

Chapter 1 : Pete Bonanni (Author of The Art of the Kill)

Art of the Kill demonstrates the "hows and whys" of modern air combat and is the only product of its kind to present its message in a multimedia format. The Art of the Kill book was written by Pete Bonanni, an Air National Guard officer whose primary job is to train fighter pilots in air-to-air combat.

It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack. It provides a relatively low-cost, high-performance weapon system for the air forces of the United States and allied nations. It can locate targets in all weather conditions and detect low flying aircraft in radar ground clutter. In an air-to-surface role, the F can fly more than miles kilometers , deliver its weapons with superior accuracy, defend itself against enemy aircraft, and return to its starting point. An all-weather capability allows it to accurately deliver ordnance during non-visual bombing conditions. CSIM Please give me a bit of background on your career. PB I am a second generation fighter pilot who grew up on various fighter bases around the world. In the 90th I flew F-4Es and Gs. Without those slats the jet flew VERY different at high AOA and I experienced a few wild rides and some pissed off back-seaters before I got used to slow speed fighting in the jet. At slow speed you could not use the ailerons at all. Just think about that. Here you were in a flat scissors with an F-5 and you needed to roll and pull to the left. If you actually moved the stick to the left several things would happen - none of them good. Next the nose of the jet would slice violently in the opposite direction. The only way to regain control of the jet was to unload and by the time you got the Rhino flying straight again some ass hole in an F-5 was gunning you. I never really got a feel for the F-4D because after only 4 months at Taegu, I was selected to fly the greatest fighter ever built -- the F In August of the F was more than just a new fighter. It was a concept - an idea about air combat that was fashioned into a machine. The first time I stood next to the jet I was transfixed. I had been around fighters all my life but this jet was different. Finally they built a fighter that not only was the right size small but also had the correct number of engines. They say beauty is in the eye of the beholder but no fighter pilot can see the lines of the F without feeling deep admiration for the men and women who designed and built it. The F was even better from inside the cockpit. To put it simply the jet just felt right. It just felt so natural. My first thought was "so this is how a fighter cockpit is supposed to be". Anyway, sorry for the nostalgia but it was truly a great feeling to be a part of the early days of the F The F Fighter Weapons School was my most arduous Air Force experience to date and very hard to describe in just a few words. I spent the next 5 years flying the old A-7 and pining for 10 thousand pounds more thrust. It was not that the A-7 was that bad, it was just that it was no F Finally in the th Fighter Squadron received "C" model Fs. When I first flew the jet in transition rides I could tell that the nose was a lot heavier but when I actually did BFM in the jet I was pleasantly surprised. The nose was heavier but with the new GE engine the jet had more thrust which made up for the increased weight - kind of. Nothing maneuvers like an "A" model F in my opinion but in a fight against your clone - A versus C, it would probably be a push. CSIM What is the closest you ever came to actual combat? PB When my father went back to Vietnam in he told me, "every generation of fighter pilot has their war. PB The F is the greatest fighter ever built. I know we can get into a "News Group" type debate over energy curves, payload, avionics, range and other various fighter characteristics. In my opinion however, the F is still the best fighter in the world at what it was originally designed to do -- dogfight. In addition to dogfighting, the F is also the best jet in the world at killing SAMs. When you add AMRAAM and LGBs to the jet you have a great all around fighter that is only a "stores jettison button" away from being the best maneuvering jet in the world. PB The A model F is lighter. More specifically it has a lighter nose which means you can rate or move the nose better in an A model. The C model generally has more thrust than the A model which for the most part compensates for the greater weight of the C. I personally believe that an A model F is a better dogfighter than a C model. This Block has considerably more thrust than the Block 30 or Block 40 C models and may have a sustained turn advantage over an A model. The other difference between the A and C model is of course the cockpit. The C model has a completely different cockpit layout and a new radar which improves the combat capability of the jet. The MiG matches up favorably to the F in maneuverability but is inferior in avionics and weapons. The exception to this

