Photo by Phil MacMillan

GOING PLACES

In the second article in a series aimed at those acquiring new skills, Tony Cronshaw asks two leading coaches for top tips on how to start going places

Alastair MacKenzie

Figure 1

HAVING explored thermalling techniques (pp8-13, *Ask the coach*, Oct/Nov 13), Tony Cronshaw seeks tips on how to start "going places" from two leading coaches: Bernard Eckey, author of *Advanced Soaring Made Easy*, and Kevin Atkinson, leader of the BGA's Aim Higher initiative, recently launched at *www.gliding.co.uk/bgainfo/aimhigher.htm*

TONY: ***When we want to fly confidently from place to place, what can the pilot learn about thermal conditions, even before launching, simply by looking at the sky?***

KEVIN: Pilots are generally good at recognising cumulus (cu) and have a knowledge of cu lifecycle, but they may be missing the opportunity to read the sky and form a more detailed view of thermalling conditions. Observing clouds and noting how long it takes cu to transition from embryo (newly appearing wispy clouds) to initial decay (ragged tops and edges) can tell us if thermals are short-lived bubbles or longer-lasting columns.

Observations of gliders launching ahead can also yield valuable information: A glider taking an uninterrupted climb suggests a thermal organised as a column. A glider breaking off periodically to move slightly upwind and then restart climbing suggests a thermal made up of a series of bubbles.

We can also learn to read the sky further afield to assess cloud structures associated with large column thermals (in lighter winds usually), areas of blue holes due to interference by wave, top cover or contrails likely to cause reduced thermal strength, changes in coverage of cu indicating approaching sea air, cloud patterns indicating a sea breeze front, and so on.

TONY: ***Assuming we climb away in one or two thermals after the launch, and cloudbase looks sufficient for going places, what kind of decisions are needed before setting off towards a chosen turnpoint?***

BERNARD: During each climb, we need to assess three inter-related things: When to leave the climb, the route to be taken, and the likely lift available on that route. There are three main scenarios to be recognised, as I will explain. However, we need to be aware that the required observations and analysis will add extra workload for the pilot who is already working hard to centre the thermal and keep a good lookout. For these reasons, an unoccupied thermal will provide a better opportunity for the newcomer practising these skills than one that is marked by several other gliders.

The first scenario is when "this thermal is a poor one". In this case, we should leave the climb as soon as we have sufficient height to reach the next two or three promising

clouds. In other words, there is no benefit in staying with a poor thermal, other than to gain the height required to reach much better lift according to our observations of "good" clouds and our judgement of height needed to reach them.

The second scenario is when "we need all the height we can get", because the route ahead does not look too good in terms of promising up-draughts. In this case our best option is to stay with the current climb, accepting perhaps a modest rate of climb, and leave with the maximum height. This fills us with confidence, provides us with the maximum range and hence maximises our chance of finding new lift in the difficult conditions ahead.

The third scenario is when "this is a strong thermal", ie our rate of climb is similar to the best we have been finding. In this case we continue to climb for as long as the lift is strong, despite seeing good clouds ahead en route. The reason is simple! We want to minimise the number of thermals needed overall for the task, and so reduce the unproductive time spent finding and centring thermals. Hence we keep climbing in the strong lift until it becomes weaker and then, like the first scenario, we leave because better lift promises to be available en route.

KEVIN: I would add that if we are leaving a core which is a bubble that's now dying, and there is a cloud well above, we may be able to move upwind a short distance and engage with the next bubble, which may also be strong. Quickly finding the next bubble and climbing strongly again is a more efficient option than setting off for a more distant cloud.

