the nose down and accepting the higher airspeed (read, not higher ground speed) and give up energy due to drag by flying well over best L/D (adjusted for wind speed).

Low Altitude Thermaling

Try to set your CG a couple of mm forward and add a couple of mm flap to your thermal mode. This works for me with my Twister 2. I actually fly the plane that I have set up like this in very quiet almost dead circumstances to take-on the smallest thermals but also for the flights with huge amount of ballast. Flown too light in more turbulent circumstances this does not really work out well.

You could try just doing a low toss to return to lift you have already worked. Find it at altitude, and close by. Then do a rather low toss and work it. Then lower...

As one goes up in altitude, lift becomes better formed and better behaved. Near ground level, the lift is possibly going to be smaller than the diameter of your turn. The goal is to have at least some part of the turn hit the lift. Try to adjust so that more of the plane is in lift. Widening the circle may not be the best way to do it when low down. Just try moving the circle slightly towards the good side. If it gets better, keep going. If it gets worse, go back. Sometimes a figure-8 is useful, making the crossing point where you already know the lift is hitting. Perhaps the other side of the 8 is better, perhaps not. But it may keep one from losing contact with a tight core.

Many get complacent in lift, figuring once they are in lift the work is done. One should IMHO strive to improve the location in the lift, and the efficiency of using it. Just don't overdo it. Once you conclude that you have the best you are going to find, be satisfied with it and work it the best you can. I often fail at the being satisfied part and occasionally suffer for it.

But most likely the reason you haven't saved a plane low is that you have already given up. Read it and use it all the way to your hand.

IMHO, this is a big mistake to do (figure 8 flying low). Anytime you attempt to change direction of a turn in the midst of worrying about scratching out the last little bits of lift at low altitude, generally results in much more altitude loss than you like. You think you can do it with those fast turns with flaperons, but no, not really. It is better to keep the smoothness of the turns constant and try to let the plane drift toward a direction by mildly opening and closing the circle a bit with proper timing in order to move the plane toward a desired area where lift might be. Changing direction only increases the chances of a bobble, and then you are done for in the low level circle. If you happen to be working the same little thermal as another then if you have to change direction in order to reduce the chances of a mid-air, then do it. Then again, even if you are circling the same direction, just being off-center can result in a simple mid-air.

It is better to practice smooth, precise speed control and plane banking in low level lift than change direction using a figure 8.

Try to fly fast ALL the time, at least try to fly faster than your usual. Flying too slow and cambered too much is a waste of airfoil efficiency and energy. This allows for smoother flying also. Rudder!

I play with cruise and thermal also when flying low.

My flying sessions are always, always composed of launching high and flying low. If you can stay in a thermal at low altitudes, then you can stay in a thermal at higher altitudes.

This is a REALLY tough one to address. The number one thing IMO that matters is how well you can read the planes energy, and how well you are reading all the little clues that point you to where the best lift is.

I do like the idea of doing lots of low launches so that you have to work the low stuff. The high stuff is much easier; you should be practicing the elements that are most difficult for you.

Being able to know that you are just a bump of elevator away from either a stall or an inefficient mush is more important than having the perfect camber setting. Knowing just when and where to tighten up your turn when working a low level thermal is VERY important, and comes from being able to "feel" the planes energy state. Or better stated, being able to tell when the energy state changes because of a puff of air.

One little hint, at very low altitudes, sometimes the energy state changes more from the horizontal inflow to the thermal than the actual vertical movement. The trick is to figure out that the energy kick was from the inflow, and turn towards the direction the inflow is moving. This kind of stuff is key to working the very low thermals.

I'm O.K. with the figure 8. I think Gerald has a point that sometimes this can work well at low altitudes. Although it seems counter-intuitive, but I would not change my turn direction once I'm up in the thermal, say 100+ ft. But at low altitudes, I find that sniffing the core can be done by changing directions. It sounds crazy, I know. But at this height, when milking time, you've got nothing to lose, assuming you're within the field boundary.

There have been countless times I have been 5-10ft off the deck with another minute to go, and made my time, with a lot of figure 8s. Energy management is paramount.

IMO you have to "let go" of some common practices when you're trying to work something from 5ft off the ground. One is, ignore the ground and imagine it isn't there.

If you want to get good at the low level stuff, you have to do 30ft tosses and start working it. This goes back to my post last page about knowing where the lift is.

I think the DLGers are spoiled with the launch heights now days. During the javelin launch days, a lot of guys were only getting 30-50ft. They still got their times in the 5x2 for example.