is the AA Archer heat seeking missile. This missile provides the MiG an excellent "close in" weapon. PB The MiG because that is the fighter that I would most likely face in combat and a chance to fly it would be helpful. How did you get hooked up with Spectrum Holobyte for this project? I worked with Gilman Louie, the current Chairman of MicroProse and the creator of the Falcon series, on a proposal to build an F trainer. Spectrum-Holobyte was teamed with General Dynamics and another company called Perceptronics on the project and fortunately we lost the contract. I say fortunately because after losing the contract, Gilman took our design and some of the User Interface work that was complete and turned it into Falcon 3. So my input to Falcon 3. In the Falcon series there has been very few constants between each development effort. The exception to this of course is the involvement of Gilman Louie who is again providing the key vision for Falcon 4. How close does it follow your actual lessons for real pilots? PB Art of the Kill was an idea pushed through by Gilman. The concept was first proposed to him by a young guy named Pat Gost. Pat helped work on the video while I wrote the content to include the script for the video and the manual. The Art of the Kill courseware is essentially identical to the course content taught in the F training squadrons. CSIM What are the most common maneuvering mistakes beginner fighter pilots make? PB The most common BFM mistake made by new fighter pilots in Falcon or the jet is pointing at the target before you are ready to shoot. A pure pursuit path pointing at the target will almost always generate an overshoot. It is very hard to get most new fighter pilots to think in terms of driving the aircraft to another point in the sky besides directly at the bandit. Everybody has a natural tendency to put the bandit in the HUD and in most cases unless you are shooting, this is the wrong thing to do. The other common mistake is trying to turn the jet at too high an airspeed or at other end of the spectrum -- getting too slow. These two mistakes can be lumped into the category of not managing your energy. CSIM What is the toughest air combat maneuver to learn? PB The toughest air combat maneuver to learn is controlling your lift vector when you are slow and tight. These situations occur when you are scissoring or in high low stacks. It is very hard to recreate various situations where mistakes are made so the learning curve for this type of fighting tends to be flat. What areas of the sim have you been asked to participate in? PB I have provided fighter pilot input on a number of areas of Falcon 4. I have worked on most areas of Falcon 4. The heavy lifting on this project is of course being done by the guys and gals writing code and drawing pictures. How close is the flight model to the real FC? Altitude effects, feel, turning etc. PB The flight model is very accurate. I have talked about this before but in Falcon 4. Does it have a reasonable on set? PB The black out model we used is based on centrifuge data. I know there will be plenty of debate over blackout models but I feel that if you are going to have one, ours is as accurate as you can make it. I guess its only natural. CSIM The avionics package is very complex. How close to the real thing is it? How close to being able to actually being used for air force training is it? Is this the complete package or are there features that can not be modeled due to security issues? On the F side of the scale you have a radar beam sweeping, range bins, radar cross section, probability of detection, in other words a highly detailed simulation of the radar fight. On the easy levels the bandits are essentially just stoogeing around out there waiting to get poked by your missiles. On the realistic levels the bandits are "spike aware" at BVR ranges and will flat out ruin your day if your shit is not all in one sock. When you gaze into your tube radar scope you will have to detect Brackets, Post Holes, Drags, Beams and other standard bad guy intercept tactics. It can be done but you will definitely not be able to crank Falcon 4. Keep in mind however that some of them are mobile and at the higher levels of the game, the Integrated Air Defense System will demonstrate connectivity and cooperative tactics to include blinking, ambush and buddy launches to defeat the HTS. Of course I have not even mentioned the Targeting Pod, Maverick and a host of other weapons and avionic modes. As far as security issues are concerned, Falcon 4.