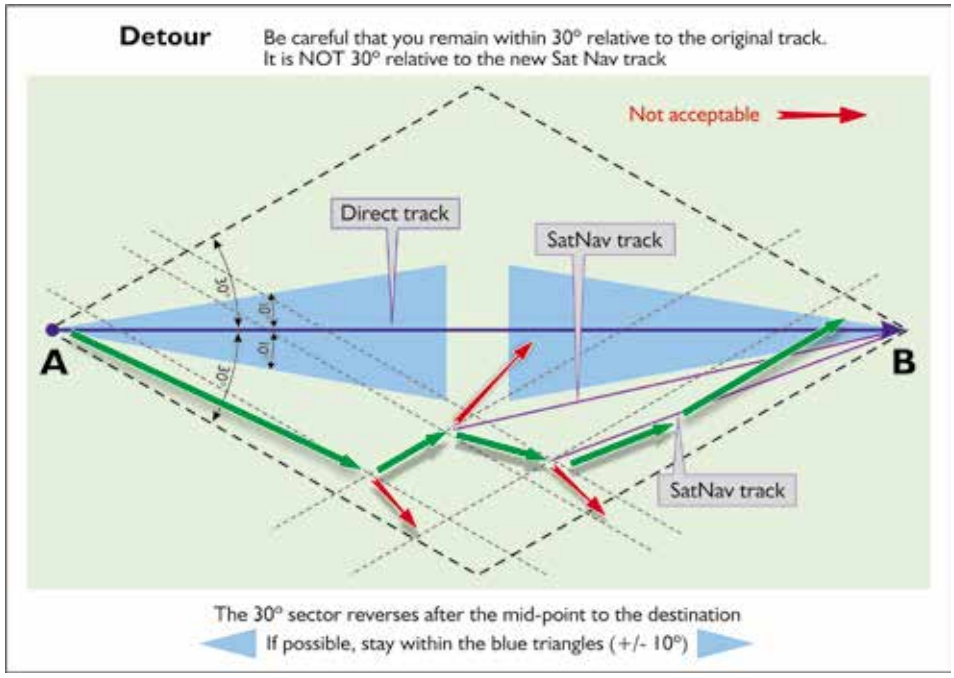


Illustration enhanced by Steve Longland

Figure 2

TONY: ***How do we choose a route from one thermal to the next?***

KEVIN: The pilot needs to assess possible routes ahead, comparing the appearance of the cloud just used with those further on track. We need to "time lapse" the sky ahead to spot the best cu. Cauliflower-topped clouds suggest well established thermals, which promise to be still working when we get there. Each time our circle comes round, we update how clouds are growing, or how dying clouds are becoming more ragged (see fig 1, left).

In general, we want to route via the maximum number of loosely linked thermals (clouds) with a minimum detour (see fig 2 above), ideally less than 20 degrees off

Figure 3

Tony Cronshaw is an Ass Cat instructor at Cambridge Gliding Centre with over 1,000 hours gliding. His enthusiasm for helping the next generation of pilots includes running courses for visitors and members, and leading CGC's recruitment and retention sub-committee

DURING EACH CLIMB, WE NEED TO ASSESS THREE INTER-RELATED THINGS: WHEN TO LEAVE THE CLIMB, THE ROUTE TO BE TAKEN, AND THE LIKELY LIFT AVAILABLE ON THAT ROUTE

A VERY USEFUL TECHNIQUE IS TO USE THE YAW STRING TO GUIDE THE GLIDER LEFT OR RIGHT TOWARDS BETTER AIR

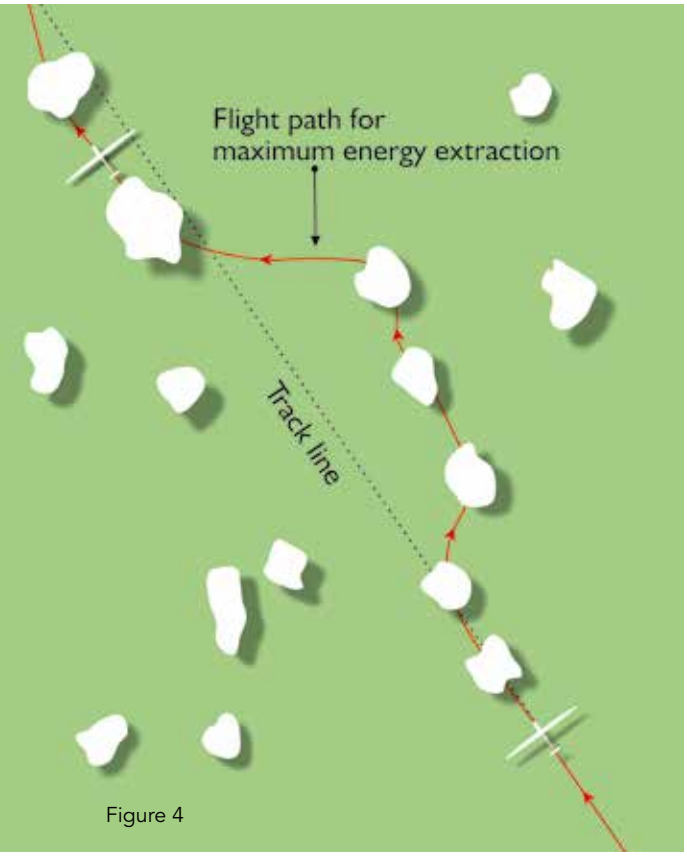


Figure 4

Kevin Atkinson is the club coach lead for the BGA Aim Higher initiative. With more than 7,500 military jet hours (Tiger Moths to Typhoon), Kevin started gliding at age 13 at Ouse GC (now York) flying his first solo on his 16th. Kevin has over 3,500 hours gliding, including competing in UK national and regional competitions

track (whilst allowing for wind) or less than a maximum detour of 30 degrees, except to run an obviously strong line. We can only accept an expanding cone out to half distance to the TP and then we must reverse with an inbound cone from the TP to the glider. This latter cone is more important to get right.

