TOGGLE TIMES
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The Unnecessary Risk Factor

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So there you are, standing on the DZ, shooting the breeze with your bud, when suddenly you hear that rush of wind through lines, that distinctive sound. The sound that is ONLY made by a high-speed canopy. Your mouth stops moving, and you and the DZ lookup, as one, just in time to see the tail end of the pilots 'hook'. It's 'Bullet Johnson' and he is Ballistic! Toes in the grass, vapour trails from his fingertips he's so fast. 75 meters later, Bullet applies some brake; his canopy raises 4 feet and stops. He drops the toggles and steps down. Looks at you, smiles, picks up his canopy and walks away into the hanger. The Babes swoon, one of them stands up, and goes after him. Close to you someone walks by with a "No Fear" shirt. On the back it says:

- **Pain is Temporary**
- **Glory is Forever!**

The mind starts to go,

"Coorr, Wicked Swoop……I know he has a Icarus or Xaos, it's a 98…… so small, must be the way……Elliptical…. Hmmm. My Hornet 170 is so boring now, hey man, I've GOT 250 jumps! It's time for a new one! Yeah, new gear, small main, small reserve, I should be able to get it in one of those new "Tiny Icons". Then I'll be able to swoop like that….. Glory & Babes forever! Where's that credit card!"

Right, lets get back to reality, because that's where we ARE ladies and gents, REALITY! The real World

We have just seen "Bullet" swoop. Way COOL. Wow. OK so you have guessed "Bullet" is fictitious (based on a real person, name changed to protect The King). Who is Bullet? He is one of the jumpers on your DZ. He has been in the sport, at least as long as you have. He probably works in it for his living. He has lots of jumps; he must have, because he is jumping ALL the time. When you watch him you probably see the same "Hook" every time, and the landings are always immense.

Bullet *IS* the dude, the one you would like to be. **Bullet has honed his skills, on many different canopies, over many landings, on many different DZ's.** Skills he has developed on canopies from Coe-D and Predator, through Pin Tail, Heat Wave, and Stiletto to Icarus. He made some bad mistakes in the first one or two thousand swoops. Mistakes that we ALL make, HAVE made or WILL make. When he made them, it was on canopies that are now scoffed at, no cool dude would be seen under one today, they just don't have enough performance. But they 'Were' the cool wing at the time; anyway they were enough to keep him from jumping for 2 – 3 days after a mistake. Now he rarely makes an error, only scaring himself maybe once every 250 – 500 swoops. BUT he still makes them! He only gets scared and not hurt, because he detects the error immediately and instinctively takes the necessary action to sort it out. What allows him to detect this error so quickly? Is it luck? **No, it's experience! One thousand swoops plus experience. Not 1000 jumps, 1000+ swoops!**

So how has Bullet got this knowledge and not ended up in a wheelchair? Because he was cool, and learnt his skills slowly and progressively. He knew the risks. The consequences of a mistake could range from time off jumping, life in a wheelchair…..or worse. They say you can't run before you walk, and Bullet has crawled. He knows that the swoop is not everything. He knows that if he has to walk a little further, coz he can't get back, then that's OK. He knows he can't swoop safely in a congested airspace, so doesn't. He lands safely somewhere else and walks back. He knows not to swoop hard on the first jump of the day or over a new DZ, or if he is feeling rough (hung over), he's seen too many get carried away like this.

When he is open, and has stashed his slider, loosened his chest strap and sorted all his stuff out, he is planning his landing, **checking out the airspace.** From opening onwards, he is setting up for his swoop. Aiming to place himself, over the chosen landing place, at the correct height and facing in the correct direction to commence his 180, 270 or whatever degree descent to the ground. He is checking out ALL the canopies, flying on brakes to get into 'His' slot in the pattern. The lower he gets, the more focused he becomes. When he starts the swoop, you can be sure he knows were ALL the canopies in the air are, their predicted flight path and landing place. He has concluded that they will not be put in jeopardy during his swoop.

If someone flies into his path, thus destroying his setup, then he will land normally, rather than take an unplanned, tight swoop.

Finally he swoops because HE gets a rush from it. The rush is having his toes in the grass, canopy travelling horizontally, for the longest time. The fact that it looks good is a bonus. **He swoops for Bullet, not the babes.**

Let's look at what it takes to get EXPERIENCE. Someone with a 100 jumps has maybe spent 8 hrs under canopy. This is not enough time for someone to get a drivers license let alone a pilot's license. You need a minimum of 50 hrs to get a pilots license, this equates to 620 jumps. This gives you an idea of how long it can take to get experience under canopy. Experience is also attained not only when all goes well, but when it goes wrong. This is when we learn the most valuable lessons and are able to get experience out of a situation that can scare the hell out of us.

The general standard of canopy flying is excellent and the stress under canopy generally not high. But step outside of our rules and regulations and the game changes radically. Some of the canopy flying seen really opens your eyes. At boogies, pilots can do anything, land with the wind, across it, down wind. In an apposing way to their mate, but all at the same time and of course as near to the packing area as possible. It can be and often is a ZOO on finals, very busy. A Couple of years ago at a boogie overseas 1 jumper died, 1 got resuscitated and 2 more ended up in hospital, all because they made stupid decisions, and were oblivious to the consequences of their actions, otherwise they would not have been flying the way they did!

