
Book Review

Kern, T. (1997). *Redefining Airmanship*. New York: McGraw-Hill. 463 pages. ISBN 0-07-034284-9. U.S.\$29.95, hardcover.

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Redefining Airmanship by Tony Kern is written by an aviator for aviators—whether they have just soloed for the first time or they are senior captains flying for a major airline. Don't be mistaken. It is not just another how-to-fly book. It is a serious work supported by numerous case studies. The author's stated purpose is to challenge all pilots to undertake a lifetime of learning by constantly striving for personal and professional improvement in their airmanship skills. As with other authors who have attempted to write about airmanship, Dr. Kern relies on both personal experience and the experiences of others. Much of this information is a result of lessons learned from accident reports and from the stories of those lucky enough to walk away from an accident or close call. The strength of this book lies in the advice and recommendations for self improvement that are equally pertinent to the novice private pilot, the military fighter pilot, and the seasoned commercial pilot.

Why is it necessary to write such a book about airmanship? After all, no pilot deliberately climbs into an airplane with the express intent of crashing. The answer lies in the wealth of case studies provided in this book. Failures in good airmanship all too often lead to tragedy and unnecessary deaths for both the pilot in command and innocent victims. Those who fly for a living and especially those who teach new pilots have a moral obligation to not talk the talk about good airmanship but to walk the walk and provide the standards for others to emulate. Airmanship requires that every pilot personally accept the responsibility and determination to strive for perfection on every flight. The skills and professionalism we demonstrate during check rides should be our minimum standards and not the occasion for super effort.

Dr. Kern certainly has the qualifications to discuss this subject. He is an assistant professor of history at the U.S. Air Force Academy and an instructor pilot. He holds a doctorate in higher education and master's degrees in public administration and military history. Previous assignments included service as aircrew commander, instructor pilot, and flight examiner for the B-1 bomber; human factors training; and Chief of Cockpit Resource Management Plans and Programs.

Redefining Airmanship is divided into five main sections. The first section introduces the concept of airmanship. Most pilots I have known would have a

difficult time trying to define good airmanship. Common answers would include words such as common sense, good judgement, situational awareness, and being prepared. Whatever the definition, almost every pilot can readily identify those who demonstrate good airmanship and those who don't.

In the next three sections, the author lays out his airmanship model. This model uses an analogy of a building with a foundation, support pillars and dual capstones. Section two begins with a description of the model and expands into the specific "foundation stones of discipline, skill, and proficiency." Section three moves onto the pillars. These pillars are knowledge of self, the aircraft, the team, the environment, and risk. Section four discusses the two capstones of airmanship. These capstones are situational awareness and judgement.

The final section of the book deals with associated topics affecting airmanship. Among these topics are the role of human error in learning, techniques for teaching and evaluating, and common inhibitors to good airmanship. The book concludes with ten common principles of airmanship and a six-month planning calendar involving three hours-per-week of study and a regular schedule of flying. This plan relies predominately on self-instruction, self-assessment, and total honesty.

Each chapter of this book is designed to build on the last in the same manner that a building is erected by starting with a sound foundation and adding additional parts of the structure until reaching the capstone. Each chapter is organized around several case studies that allow the reader to reflect on the information as it pertains to their own aviation skills. Although the author is speaking from years of experience in how the Air Force operates, he presents adequate examples from general aviation and commercial aviation as well. In those instances when he is describing military procedures or military accidents, he has attempted to decipher the military language in terms that civilian pilots will understand.

The three bedrock principles that form the foundation for good airmanship are discipline, skill, and proficiency. Kern defines flight discipline as "the ability and willpower to safely employ an aircraft within operational, regulatory, organizational, and common sense guidelines—unless emergency or combat mission demands dictate otherwise" (p. 29). Violations of good flight discipline when uncorrected tend to reinforce poor decisions leading to additional violations. For pilots who serve as role models for others, poor discipline sends a very clear signal that rules only apply to the tame and inexperienced. A strong argument is made that this type of behavior, sometimes known as the rogue aviator, can only occur when that behavior is repeatedly ignored or condoned by others.

Chapter 3 presents the next two bedrock principles for a two edged sword—skill and proficiency. An introduction to this chapter, written by Chuck Yeager, makes three comments: complacency kills, knowledge of your aircraft is critical, and the best pilots constantly strive for personal improvement. This chapter was the most interesting to me because it reinforced everything I believe as a pilot myself. This is also the first book I have read that discusses the importance

of armchair flying—a technique I not only practiced but taught to my flight students. Skill is not something that is taught once and retained forever. Skill is developed over time and will deteriorate over time unless practiced.

The author presents four levels of skill for pilots. Level one is safety, for example when a new pilot first solos they have demonstrated enough skill to takeoff and land under routine conditions. The second level is effectiveness in which the pilot has demonstrated they have all the skills necessary to perform the duties of flying. For private pilots this may mean the ability to fly cross-country, obtain flight clearances, check weather conditions, and land in a crosswind. The third skill level is efficiency in which the pilot learns how to optimize the flight environment such as choosing an altitude based on a comparison of winds versus fuel consumption. The fourth skill level is reached by very few aviators. It has the goal of precision and continuous improvement. If a 100 foot altitude deviation is the accepted standard, these pilots will strive for a 50 foot deviation and then 25 feet.