But, to take your contest results to the "next level" you need the total package, launch height and mad thermaling skills.

Please understand, I was not advocating extensive use of figure-8 turns! But one should be proficient at doing them efficiently. And if you don't have a rudder, don't bother. They are a useful solution when only part of a turn is in lift. After all, being in lift is better than being efficient.

If you've ever watched mist burn off a lake, you'd realize at ground level sometimes the lift is just little mad columns of spiraling air perhaps only 6" in diameter or smaller but climbing at several meters per second. These can come in clusters. I spent some time studying that

for a few mornings some years ago. That is what you might be trying to work at low altitude. And the influx at ground level as has been pointed out. So shifting a turn can easily result in simply turning around the lift and missing it completely. At very low altitude, do the best you can to NEVER lose contact with the core. There often isn't the altitude to get back. And IMHO keep enough momentum to be able to maneuver. Wallowing out of the lift zone means landing.

When part of a plane's circle is getting a notable bump upwards, then you can be reasonably sure that you might be working one of those micro cores. Keep hitting it for all it's worth. Try to maximize your contact. IF instead it is getting a gentle rise, shift over more in that direction as the lift may be broad enough to support that.

IMHO, of course, and based on my experience and observations.

First I agree with bits of all of the posts, but hopefully everyone is really concentrating on Joe's post. If you are really concentrating on the energy that the glider is showing you all the time, you will realize that you can and should change directions sometimes, and others, you should simply re-center but remain turning the same direction. Sometimes, depending on what your glider tells you, simply changing direction at the right point on your circular path will offset your pattern exactly where the lift is. Can't count how many times I have successfully used this to get directly to the lift rather than go around one more time in the weak stuff... Doing most everything you can to stay in contact with the lift is the key. Less important is your flight mode. Heck, at 9.5 oz. these things will climb just fine in reflex as long as you can keep it in the lift. Worst possible course of action is to fly too slowly. Again, the flight mode not very important. If you control your glider such that it is flying too slowly to recover from any of the turbulence associated with low level, immature thermals, then you will be doing a lot of landing practice. Flying at the proper speed is what allows the top pilots get the most out of their glider's performance, and allows the maneuverability to stay in contact with the lift. And, as Joe talks about reading energy, if you always strive to fly your model at the proper airspeed, you will be able to tell if you just flew into an air mass that changed your gliders energy easier....because you have been really paying attention to it from the start...

Generally though, if in lift, use camber as recommended by the airfoil designer, if cruising gently around, clean section, if diving and penetrating upwind, reflex. Remember, these settings alone do not determine how fast you plane flies. That is up to you...push the stick forward and speed up if you are not in lift, more if you are in sink. The goal is to get out of that mass of sinking air. Linger in lift, speed out of sink. If you think about this for a while, it will not be counter intuitive at all. It will be obvious.

Food for thought: as you get closer to the ground, consider increasing your airspeed a little to give you the opportunity to make the most out of any little bit of rising air you might want to try circling in. You could likely get away with a full wrap with only your momentum, then continue on if there was no thermal...

Flight Mode Usage

I don't use thermal mode (TE drop, more differential and more rudder coupling) until I'm in a thermal. I launch in speed mode (reflex), then, at the top, I go into cruise mode.

In the early morning, I'll deploy a little camber for cruise (slider bar). Also, couple up-elevator with camber all the time, so when you give up elevator, you get a little camber...not too much though. At full up elevator you should get about 4mm of TE drop.

In a contest you're always thinking about your next flight. If the thermal you're currently in is too far away for you to launch into, you really want to try to find a new closer thermal before you come in for a landing. If you can do that all the time, you'll win all the time.

Some people keep their plane in the speed mode after launch because it allows the pilot to cover the most sky quickly in looking for thermals. Larry Jolly comes to mind as a pilot who will come off the top of the launch then charge hard downwind till he gets that thermal he knows is there. Remember that if you're going downwind to find a thermal and you hit sink along the way, you'll want to spend as little time as possible in the sink. That means you'll want to be in your speed mode. If you're searching in neutral air you may want to be cambered a couple of mm to maintain your altitude and to help you hook the thermal. I'd say that I spend 90% of my time between thermals in speed mode, and only use the camber once I find a thermal.

I only put the thermal camber in when I think I'm in or near to lift. If I launch into nice air then I'll immediately switch on the thermal camber, otherwise I transition into glide and keep the speed mode on. I'll cruise to where I think the lift is or in some blind search direction in speed camber. Once I get the first thermal indications I'll switch on the thermal camber, I think I can read air better in thermal camber. There are exceptions to the rule though.