Chapter 2 : Pete Bonanni | LibraryThing

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As the name implies, BFM is the cornerstone of tactical fighter aviation. Since its principles are rooted in the laws of physics, geometry and aerodynamics, they are non-negotiable and cannot be finessed. Depending upon what your expectations were when you purchased Art of the Kill, a couple of learning outcomes are possible. If you watch the videotape only once as you flip through this book, you will probably be mildly entertained and may even retain a few basic principles of BFM. I can guarantee you that such knowledge will serve you well. So you may be wondering why, in an era of pulse-doppler radar, low observable technology and sophisticated missiles, should one devote time and energy to learning something as old-fashioned as BFM. More than a few sincere advocates have been making that argument for years. As an aspiring fighter pilot in the s, I first heard the same siren song when the F was armed with the original AIM-9 Sidewinder missile. It continues to be my personal belief that some of the detractors of BFM do so simply because of their own ineptitude. Other commanders of the past, who were more interested in personal career advancement than the combat skills of their pilots, disdained BFM because of their fear of losing an aircraft and their careers. By the same token, if you fly air-to-air combat long enough, one day you will find yourself looking across a turning circle at a guy whose main objective is to see to it that you die for your country. Make no mistake about it, though: They can also ensure that should you find yourself trapped in a 1V1 from which you cannot disengage, that you afford your adversary the opportunity to die for his country. During the course of World War II, the great German ace, Eric Hartmann, shot down at least enemy fighters while using the single employment tactic of see, decide, attack and break. You bet he could, but unfortunately those most qualified to attest to that fact are no longer here. Yet, he was not single-minded or foolish about the application of his considerable skills. The bottom line is that BFM is to air combat as blocking and tackling are to football. Is it worth your time and effort to master it? I have never met a single one of them who was not an outstanding BFM pilot. As is said in the accompanying videotape: The Art of the Kill book was written by Pete Bonanni, an Air National Guard officer whose primary job is to train fighter pilots in air-to-air combat. Each chapter in this book begins by describing a situation this Weapons Officer and Instructor Pilot experienced while delivering on-the-ground and in-the-air training to his F pilots. These stories illustrate the complex task of learning modern air combat skills and some of the unusual situations he and his students have experienced in the process. Most existing books about air-to-air combat are either historical retrospectives, biographies or highly technical texts written primarily as syllabuses for Fighter Weapons training. This is the first study written expressly with the layperson in mind: Immediately following each story in Art of the Kill is a series of explanations and diagrams directly relating to the air-to-air combat situation presented in the story and illustrating step-by-step how modern air combat is learned and successfully executed. Art of the Kill may be read straight through. This videotape intermixes a presentation on air combat skills with real air combat footage. During the explanations, flight simulators and models are used to illustrate both the concepts involved and the actual maneuvers being discussed. With this Falcon 3. These maneuvers are the basic building blocks of all the other air combat tactics and techniques. You will never achieve true proficiency in any phase of air combat without first understanding BFM. BFM describes specific concepts of fighter turns, turning room and turn circles. These principles will be discussed in this book in an air-to-air context. BFM forms the foundation of the complex skills that a modern fighter pilot must master in order to achieve this objective. From this foundation, we will help you build an in-depth understanding of modern air combat. There are no points for second place. The following story will illustrate this point. Art of the Kill will start you on the road to mastering the principles of air combat. I was in an F, and the bad guys were flying FEs. The FE is a two-seat jet equipped with conformal fuel tanks which increase its range, but limits its maneuverability. This move would force the bandits to look into the sun as we got within visual range. We were already outnumbered four to two, so we needed all the help we could get. In other words, we could not go right at them because they had