The other side of the skill sword is proficiency. Pilots with fewer than 10 hours per month are at greater risk than those with more hours as are those with too many hours who may suffer from fatigue. Proficiency is also more than just hours in the logbook. Those hours must be used to hone specific skills. The author points out that studies have shown that “important safety-of-flight items such as landings, unusual attitude recoveries, and crosswind takeoffs” deteriorate quickly (p. 62). These foundations are critical to the individual pilot since the other elements of the airmanship model cannot compensate for poor skill, proficiency, or discipline.

Once the foundation has been established, the pilot is ready to progress on to the pillars of knowledge—self, aircraft, team, environment, and risk. Each pillar is covered in a separate chapter in the book. It goes without saying that it is extremely important for pilots to be physically and mentally fit before attempting to fly. The book delves into the numerous physical problems of concern to pilots. Some may only be a problem at altitude or under stress while others impact the basic ability of pilots to function effectively under any circumstances. Alcohol, drugs, medications, and any other inhibitors to the health of the pilot cannot be tolerated. The FAA provides numerous guidelines on what constitutes a physically capable pilot but only a mature pilot can make the judgment about whether to attempt a flight.

Knowing the aircraft seems like another obvious pillar to good airmanship but the author points out that it means more than just knowing emergency procedures, cross wind limitations, stall speeds, and switch locations. It also includes awareness of cockpit design problems, cautions and warnings, detailed knowledge of aircraft systems, and the maintenance history of the aircraft. The pilot needs to know this before climbing into the aircraft. Although the author presents good case studies, I am personally familiar with a case in which a pilot took off in a Navy Corsair II with his wings folded. How this happened is a separate discussion but the pilot realized his mistake after becoming airborne. No proce-

dures were published for this emergency even though there had been at least one fatal accident due to this problem prior to this incident. The pilot knew both the flight implications of folded wings in flight and that the hydraulic system should permit lowering and locking the outer wings. He was able to save the aircraft and his own life by thoroughly understanding the aircraft.

In the chapter six, the author introduces much of the latest knowledge about teamwork and crew resource management. Emphasis is placed on leadership, communication, and importantly on followership. Kern uses Kelly's model of follower behavior to discuss how this impacts on teamwork. The five types of followers are sheep, yes people, alienated followers, effective followers, and survivors (Kelly, 1988). Of this group, only the effective followers demonstrate the combination of independent critical thinking and active participation that contribute to good teamwork.

The next two chapters covers the importance of knowing the environment and risk taking. The environment includes the physical, regulatory, and organizational elements while risk taking involves the decision making process involved in deciding both what constitutes a risk and when to accept the risk. Get-home-itis is the classic example of accepting unnecessary risk. These two chapters seemed more firmly founded in the military environment than other chapters and also more difficult to deal with from the perspective of personal improvement. Risk taking in particular is a very insidious problem for pilots because it leaves little room for unexpected changes. Changes in forecast weather, enroute winds, fuel consumption, or emergencies can turn a previously acceptable risk into a very bad risk. Risk taking is always a gamble that the mission requires the risk and that the risk was properly evaluated and prepared for.

The capstones to Kern's model of airmanship are situational awareness and judgement. The second most important chapter I found in this book was on situational awareness (SA). Even the most professional pilot will be challenged to maintain situational awareness. If situational awareness is lost at the wrong moment, it can have disastrous results. The author presents a thorough discussion of SA including levels of SA, how to recognize it, how to recover from lost situational awareness, and keys to prevent losing SA. The only error I found in this chapter was the five keys to improving SA that turned out to present six keys.

In chapter 10, the author begins with a quote from Charles Gow. "Judgement is not the knowledge of fundamental laws; it is knowing how to apply a knowledge of them" (p. 253). Judgement errors dominate aircraft accident reports under its other common name—pilot error. Judgement is a matter of choosing alternatives which becomes increasingly difficult when the decision maker has inaccurate or incomplete information.

The book ends with chapters on obstacles to good airmanship, the key role of instructing and evaluating airmanship, and understanding pilot error. These chapters bring together the previous discussions in an attempt to recap the important issues and introduce the last chapter of the book about developing a

personal program of improvement. The six month program the author offers is well thought out and worth reading. Unfortunately, I doubt that anyone will complete the program as outlined. Some pilots already have a personal commitment to being the best pilot possible and work very hard to do those things outlined in the book. As mentioned in the book, the study plan requires time, resources, self-assessment, self-instruction, and honesty. None of these are easy for private, recreational pilots in particular. In fact, my personal experience would indicate that the only group who might be able to tackle this program would be military pilots. Even with this limitation, there are components of this program that would benefit most pilots.

Redefining Airmanship provides a holistic approach to the subject. It is very well written and uses case studies from general aviation, the military, and commercial world to emphasize each topic. I would suggest that this book be required reading for all flight instructors and evaluators. I also can think of no aviator, regardless of experience, who would not greatly benefit by reading the book. It is not the final definition of airmanship but a book designed to point out to every pilot the areas where improvement can be made.

Reference

- Kelly, R.E. (1988). A two-dimensional model of follower behavior. *Leadership: Enhancing the Lessons of Experience*. Hughes, R., Ginnett, R., & Curphy, G. (Eds.). Homewood, IL: Irwin Press.