If the conditions are just launch and float conditions or conditions where the lift and sink are very gentle and subtle then I'll immediately switch to thermal or float mode right after launch. In those conditions I'm in maximum "air reading" mode immediately after launch.

Then there are the opposite conditions. If the air is real "sporty", that is to say breezy and turbulent I might just leave the plane in speed mode even while thermaling. In those conditions I want to always keep my airspeed up to avoid upsets. The small loss in climbing ability will not matter since in these conditions the lift needs to be strong to be usable anyway and so the plane will climb as long as you get to the lift and avoid being thrown out of it when you get there.

You should not have camber on if you know that you are not in or near lift. You want to move quickly through that air on your way to better air. If you can read air while flying fast in speed camber mode then leave the plane in speed camber until you get to lift. If you are like me and you can read air better when flying slowly with camber then flip to thermal

camber and slow down at the first lift indication or when you reach the area of sky that you really want to search.

Working with a Timer

When you do go to a contest, talk to your timer and let him know what you want to hear from him as far as count down, what others are doing, etc. If you are timing in your first contest, make sure you know what your pilot is expecting. One big mistake is to stand there and watch your own pilot fly. You should constantly be scanning the field to see what everybody else is doing. If your pilot is having trouble, you can then say "couple of guys working a bubble over the NE corner" or whatever that he possibly can't see.

Timing style is very important. I have been on both ends of the mentoring situation quite a bit. Both in unlimited class and in hand launch. The mentor and student need to learn each other's tendencies and styles. The biggest and most common problem that comes up is that when the mentor starts talking, the student frequently stops thinking and becomes a robot. The situation soon becomes one where the mentor is attempting to fly the plane by voice commands. A balance needs to be struck where the mentor offers advice and teaching without the student shutting his own brain down. I have commonly had the experience (at hand launch contests mostly) where I time for a guy who is quite good and does quite well already but after the round I know that he would have done better had I not timed for him. This is because I was talking too much and offering too much information and he had stopped thinking for himself and reading the air that he was flying through. The student (remember I have been on the student end of the relationship quite recently so I'm talking about myself here too) naturally thinks of the mentor as being so much better than he is that the mentor should just be able to tell the student where to fly and the rest should be easy. The truth is that the pilot on the sticks needs to get feedback from the plane that only the pilot on the sticks can see. If that flying pilot's mind is shut down and in robot mode then this information is lost. The flying pilot needs to be recognizing and responding to the subtle lift clues that only he can see. The tendency is that he overrides this information with what the mentor is saying or is just so distracted that he no longer even sees this information.

I'll point out one other thing that many sportsmen might not guess to be true. A sportsman probably imagines that a top expert always knows where the lift is and as such, an expert could just point and say "go fly over there and you'll get time". That is rarely the case. Sometimes they have a notion where the air might be nice but only a rough idea. Many times they launch and go do a search. They can succeed doing such a blind search because they have the ability to quickly recognize lift when they fly through it. An expert is frequently very hesitant to try and point out where he thinks lift might be to someone else. If the lift is not exactly there or if the guy doesn't go quite deep enough then the outcome will likely be bad and everybody is unhappy. Had the expert been flying, he would have quickly gone deeper or searched a wider area, or gone to plan B and found enough lift to max. These problems are most prevalent in situations where the expert is just timing for or offering advice on a one time basis. In a mentoring situation the mentor can learn the capabilities and tendencies of the pilot and adjust his mentoring style to suit.

My biggest advice is to never guess. Never say, I think air is over here.... you should be stating your observations, not your conclusions. The first time I ever timed for a DLG pilot was for Tom Kiesling in the fly-offs of the first IHLGF I ever saw. At that time I had never flown a DLG, nor did I know the tasks. I was good at keeping 2 watches, one for the window

time and one for the flight time. I also told him about obvious air he could get to (planes were going up in). That was it. It is ok to relate little info, it isn't ok to relate bad/wrong info.

Don't be intimidated, just do your best.

BTW, I highly recommend picking up a Palm Pilot with the DLG software. It unloads the timer a great deal, allowing you to shift your attention elsewhere.

Start by having a pow wow with your pilot, and ask what he would like information wise. Count up or count down..... Talk about how you describe or name each direction on the field. Pick out landmarks and names of different areas so that you can effectively communicate where the planes or air are.

Never tell the pilot about air he cannot get to. State your observations, not your conclusions.

Actually, whether the pilot is turning or not is irrelevant. Whether they are climbing or not is the key.