the big stick the AIM When you are up against a fighter with a bigger stick, you have to use deception to keep from getting your cranium creased. Our game plan for the rope-a-dope was to sort out the Mud Hen formation before we got to Sparrow range. Next, we would determine which one of us was targeted on radar by the FEs. If we were both targeted, then we would turn and run. No need to end up wearing a Sparrow. If only one of us was targeted, the targeted jet would drag, [4] and the untargeted Falcon would go to the merge and wring a few Mud Hen necks. They were in a wall formation coming right down the snot locker. I leaned the flight farther southwest and pushed it up to just below the Mach. His call was followed by a roll and turn out of the fight. This was our planned maneuver if one of us was found by the FEs. With my wingman executing the planned drag, I checked my threat warning again. I knew I would get a tone if I was targeted, but these ears of mine have betrayed me in the past. Nope, the scope was clean. I closed the range and pressed down on the Z axis of the F cursor slew button. When you press and hold down on the cursor slew button, you switch the Sidewinder from the radar slave mode to the boresight mode. I planned to take out the closest Mud Hen with a boresight Sidewinder shot and then switch to the farthest FE in the formation with a radar slave Sidewinder shot. This way I had a chance to kill two guys at the merge and have the other two guys out in front of me. Things were happening at the proper pace, and I was in the groove as I got a good missile tone on the closest Mud Hen. God was in heaven, and the birds were singing in the trees. All was right with the world as I squeezed the trigger in the heart of the Sidewinder envelope. My shot call on the radio created an explosion of activity in the enemy formation. Suddenly the entire wall of FEs turned quickly like a great school of fish and pointed right at me. This move transformed a nice, peaceful wall of Mud Hens into an angry, lead-trail formation. The closest guy flashed past me and aileron rolled to signal he knew he was dead. The rest of the formation was very much alive and aware that there was a Falcon in their knickers. I tried to uncage the Sidewinder on the trail FE, but the sky was full of flares, including my own. I ended up right in the heart of the gun envelope and quickly tracked the trailing Mud Hen. The guy reacted like he was struck on the head with a board. While my turn surprised me, it must have mesmerized the target because he never even jinked out of plane. He just kept pulling into me and gave me an easy shot. The two Mud Hens were nose on at 6, feet. I rolled to put my lift vector on them and started to pull. The nose would not move. My mind started to clear as I realized that I had just taken a knot fighting machine and turned it into a knot grape that was about to get eaten. Extend to get energy and soak up a missile, or try to turn the jet with no airspeed and get gunned. Neither choice was good, but fighter pilot instinct took over, and I turned into the closest Mud Hen. The fight ended but not until I performed a feeble jink out [10]. I did everything correctly up until the moment I committed to a 3V1 turning fight. The FE is the best air-to-ground fighter in the world. It is also a very respectable air-to-air jet and is very similar in performance to a Turkey. I got shot because of pure buffoonery. Many fights come down to the ability of the pilot to maneuver his jet in a 1V1 situation. In this fight with the Mud Hens, I should have realized the position of my escape window and separated a concept we will discuss in Chapter 4. In addition, I used up far more energy than necessary turning on the trailing bandit. BFM is the first critical set of skills that a fighter pilot must learn. In this case, I flew my BFM like a plumber, not a fighter pilot, and paid the price. Captain Sominex could take the most motivated and dedicated student and within minutes turn him into a slobbering, head-bobbing imbecile, fighting a losing battle to stay coherent. In fact, I still have the scars on my forehead now covered by wrinkles from my head banging off the desk. Well, the same thing can be said for this chapter on geometry. Now, in order to perform BFM, a fighter pilot must understand his spatial relationship to the target from three perspectives: Like any profession, air combat has several unique terms that are a necessary part of the language. Positional Geometry Angle-off, range and aspect angle are terms used in BFM discussions to describe the relative advantage or disadvantage that one aircraft has in relation to another. Figure shows angle-off. Range Range is the distance between your jet and the bandit. In most HUDs, range is measured in feet, out to one nautical mile 6, feet.

This feature is not available right now. Please try again later.

All rights belong to the author: Pete Bonanni , Phil Handley. This is a short fragment for review the book. The full version can be purchased in the store. As the name implies, BFM is the cornerstone of tactical fighter aviation. Since its principles are rooted in the laws of physics, geometry and aerodynamics, they are non-negotiable and cannot be finessed. Depending upon what your expectations were when you purchased Art of the Kill, a couple of learning outcomes are possible. If you watch the videotape only once as you flip through this book, you will probably be mildly entertained and may even retain a few basic principles of BFM. I can guarantee you that such knowledge will serve you well. So you may be wondering why, in an era of pulse-doppler radar, low observable technology and sophisticated missiles, should one devote time and energy to learning something as old-fashioned as BFM. More than a few sincere advocates have been making that argument for years. As an aspiring fighter pilot in the s, I first heard the same siren song when the F was armed with the original AIM-9 Sidewinder missile. It continues to be my personal belief that some of the detractors of BFM do so simply because of their own ineptitude. Other commanders of the past, who were more interested in personal career advancement than the combat skills of their pilots, disdained BFM because of their fear of losing an aircraft and their careers. By the same token, if you fly air-to-air combat long enough, one day you will find yourself looking across a turning circle at a guy whose main objective is to see to it that you die for your country. Make no mistake about it, though: They can also ensure that should you find yourself trapped in a 1V1 from which you cannot disengage, that you afford your adversary the opportunity to die for his country. During the course of World War II, the great German ace, Eric Hartmann, shot down at least enemy fighters while using the single employment tactic of see, decide, attack and break. You bet he could, but unfortunately those most qualified to attest to that fact are no longer here. Yet, he was not single-minded or foolish about the application of his considerable skills. The bottom line is that BFM is to air combat as blocking and tackling are to football. Is it worth your time and effort to master it? I have never met a single one of them who was not an outstanding BFM pilot. As is said in the accompanying videotape: The Art of the Kill book was written by Pete Bonanni, an Air National Guard officer whose primary job is to train fighter pilots in air-to-air combat. Each chapter in this book begins by describing a situation this Weapons Officer and Instructor Pilot experienced while delivering on-the-ground and in-the-air training to his F pilots. These stories illustrate the complex task of learning modern air combat skills and some of the unusual situations he and his students have experienced in the process. Most existing books about air-to-air combat are either historical retrospectives, biographies or highly technical texts written primarily as syllabuses for Fighter Weapons training. This is the first study written expressly with the layperson in mind: Immediately following each story in Art of the Kill is a series of explanations and diagrams directly relating to the air-to-air combat situation presented in the story and illustrating step-by-step how modern air combat is learned and successfully executed.

