



Highlights and Margin Notes in
Wolfgang Langewieshe's

Stick and Rudder: An Explanation of the Art of Flying
Chapter 14 Notes

Perhaps my notes and observations will inspire you to buy your own copy and learn from this classic...or to take the copy you already own off the shelf and revisit its great lessons, just as I am doing again now.

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Continuing my notes on Wolfgang Langewieshe's essential classic, ***Stick and Rudder***.

Part IV: The Basic Maneuvers

Chapter 14: "The Glide"

Page No.	Highlighted Text (Langewiesche's words)	My margin notes
240	The difficulties of the glide are twofold...perception... [and] control....	Pretty much true of everything in life.
	If [a pilot] is overshooting, he will "naturally" point his airplane down more steeply; but this "natural" reaction will only make him overshoot still more.	Airmanship
241	Flight instructors believe a student should make no attempt to steepen or shallow...glide path, [but] always use the same glide, that is, the same gliding speed, the same gliding attitude of the ship, the same steepness of glide.... Instead of "playing" his glide, he should "play" his turns and his patterns.... Experienced pilots do actually play their glides heavily.	L is anti-stabilized approach
242	In case of undershooting in an actual emergency landing, his attempt to stretch his glide will be desperate indeed. Common-sense attempts at glide control, however, are exactly wrong.	Engine failures don't kill pilots, poorly planned and executed glides kill pilots.
	The secret of glide control: if you want to go down more steeply, point your nose down less steeply. If you want to go down less steeply, point your nose down more steeply.... It is true of course, only within limits.	Angle of attack control and resulting drag.
243	Normal glide is a compromise between dangerously slow speed and awkwardly excessive speed.	
	The "normal" glide is also the airplane's most efficient glide.	
244	It is the glide that results in the shallowest part of descent; in which the airplane will cover, from a given altitude, the longest distance. <i>That</i> this is so, and <i>why</i> it is so is the core of the whole business of glide control.	Assumes Best Glide speed for descent and even final approach.
	If...you glide an airplane too slowly you also get a steep path of descent. Pilots would say that this is because in slow flight the airplane mushes excessively. Engineers would say it is because in slow flight the airplane proceeds at high Angle of Attack and is being braked by much induced drag. The two expressions mean the same thing.	
	The "normal" glide, then is a compromise between too-slow mushy glide and the too-fast divelike glide.... The normal glide is the glide of shallowest descent; the glide at which (in still air) the airplane will cover the greatest horizontal distance from a given altitude.	L is getting redundant. Perhaps the idea of Best Glide was not widely taught or understood at the time he wrote this.
245	Undershooting: holding the stick back, and simply point	State vs. Trend

	the airplane not so steeply down...exactly the wrong thing.... The worst part of it is that the steepening of the glide path does not follow immediately. The <i>first</i> reaction of the ship is deceptive—there is a <i>temporary</i> ballooning which for a couple of seconds markedly shallows the glide path. It's only after those few seconds, when the airplane has slowed up, that the mushing and the steeper descent begins. The first brief reaction of the airplane tends to trick the pilot into thinking he had done the right thing.	
	"I did the right thing," he thinks, "but apparently I didn't do enough of it."	Genesis of overcontrolling
	The normal glide is (by definition) the glide in which the airplane will have its shallowest descent. Therefore it makes no difference whether the pilot pulls his nose up more or points it down more—he will only steepen his descent.	Pitch, IAS, AoA, power, vertical speed, glidepath...all related
246	There is usually a wind, and wind has an important effect on the whole problem.	
	Dropping the nose will result in a steeper glide path but also an increase in speed...[that] must be got rid of again so the landing can be made.... Close to the ground an airplane is markedly more efficient....	Ground effect. Did they know about that when L wrote this?
247	If you are overshooting...the only remedy is to pull your nose <i>up</i> and get the airplane into a mushing glide.... It works, however, only after a certain delay.	Not an instantaneous reaction
	In such conditions you cannot afford to make bad, skidded turns.	
248	In actual practice, experienced pilots don't use a "normal" glide during their approach, but [instead] a much slower glide.... They glide it just fast enough to retain good control.	Not Best Glide, but 1.3 Vso
	Bringing the ship in more slowly...gets it to the ground in a better condition for an immediate landing.... The slower mushier glide gives him a steeper descent, and the steeper descent is much easier to judge.... Some extremely clean airplanes have so shallow a "normal" glide that an approach in that condition is just about impossible to judge....	Ramifications for flying Best Glide speed all the way to the ground in an engine failure landing.
249	The elevator is not the airplane's up-and-down control, but its Angle of Attack control or, if you will, its speed control.	Pitch for speed, power for vertical speed
250	Head wind is an important aid in glide control.... Gliding against the wind, you can steepen your descent enormously by slowing yourself up....	
251	On a day with average wind, you will find that you can gain distance very effectively by pointing your nose down a bit and flying perhaps 5 mph faster....	
252	The big problem in a rough emergency landing is to avoid a stall or spin and to get the airplane down to the ground under control....	"poorly planned glide"—and Bob Hoover, "fly the thing as far into the crash as possible."
255	Because the student will advance (or at least dream of advancing) to big powerful heavily flapped airplanes...some of the training routine is shaped toward flying such airplanes. But in the process, we sometimes forget to tell the pilot how to fly properly the ship he is actually flying.	Fly the airplane you're flying
	The heavily wing-loaded airplane glides so steeply because of the drag of its powerplant when it is windmilling in the glide.... The powerplant acts as a brake.	
256	With flaps down, the airplane's glide is so exceedingly steep that there is hardly any problem of glide control...you can't possibly overshoot...the ship can't pick up additional speed...even if nosed down sharply.	Flaps were new enough at the time L wrote this, he didn't realize pilots would find a way to screw up an approach with flaps too.
257	The power approach has several advantages. It keeps the engine warm. It results in a slower loss of altitude than the power-off glide....a flare-out may become unnecessary....	

259	The stick is the airplane's speed control and the throttle is its up-and-down control	
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I'll add chapter highlights and notes until we reach the end of the book. If you're impatient—and I hope you are—you won't wait for my musings, but instead will secure your own copy of *Stick and Rudder* now. Beyond simply reading its words, you'll truly analyze, criticize, mark up and understand Langewiesche's teachings to, as Adler suggests, **make this book your own**.

I look forward to your comments on these notes and the larger work. Please send your thoughts to me at mastery.flight.training@cox.net. Thank you.



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