Having a great timer is fantastic. As the pilot it is good to know how the timer thinks that you are using at the time. You should try to practice with your flying partners at the field that you fly at. Time for everybody at your field and let all of them time for you. Most pilots do not practice flying with timer except at contest and this is not the place to practice with your timers. When you go to a contest you should have confidence in more than one timer. I know that you will fly against your timer sometimes and this is why you need to practice with all your flying buds. It will make you as a timer better and better pilots.

A lot of being a great caller is based on experience.

A lot of being a good caller is knowing what you don't know.

It is useful to let your pilot know that people are circling, and whether they are:

- 1) going up
- 2) going up better than their pilot is
- 3) maintaining
- 4) not going up

This is of course if they are in range. It is important to let them know because if the pilot glances over and sees guys circling, but doesn't have the time to evaluate if they are going up, he may assume they are doing well and leave marginal air for something he perceives as better. As a caller it is your job to let them know if they are really in good air or not. To do this you really have to watch them for three or four circles and make sure they are going up. Nothing worse than a caller that thinks they can make a read in a quarter of a second

and influence the pilot's decision and then turn out to be wrong.

If you are unsure of something let your pilot know you are not sure, but you think you have information that may be helpful. Then the pilot can look and evaluate if they are willing to take action based on the information given.

Knowing if the pilot can or cannot get to the air is subjective. I still want to know it coz I might be able to use the info.

I find that timing CAN be very stressful so I do my best to make it easy on my timers. I usually just ask to watch out for other planes and where they think a thermal is. They can give me time remaining if they want or not-- I would usually ask for it anyway. I always ask for a 15second countdown/up (whatever they're comfortable with).

As far as heading-- I like to hear MY left or MY right, up/downwind. I don't want to hear north, south, east or west mumbo jumbo. I'd like to hear land marks--- 'go to the tents!' 'go to the cars!' OR 'FTW! get out of that sink!' LOL!!!

I have seen guys fumble with the buttons and the timesheets. I just tell them to RELAX!!!--I have 2 and 3 min timers set on my tranny that reset after I release the launch preset. There will be a lot of times that I won't follow your suggestions. Please don't take that as a negative. The information that you provide influences MY decisions. There will be times that I will tune you out also. Please don't take this the wrong way. It's just my way of focusing.

What I mentioned above are what I usually do when I time for people. I will only look at your plane only when necessary (usually during launch/landing or finding the thermal core). Most of the time I will be watching the other planes, field, birds, bugs, dust, etc. and tell you what I think.

One of the reasons I like going to large contests, is that you get to see how it is really supposed to be done.

Nothing is more educational to me than to watch the top pilots in action. When I have off time, I am usually watching the planes fly. It has really helped me identify which plane is in lift, or scratching, or not in lift.

I also try and keep quiet and listen to how the top pilot/helper combinations work together, and try and hear what they are saying.

The big contests are great....I do a lot of listening and learning while I am at them.

This is an interesting thread. Unfortunately, the answer is highly dependent on the pilot/caller combination. Some pilots want the caller to be a filter with the pilot being informed of only the "important" stuff, other pilots want all information possible from the caller with the pilot doing the filtering (I am in the latter camp). For DLG, being aware of the timing is of high importance as the tactics/strategy changes and evolves during each flight as well as during the working time. So I would put a high priority on providing periodic updates on flying time and working time remaining. And find out whether the pilot wants to hear time elapsed or time remaining (count up or countdown)!

A painful example of clashing calling strategies was highlighted to me at a past F3J WC. I had been used to working with what I would call "strong-willed" pilots, and I was used to providing somewhat directive information where my pilot would then filter as appropriate as he determined necessary. The pilot that I was calling for was used to hearing only informational calls. He interpreted my calling style differently than what was intended, which ended up costing us some points. A lesson was learned there...

Bottom line, it is REALLY good for the pilot to talk with the timer to give an indication of what he is wanting from the caller.

Watching other contenders for the top in that flight group is common enough. Sometimes it is for strategy/tactics reasons. For instance, 3rd flight in AULD, and your pilot has managed to eke out a lead. The winning strategy at that point is often to cover the next best contender. At least as long as that pilot is not doing anything stupid!