Day 1

Dude on a large canopy, flies over landing area at 200ft going down wind, turns 45degrees onto short finals forcing 2 jumpers to go onto deep brakes to let him in. The guy (I won't call him a dude any more, because he obviously wasn't) then hooks with the left toggle the rest of the way. He hit hard at 45 degrees to the ground at the same time his canopy did. Hospital. The airspace was congested, 40 on a pass and then everyone trying to land in the same place at the same time.

Day 2

A video guy with about 250 jumps, on a Stiletto 120, opened on a deep spot. Ran down wind all the way back. Made a 180 degree toggle turn, at 60 ft and hit horizontal. He got badly smashed up, hospital (maybe he didn't want to walk…)

Day 3

Two canopies were flying at about 250 ft into wind. They then collided, one into the back of the other. The 'canopy then flat spun' for three and a half revolutions and stopped facing down wind with no loss of altitude! The pilot then spun with the energy that was in him from the spin. The canopy then spiralled into a field over the runway.

Day 4

A guy pulled in the basement, at about 1000 ft (this had been happening all boogie, for no reason) and has a toggle come undone on opening, he did not deal with this and the canopy wound up. The choice, cutaway or die! He chopped at less than 700 ft and the reserve deployed with twisted lines. He kicked hard to get out of them (bet he wished he was at 2000 ft), the reserve then wound up and he impacted hard on the DZ. *Jumping there was definitely in the Unnecessary risk category.* Some jumpers even left.

So what went on there? Well it was a relatively large DZ, but the 'cool' place to land was about a rugby field size. The aircraft was a herc, with 80 on board, 40 out on a pass. With 20+ canopies on finals at the same time, it became very tight and congested. This congestion makes for a very high workload for the canopy pilots. Lots to watch out for, many instant decisions to be made. Really you need eyes in the back of your head!

Another factor was **inexperience of 'FAST CANOPIES'** in crowded airspace. It was obvious that these people had no idea of what would happen to them if they had a collision on final approach, or any other time for that matter. What happened here is frightening. So you want to get a new faster canopy. OK that's cool but YOU must objectively look at all the options on the way to making your decision. There are 3 main types of canopies and I group these into:-

1. "NORMALLY ASPIRATED" (NA – non ZP canopies)
2. "TURBO- CHARGED" (TC-ZP, rectangular, semi Elliptical to 1st ellipticals)
3. "SUPER CHARGED" (SC-ZP, elliptical)

They all do the same job of halting the free fall, but are radically different animals.

1. **Normally aspirated:**

These are the canopies that we all started skydiving on. Slow flying (maybe 25 km/h), slow turning, with slow reactions to the pilot's commands. Jumpers with 4000+ skydives, probably used one of these NA canopies as a main for 400 odd jumps. The alternate was a round. Even with these docile canopies, many people were badly hurt or even killed attempting 'Low Hook Turns'.

- PRO's ---- Docile, slow, very forgiving, easy to handle
- CONS ---- None! The alternate was Round
- Minimum "Risk Factor"

2. **Turbo Charged**

These started to appear around the late 80's, early 90's and they were made of 'New' Fabric that did not let air through. They were radical parachutes. They were fast through the air, turned quick and had a good flare. Because the material was more efficient, the airfoil was more rigid, which enabled thinner, quicker sections to be used. Parachutes de France made the move to an 'Elliptical' shape. Performance Designs released the Sabre. Pisa brought out the Conquest and elliptical Pin Tail. Based on proven designs in ZP fabric. Now we were starting to get somewhere. Speeds rose to 50+ km/h. Turns became fast, but openings started to be harder go 'Off Heading. We now started to experience an increase in canopy collisions on opening. Some pilots were now very proficient at swooping the canopies on the front risers, a new technique, with a lot more margin for error, than the full-blown toggle hook. Landing speed was now very fast, "Swooping" was born and longer landing "run off" became necessary. We started to see an increase in the number of serious injuries and fatalities caused by radical turns, made very close to the ground and 'finals' canopy collisions.

- PRO's ---- Speed & glide ratio, low toggle pressure, surfing, longer lasting canopies
- CONS ---- Inconsistent openings, high speed rotating malfunctions.
- Medium 'Risk Factor'

3. **Supercharged**

These hit the streets in the mid 90,s and have continually advanced with the latest rocket's to appear in the last couple of years, heat waves, stiletto to Icarus and Xaos being examples. New airfoils, smaller canopies, cross bracing giving new characteristics and very, very high speeds and super long swoops. The hard openings have been sorted by such a degree that they can take up to 1000 ft to open. The canopy now reacts instantly to the pilots command. Turns are so radically fast, that a hard right, hard left, hard right turn can put twists into the lines, rendering the canopy out of the pilot's control. When a toggle is depressed the canopy will turn and dive, pull a front riser hard and they will fall out of the sky at up to 90 ft a second! A skilled pilot can swoop the canopy in, level it out and swoop for 60 meters and more. The swoop does not have to be straight either, and it is possible to touch the end cell on the ground and then stand it up! All of this is possible because of the high speed that these canopies are capable of. Manufacturers even put experience limits on these canopies when first released but this fell by the wayside and only lately has limits been put in place by Safety and Training but still limited (up to 100 jumps) It then falls to instructors on the DZ's to dispense advice which is not always taken.