In spreadout, or streeting with capped tops, the widest cloud will be the strongest, but the lift core may still be small, ie not the full width of the broad cloud (see fig 5, below). We should aim to fly over the upwind edge of any cloud shadow line: The advancing cold shadow can often trigger thermals. We usually choose a route with three cloud thermal options. If they all look the same, we plan to climb at the last one, because if they are all the same strength we lose nothing by trying all three, but if one appears good enough or unusually strong then we will climb in that one.

BERNARD: If there is streeting marked by cu (see fig 3 on previous page), it can pay to make substantial detours, gain height under the street, then leave close to cloudbase to cross the sink on the way to the next street. Exploiting streets in the blue is also possible as top pilots often demonstrate.

Even on a blue day, experienced cross-country pilots select an "energy path" (fig 4). This is not a straight line, but a path that pays attention to the feel of the air, the sound of the air, and the lifting of a wing. The pilot also chooses to divert slightly to cruise through lift marked by clouds, route over densely populated or industrial areas, and over slopes facing the sun and the prevailing wind. Each small decision helps us to exploit buoyant air and – what is equally important – avoid sinking air. At lower altitudes, tractors ploughing or harvesting often trigger thermals, and very good indicators of lift are soaring birds and thermalling gliders. Even if we are getting low, it's worth flying directly into wind under clouds, and when even weak lift is found, hang on to it: It might be the top of a bubble starting to rise and, with luck, may turn into a reasonable thermal.

TONY: ***What speed should we fly at between thermals?***

KEVIN: I recommend picking a block speed to fly between thermals, which optimises the best speed to fly. We need sufficient speed to penetrate sink efficiently, especially into a headwind. If flying under a street, it may be tempting to "dolphin", slowing down in the lift, and speeding up in the sink. But dolphin flying can be slow, so I prefer using block speeds for either maintaining height or accelerating (final glide or into wind TPs).

Once on the route, if a wing lifts up immediately, we should roll against it to climb up on the down-going wing whilst it is still in the rising gust. It is best to minimise the use of S-turns into wind as progress over the ground will be seriously reduced. However, S-turns can be more beneficial downwind. A very useful technique is to use the yaw string to guide the glider left or right towards better air. In straight flight, the string blows away from the area of rising air. So if the string goes right we need to turn left a bit and then resume the intended track, which is now displaced to the left of the original track relative to the cloud lines.

BERNARD: I agree block speeds are a good technique for optimising flight between thermals, especially with today's fast, slippery, high-mass gliders. But using block speeds doesn't mean that we cruise at the same speed all the time. Depending on our assessment of the flying conditions ahead, there will be a block speed for inter-thermal flying, a slower block speed for lines of energy, and a higher speed for areas of sink. And, of course, we change speeds when we want to extract energy in difficult flying conditions with broken lift and bubble type thermals.

This is, of course, what MacCready is suggesting, but the problem is that his theory does not take aerodynamic losses into account. Every time we move the stick back and forth we create additional drag and sacrifice some altitude. Therefore, it is essential to be gentle on the controls and not rely on the variometer for the timing of elevator inputs. We often