Generally many sportsmen have an idea of these things as well, just not as refined. Novices don't know much about flying gliders and tend to need flight coaching. Also even experts miss things. But as a general rule of thumb, the sequence is of the following form:

- 1) Make your air read.
- 2) Collaborate with your pilot.
- 3) Keep alert for changes in the read, particularly last moment changes before launch.
- 4) Watch where the pack goes, where the best pilots go, and look for anyone trying something unusual. Quickly learn to identify the planes of the better pilots.
- 5) When your pilot has committed to an area (they should tell you) then focus mostly on helping them get the best out of the region where they are flying. Committing to an area is either an acknowledgment that there is nothing better elsewhere, or there is nothing else in range. But even when the pilot is committed, keep a partial eye on other developments for advice on next/re launching.
- 6) In all cases, as one gets into the last half minute, make sure the pilot has a clear landing and re-launching area to work from.

Now (5) may need to be tempered back to watching the area closer to the pilot more, if the pilot has less experience. That follows directly from sportsmen being intrinsically more committed to an area than experts as they usually have lesser capabilities at ranging.

If one were to take a sportsman, and instead of critiquing their flying, give them the situational reports as one would an expert, one might be surprised. The pilot might do better.

First off, they know you trust them to fly their plane. If they need help, they might ask. Otherwise let them fly - give advice after the round! Second, when they have the "big picture" they may feel more at ease and more in control of what is happening. They may make better decisions then when they are being micro-managed. This also helps them build the skill set needed to ascertain the big picture without help. Consider it real time training.

The "mushroom treatment" should be reserved for pretty low level pilots and really should be arranged in advance so there is no uncertainty.

If one looks at the competition results, they usually split fairly cleanly between expert and sportsmen. Yes, there is an occasional "sportsman" who scores into the bottom of the experts, or vice-versa. But these are the exceptions rather than the norm. Experts generally are better at most of the skills required for competition than sportsmen.

One of the key skills is air reading and another is rapid decision making. Sportsmen tend to be weak in these areas. This also makes them weak in assisting experts as helpers.

When Phil was training me (he may have somewhat succeeded or he may have given up...) he asked me often enough what my read was. Or why I made a read. Or he would point out why he made a read. Sometimes I would ask why he did something when I couldn't find the reason...

I remember watching Phil and Oleg doing what is called the "Taboo Flick" or something to that effect. A Taboo is flying along, and the pilot immediately throws it into a tight 360 to check out a patch of air. (Note, if you don't have a rudder, this doesn't apply) Originally I wasn't even seeing why. Then later I would see why, but couldn't recognize it as fast. Now, it seems obvious and easy to me. I have other weaknesses...

For me, the first thing I am interested in regular updates of my flight time and the slot time. We also try and keep watches on as many other pilots in the slot as well, so we know what I need to achieve. Sometimes we have watches on as many as 4 different pilots (and it is sometimes interesting to see how their times correlate with what we recorded)

One of the big decisions for me is when to give up on a flight and re-launch to find better air. Being able to make calculations in my head to work out what kind of window I have to make that decision, and also the risk attached.

Although I pay attention to the air for "reads". I only seem to hit lift on about 40-50% of the reads I get. The majority of lift that I catch I just happen upon because I know that a feature seems to kick off regular cycles, or simply pimp off other pilots lift, the key is being able to quickly notice when you are in lift. So often I see people launch directly into lift and fly straight out of it.

Of course regular feedback on where other pilots are and if they are in lift.. but the decision on if you can get there or not is yours, not the timers. A quick glance towards where you are aiming should give you this information. Hayley very rarely tells me where to go... however on the odd occasion she will be very decisive and tell me and I know that it must be a very good read and it always pays off. However it is impossible for a timer to keep an eye on the clocks, your model when it comes into land AND know where every model is in the sky. If your timer misses someone in good air don't blame your bad flight on them!

I also find it good that I can be quite abrupt with Hayley without causing too much offence. There are times where we do have a few cross words after messing up a round, but have a rule that as soon as we step out of the box, all is forgotten. Although I do know that I am going to get my ass kicked if I land out.

I don't think being rudderless makes any difference to being able to flick a model into a circle (I fly some models rudderless and some with a conventional setup).

I enjoy timing for pilots who are happy to make their own decisions on feedback I give them, but really dislike timing when the pilot is waiting for my instruction on exactly where to fly.

Another tip is for a timer to have an absolute and total understanding of the rules. Helping your pilot avoid any silly rule infringements could save them the competition.

There were several rule breaks that I see often, that would get protested at World champs level.

Swapping models, BOTH models need to be in the box before removing the one you no longer want to fly. Often if a timer is retrieving one model and the pilot fetching his backup this becomes uncoordinated and could cause a zero for the next flight or for the whole round!

Poker - the timer MUST know the exact flight-time the pilot is aiming for BEFORE he launches. Saying "same as previous flight" is fine in my mind, but on the last flight declaring "flying out the slot" I don't think would pass. In Poker when I hit my target time before the last flight, Hayley immediately starts shouting out each second of the slot time remaining, then just as I am winding up to a launch i will shout out a time 2 seconds less than what she last said.