- PRO's ---- Very fast. Radical turns. Efficient.
- CONS ---- Inconsistent openings, High speed rotating malfunctions. Self induced Malfunctions, increased pilot workload. Greater potential for canopy collisions.
- High 'Risk Factor'

What comes with these canopies, along with performance is the RISK FACTOR. High performance will always be a trade off. A trade off between performance and safety.

A Polo will get you from A to B, but won't go around a corner as fast as a Ferrari. In the wet, the Polo is a lot easier to drive, look at the throttle in the Ferrari and the back end is hanging out. In inexperienced hands, which one kills quickest? (There is one more problem, money! Polo 90 K Ferrari 3 mil. Baby Schumacher's rarely have the dough; unfortunately this is not the case with Bullet Wannabe's ….) So the trade off in this instance is, more speed, handling and style with less space (2 seats), a harder ride (stiff suspension) and more expense.

So what's the trade off between "SC" and "TC"? **RISK FACTOR!** That's all! With "SC" for the swoop, you get a higher risk of everything, Pain, Injury, Death, balanced against those long, landings, if of course, you have the skill to extract them….

Let's look at these new rockets. They are at the current "Cutting Edge" of canopy technology and the canopy that every 'Wannabe' and his sidekick are buying. Zero porosity, elliptical platforms can be a nightmare to pack (especially when new), turn in a heartbeat and are very, very fast through the air! These are not "intelligent" canopies, they are stupid. They will blindly go where they are pointed, following the pilot's instructions, with no thought for his safety. When the pilot depresses the toggle, they turn, as far and as radical as the toggle was pushed, with NO REGARD to the consequences. These canopies require a high calibre pilot, who is on the ball, focused and thinks ahead. To the truly capable, this is the canopy with which to obtain a fast and long landing. **In inexperienced hands, it can become a weapon with which to KILL & MAIM yourself or others.**

When it comes to choice of choice of canopies, cost is a very small factor. Most can be purchased for about R 9000. Most skydivers can find this sort of cash. I've seen lots of people changing their mains quite often. It is apparent from their landings that they do not get all the performance available from their current canopy, but they still have to have that new one that they saw at the last meet. They want those awesome landings, and they conclude that it is only the canopy that delivers. Make no mistake; **it is more the pilot, than the canopy!** If you want proof, then lend your gear to your local 'bullet' and watch the swoop that he can obtain, if your landings are as good, then it is time for a change. This will probably demonstrate the vast amount of unused performance you have yet to find in your own canopy.

In the mid 90's 43% of all fatalities were due to no pull or low pull. 57 % were due to something else. If not impact then they must have been under a full canopy for at least 2 min. With the advent of AAD's these no pull or low pull figures have dropped dramatically but this is not the case where open canopies are concerned. The trend shows us that still more of us will be killed and maimed due to canopy collisions and landings. Let's try to make sure that WE don't become one of them.

Changing your canopy to one of the new breed of "Supercharged" canopies will bring with it a higher risk due to canopy collisions and landing incidents. In either of these two cases the injuries sustained will be more severe, due to the increase of speed. A malfunctioning of the canopy on opening or beyond will rotate faster and be more violent. Cutting away from this may not be easy, due to the malfunction putting twists in the lines and risers. A slight touch of another canopy on one of these is likely to have disastrous consequences.

If you want more speed, start with the canopy you have. Make sure you have a collapsible pilot chute fitted. After opening, collapse and stow your slider. Loosen your chest strap. This can give you up to 10% more performance from your canopy. It won't break the bank and will not increase the risk factor by much. Get some instruction from 'Bullet' and explore the **untapped potential your current canopy has.** Remember the more you practice, the luckier you'll get.

RISK FACTOR is something you MUST consider when looking at a new canopy. Risk factor comes with sport skydiving. Don't kid yourself; this sport will kill you in a heartbeat. The ground is very patient and unforgiving.

Skydiving is dangerous, but we reduce this risk to an acceptable level, one that we are happy with. Make sure you make decisions about a new parachute with your eyes wide open. Be honest with yourself about your own skill level. Weigh this up with what you require and want. We skydive because it's the most fun we can have. Nice DZ's, friends, aircraft, good gear, soft openings and soft landings. But, it gets HARD in an instant. **When it all goes pear shaped, it usually happens fast and the results are often catastrophic.** YOU MUST understand the consequences of your decision, make it, be happy making it and then go forward slowly and carefully. Don't be afraid to ask for advice, but be prepared to at least consider it or it is just a waste of time.

Take it easy out there
Blu skies