Figure 5

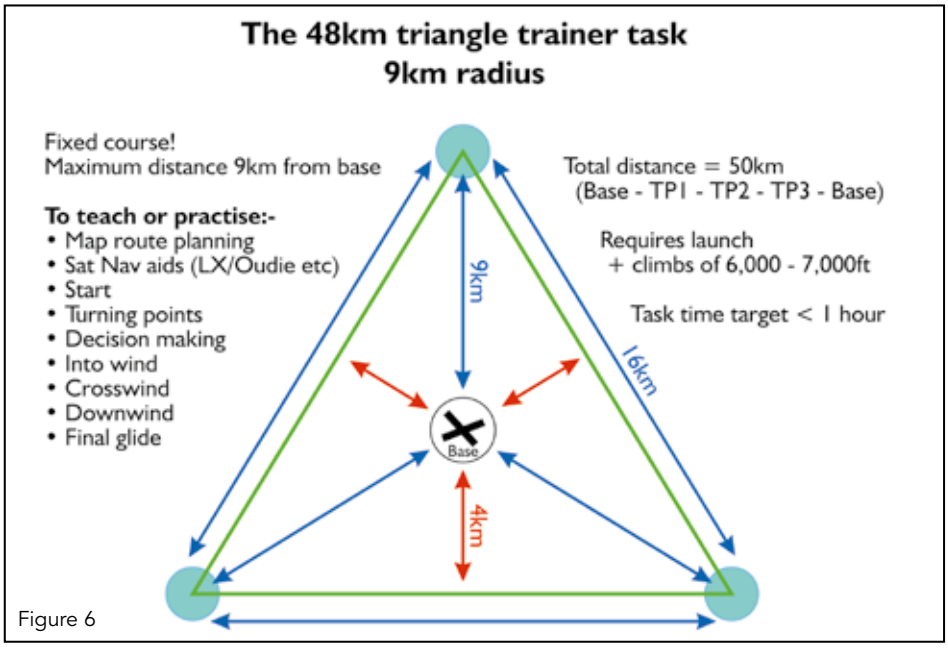


Figure 6

Illustration enhanced by Steve Longland

forget that the vario is only showing us what the surrounding air was doing about three seconds ago. If we give the vario priority and neglect the much quicker 'seat of the pants' input we will always be out of sync with the vertical movement of the surrounding air mass. An efficient extraction of energy in cruise will then remain an elusive dream. You will find almost half a chapter in my book on the important topic of block speeds for different conditions and height bands.

TONY: ***How can we use local turnpoints to practise?***

BERNARD: Using local turnpoints is a great way to practise. Beginners especially are well advised to pick TPs that take the day's wind strength and direction into account and are on the upwind side of the airfield, or just slightly downwind of it. More advanced pilots can choose TPs near the limit of local glide and, by doing so, prepare themselves for their first real cross-country flight. Like any cross-country task, we may be faced with a TP which is in a blue hole involving lots of sink, so we will need to set off towards the TP with plenty of height and be prepared for the glide down and around the TP.

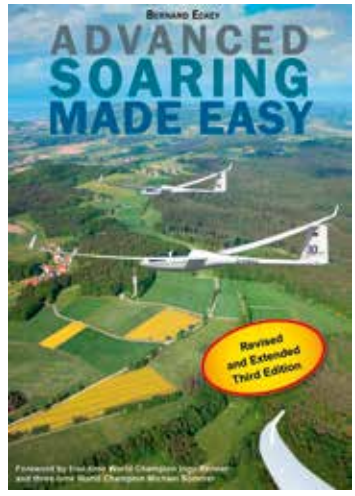
An out-and-return task can lead us to break my golden rule "Don't fly through the same bad air twice" if we find sink at the TP. A better task would be square route, centred on the airfield, with four 10km legs. If the 40km distance seems insufficient, then try flying the task multiple times and practise increasing overall task speed.

We should also treat these practice flights as if they were a badge flight so that the pilot becomes accustomed to using a data logger, flight computer, taking food and drink, etc. The pilot can also benefit from replaying the logged flight on a PC and learning what worked well and what he or she can do better on the next flight.

KEVIN: Similarly, I recommend using a 48km equilateral triangle, or modifications of, as explained in the Aim Higher online resource guide (see fig 6 above).

TONY: ***How can we accelerate our rate of learning of these things?***

BERNARD: Flying with an instructor, or someone who can act as a coach, will accelerate the rate of learning, through discussion and questions such as "which cloud should we go for next?", or "which track would you suggest now?". I recommend grabbing a coach every time the opportunity presents itself. Picking the brains of others will save time, money and frustration. It helps us learn better ways of doing things and will increase the chances of success next time we are on our own. In requesting coaching, remember "the mind is like a parachute – it doesn't function until it's open". Also, ensure you clearly explain what aspects of your flying you hope to improve. Then during the flight, observe the coach carefully and make brief notes to help stimulate the de-brief. It is very beneficial to follow up with reading and study at home afterwards. In other words, a combination of coaching sessions and the study of good gliding literature will get you on a quick path to successful and enjoyable cross-country flying.



A revised and extended third version of Bernard's best-seller is now available. At 432 pages, it has almost 100 additional pages compared with the second edition and costs €49.90 plus P&P. To purchase, contact *eckey@internode.on.net*

I RECOMMEND GRABBING A COACH EVERY TIME THE OPPORTUNITY PRESENTS ITSELF. PICKING THE BRAINS OF OTHERS WILL SAVE TIME, MONEY AND FRUSTRATION

Bernard Eckey is a pilot, instructor, record holder and head coach for South Australia. He flies an ASH 25 and has 3,500 hours (including multiple 1,000km flights and one 1,116km FAI triangle)