While I don't think there is too much worry when CD's are a little relaxed about this type of rule-break at most events, I would imagine in the world-champs, German Open or something like the USA Team Selection finals these rules might be applied to the word.

Ballast

I have only flown the Taboo with ballast once and that was a practice day. I had gone down to North Carolina early last year before the contest season started to have a practice session with Oleg and the DESS guys. It turned out to be real windy. We did a little flying anyway since we were there already and at least at first the wind came with some remarkably strong lift. The air was so turbulent that I had to increase my aileron throws to keep control of the model.

I never used ballast again after that day. I always find myself thinking about ballast at the Poway contest. It typically gets a bit breezy in the afternoons. Last year I even spent some time after lunch practicing with ballast, not flying the model but reminding myself how the ballast was inserted in the model. That way, I could quickly add the ballast if I decided to use it. So what happens is that I tell myself I'll fly the next round without ballast. If I start to have trouble getting back upwind then I'll put ballast in for the next round. I never added the ballast last year with the Taboo and I'm not really sure if I've ever used ballast at Poway. In general I hardly ever use ballast in any model.

My Taboo weighs 9.7oz (275g) and is the lightest DLG model I have owned.

With a Ballast block setup with a slightly forward Cg or 2MM, there will be a rather small CG change with this arrangement (which may be what is desired, maybe not enough). 2oz of ballast at 2mm forward of the empty CG will shift the final CG approximately $2\text{mm} \times 2/8$ or $2\text{mm} \times 2/10$ (0.4-0.5mm!) assuming 8-10oz empty weight. Not enough to really feel anything I think.

Walt, it depends on how stable/unstable your model is to begin with. If you like to fly it stable when empty, there is no pressing need to shift the CG when ballasted. But even if your ballast center is 5mm in front of the empty CG, you will not run into any trouble, the CG change will be barely noticeable. So it is not all that critical to be within 1mm or 2mm. As long as it is not behind the CG. Making the plane less stable when ballasted is not desirable in my opinion.

If the speed setting is already set for its max L/D unballasted, then it likely won't change much when ballast is added... If one adds 3 oz to a 9 oz plane then the plane weighs 1.3 times as much and neglecting any other corrections, will be flying $\sqrt{1.3}$ times as fast, or about 14% faster.

Trimming to fly faster than max L/D in speed mode is a bad idea in my opinion. One has the option of using the right stick to make the plane fly faster in specific situations, such as coming back against a strong headwind. Now if the plane is trimmed neutral in speed mode, then when one pushes the plane a bit it goes into the pitch unstable region. That can make it difficult to fly back efficiently and then you lose. Having at least a little bit of stability in the max L/D trim at speed camber gives one the option of pushing the plane a little and not entering the unstable pitch region. To me that is sufficient reason to have the plane be pitch stable rather than pitch neutral at max L/D in speed camber.

The ability to read lift on DLGs really is pretty good; they are quickly responsive to air mass motion. So there is little need to have a particularly rearward CG. Also, the sink rate difference is roughly zero for a reasonable CG range, but the penalty for flying at the wrong airspeeds (a little fast or slow for the camber setting) is high. Generally for a DLG in speed mode, if one is flying less than 1M/s slower than one should be, then cruise camber will be notably more efficient. The penalty is roughly symmetric, but you usually don't have a camber setting faster than speed mode to enter (Zone foils can go to -1 degree but it should usually be avoided unless one intends to go really fast). The efficient speed bands for each camber setting really are pretty narrow. That is another argument for having the plane be at least a little pitch stable. The plane then will fly closer to a trimmed airspeed. A neutral plane's speed will wander all over the place resulting in a higher average sink rate and a reduction in effective L/D.

If one is having to push the plane a bit frequently, then perhaps it is past time for more ballast!

Adding ballast increases the inertia of the plane which can be useful for dealing with turbulence. Perhaps this is the form of "stability" you had in mind?

The stability I was referring to is pitch stability. This is (crude definition and when present) the tendency for a plane to return to the steady state pitch angle after the plane experiences a small perturbation in pitch.

There is static and dynamic stability.

For static stability, all that is required is if the plane is pitched down - therefore accelerating - it tends to pitch back up, and vice-versa. However such a plane could be dynamically unstable if the plane then overshoots in the other direction, by an extent greater than the original pitch perturbation. The plane goes into oscillations which grow.

The "safe" region is the region between barely any pitch recovery up to the point of an overshoot that is less than the original perturbation so the oscillations die out. Ideal IMHO is having the recovery such that as the pitch approaches the original pre-perturbation pitch after a pitch down, airspeed bleeds off at a sufficient rate due to drag that the airspeed returns to the original airspeed at about the same point the original pitch is re-acquired, with little to no oscillation.

But even if you trimmed for that at some camber setting, then at other camber settings you'll want to be flying at different speeds and the resulting pitch stability behavior will be different. Everything is a compromise.

BTW, in the example where the plane's weight is increased by a third and the airspeed goes up by about 14%, the sink rate is also increased by up to 14%. It will be a little less than 14% due to flying faster increasing the Reynolds numbers so the efficiency will be a little bit

higher. This increase in sink rate is the problem with ballast. Stronger lift is required to climb out. So one has to make the choice between climb rate in lift and ability to get back from downwind. The latter can be accomplished with either altitude or a flat glide. If one has neither than one is in big trouble.

Like I said before I love to add a little ballast when i am flying my plane, in fact I am usually one of the first at the field to add a little. Of course the energy needs to be in the air to lift the extra weight. Wind usually is not one of my reasons to add ballast on a day, rather taming my glider in the heavy lift/sink as well as any turbulence that might be in the air. That way i can read my plane much better and find the lift. The other neat thing with ballast is that while our sink rate increases a bit, our L/D actually increases (which is different then full scale) so not only are we flying faster for a given L/D but the L/D curve has actually shifted up and to the right.

Plane Setup

I have three Polecat XP-4s in good shape. First thing I did was put the wings on them and check the CG. When I get a new airplane I just put everything together and start flying it. The first order of business is to set the CG. I do this by setting the elevator trim to give me a slightly positive glide in a dive. Once things are neutral I put a straightedge on the elevator to see if I am carrying any up or down. If there is up elevator I will add tail weight and for down I add nose weight. Normally I need a little tail weight. I then move on to set the throws and mixes. This is just a trial and error approach; I like to keep making small changes until I feel a decline in performance and then go back a notch or two. Anyway the CG was tweaked long ago when the planes were new. Once I put them together I found my two oldest planes had the same CG, about 3 inches back from the leading edge. My newest model had more forward CG with a tiny bit of up elevator. I flew it for a bit and then moved the CG back to match the other two and set the elevator to neutral and then flew it some more. It didn't fly badly before but the CG change made it signal lift better. Next I compared the throw rates on all the control surfaces and found them to be nearly exactly the same, great. The stress test and inspection. I like to flex the wings to look for any delaminations. If there is a problem here you can see an "oil can effect" or bubble when the wing is bent, wings in good shape. Next I look at all the control horns and linkage. Grab the control surface and try to move it, check for slop at the servo and control horn, look for loose pushrod housings. A dot of glue here and there and we are ready to go back outside. After a bunch of launches to warm-up then we get to the fun stuff, trying to break them. I flew each plane and did 15-20 launches as hard as I could. I had to adjust my launch preset on one to get a bit more up but otherwise everything passed. When I took them all back inside as I took the wings off I looked for nicks and dings in the wing and tail. I had to put a couple of pieces of tape on the wings to fill in some leading edge dings on my oldest one. The next step is so cycle the batteries and I will do that over the next several days. As I put the battery through the paces I will check all the wires and connectors.

Phil B. My DLG program (2006):

My DLG program is simpler than most. I just took a ruler and measured some deflections on my Taboo. I usually just program it by eye. I might do a tune up just before a big contest and actually measure deflections to match left and right throws, etc. but that would be largely for the psychological effect. Just to get that warm cozy feeling and gain confidence in the airplane. Here is what I measured:

Aileron throw: Approximately 5/16" - 3/8" (8mm - 9.5mm) (8 degrees - 9.5 degrees) up and down. There is no differential.

Speed camber has the flaperon aligned with the center tab.

Thermal camber: I measured 3/32" (2.4mm or 2.4 degrees) on one side and 1/8" (3.2mm or 3.2 degrees) on the other side. There is only one thermal camber setting.

Flaps: 7/8" (22mm or 21 degrees) max deflection. I use a whole lot less flap travel than most people.

Rudder travel with rudder stick: about 7/8" (22mm or 24 degrees) left and right.

Rudder travel with aileron stick via aileron to rudder mix: 1/2" (13mm or 14 degrees) left and right. My aileron to rudder mix is always on.

Elevator travel: 1/4" - 5/16" (6.5mm - 8mm or 11 degrees - 14 degrees) up and down.

Elevator travel with flap deployment via flap to elevator mix: 1/8" (3mm or 6 degrees) down.

There is a start mix that puts the flaperons in speed camber and adds a tiny up elevator preset.

That is the entire program. I have used that same basic program for all of my DLG models ever since there was DLG. I have experimented with an elevator to camber mix recently but it is not normally on and so far I can't tell if I like it or not. My left hand essentially does not know how to fly. I am not one who can effectively manipulate the rudder control separately from the ailerons. That is why my aileron to rudder mix is always on. Tom Kiesling has attempted to teach me to use some separate rudder control so for the last couple years I have attempted to hold extra rudder towards the inside of the turn while doing tight thermal turns. I'm not sure if my attempts have helped or not. Tom is also the one who has urged me to use the elevator to camber mix. Here is how my setup works:

I throw right handed and hold the transmitter with the left hand, no neck strap or dinner tray is used. I have a three position switch on the top left of the transmitter that controls the two camber positions and the start mix. The switch is at my left index finger all the time. I pull the switch towards me for the start mix. Very shortly after the throw, as soon as the plane pulls up to vertical or near vertical I throw the switch all the way forward which leaves the flaps in speed camber and gets rid of the up elevator preset. After that I just switch between thermal camber (center switch position) and speed camber as described in the earlier post.

That's all there is to my transmitter setup. No other switches or sliders do anything on my transmitter. There are no multiple flight modes and no other switches to be concerned about. The flaps are deployed with the left stick and that mix is always active so there is no need to turn it on or off. To set up for the next launch I just pull the three position switch back.

If I have a new plane or if for some reason I find myself at the field with no program in the transmitter for the plane I want to fly I can program the entire plane in maybe 10 minutes just by eyeballing the deflections. It might then take a couple trim flights to set the flap to elevator mix and maybe adjust the total aileron and elevator throws. It really can be that simple. It should be that simple if you are a beginner.

One problem I have had when trying to help beginners before is that they may have some incredibly complex program that is really screwed up and I can't help them because I don't even know how to program that brand of transmitter. When I ask them to do something simple like increase or decrease aileron throw or change their start preset they get completely lost in programming for the next half hour and nothing is learned. A beginner

has no need for a bunch of complex programming and should have some very simple program that he knows how to do and how to change quickly. He should spend his time learning to fly the plane and how to read air rather than messing around with his transmitter. You will find it more difficult to get help from others if you aren't even familiar with the programming on your own plane. Even if you find someone to help who knows your brand of transmitter then he would still have to completely reprogram your model to something that he understands before he could be much help. So keep it simple so that you can quickly make suggested changes to your programming on the field.

I would simply answer your question with the same question. Why do you want so much flap deflection? You will lose control effectiveness for turns once you drop the flaps beyond a certain point. That will require you to independently input extra rudder throw to maintain directional control or to use some sort of advanced mix that automatically increases rudder throw with large flap deployments or you will need to retract the flaps periodically to steer the model. That can all be avoided by simply not using large flap deflections. There is plenty of braking from smaller flap deflections and you can get more precise aileron control and centering for the ailerons when you limit the total amount of servo travel used for flap deployment.

At last year's IHLGF in the last fly-off round I found me happily thermaling the model without realizing that I was 3:48 into a 4:00 minute flight. Once my timer finally woke me up I was left with 12 seconds to get the model back down from around 50m - 60m height and a short distance downwind of the field boundaries. A vertical dive followed by full (full 21 degrees) flap deployment at 2m altitude as the model crossed the field boundary did the trick. I picked up the model for the re-launch right at 4:00 minutes. So I wonder why you need more flap than that.

Exercise and Physical Conditioning

We don't have much of a winter in SoCal, but some fast walking and minor jogging is good. I especially like to walk fast and fly at the same time.

Launching practice helps too. Simply launching, and turning the plane around quickly is a good exercise. See how many full power launches and turn-around you can do in 5 minutes. Take a 15 minute break and do it again.

References

How much do you practice and how can I get to the next level?

<http://www.rcgroups.com/forums/showthread.php?t=1274623>

How do you practice for DLG contest? (if you do at all)

<http://www.rcgroups.com/forums/showthread.php?t=492904>

Ballast

<http://www.rcgroups.com/forums/showthread.php?t=1098589>

Coming back from Downwind against a strong Wind

<http://www.rcgroups.com/forums/showthread.php?t=1247670>

How can 'I' be the best Timer/helper for a top pilot

<http://www.rcgroups.com/forums/showthread.php?t=1265167>