Chapter 4 : Pete Bonanni Books - SimHQ Forums

The book "Art of the Kill" is written by Pete Bonanni, a Weapons Officer and Instructor Pilot in the Air National Guard. The videotape "Fighter Air Combat Trainer" is a combination of air combat skill and air combat footage.

It is highly maneuverable and has proven itself in air-to-air combat and air-to-surface attack. It provides a relatively low-cost, high-performance weapon system for the air forces of the United States and allied nations. It can locate targets in all weather conditions and detect low flying aircraft in radar ground clutter. In an air-to-surface role, the F can fly more than miles kilometers , deliver its weapons with superior accuracy, defend itself against enemy aircraft, and return to its starting point. An all-weather capability allows it to accurately deliver ordnance during non-visual bombing conditions. CSIM Please give me a bit of background on your career. PB I am a second generation fighter pilot who grew up on various fighter bases around the world. In the 90th I flew F-4Es and Gs. Without those slats the jet flew VERY different at high AOA and I experienced a few wild rides and some pissed off back-seaters before I got used to slow speed fighting in the jet. At slow speed you could not use the ailerons at all. Just think about that. Here you were in a flat scissors with an F-5 and you needed to roll and pull to the left. If you actually moved the stick to the left several things would happen - none of them good. Next the nose of the jet would slice violently in the opposite direction. The only way to regain control of the jet was to unload and by the time you got the Rhino flying straight again some ass hole in an F-5 was gunning you. I never really got a feel for the F-4D because after only 4 months at Taegu, I was selected to fly the greatest fighter ever built -- the F In August of the F was more than just a new fighter. It was a concept - an idea about air combat that was fashioned into a machine. The first time I stood next to the jet I was transfixed. I had been around fighters all my life but this jet was different. Finally they built a fighter that not only was the right size small but also had the correct number of engines. They say beauty is in the eye of the beholder but no fighter pilot can see the lines of the F without feeling deep admiration for the men and women who designed and built it. The F was even better from inside the cockpit. To put it simply the jet just felt right. It just felt so natural. My first thought was "so this is how a fighter cockpit is supposed to be". Anyway, sorry for the nostalgia but it was truly a great feeling to be a part of the early days of the F The F Fighter Weapons School was my most arduous Air Force experience to date and very hard to describe in just a few words. I spent the next 5 years flying the old A-7 and pining for 10 thousand pounds more thrust. It was not that the A-7 was that bad, it was just that it was no F Finally in the th Fighter Squadron received "C" model Fs. When I first flew the jet in transition rides I could tell that the nose was a lot heavier but when I actually did BFM in the jet I was pleasantly surprised. The nose was heavier but with the new GE engine the jet had more thrust which made up for the increased weight - kind of. Nothing maneuvers like an "A" model F in my opinion but in a fight against your clone - A versus C, it would probably be a push. CSIM What is the closest you ever came to actual combat? PB When my father went back to Vietnam in he told me, "every generation of fighter pilot has their war. PB The F is the greatest fighter ever built. I know we can get into a "News Group" type debate over energy curves, payload, avionics, range and other various fighter characteristics. In my opinion however, the F is still the best fighter in the world at what it was originally designed to do -- dogfight. In addition to dogfighting, the F is also the best jet in the world at killing SAMs. When you add AMRAAM and LGBs to the jet you have a great all around fighter that is only a "stores jettison button" away from being the best maneuvering jet in the world. PB The A model F is lighter. More specifically it has a lighter nose which means you can rate or move the nose better in an A model. The C model generally has more thrust than the A model which for the most part compensates for the greater weight of the C. I personally believe that an A model F is a better dogfighter than a C model. This Block has considerably more thrust than the Block 30 or Block 40 C models and may have a sustained turn advantage over an A model. The other difference between the A and C model is of course the cockpit. The C model has a completely different cockpit layout and a new radar which improves the combat capability of the jet.

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Pete Bonanni is the author of The Art of the Kill (avg rating, 7 ratings, 0 reviews, published), Falcon Air Combat (avg rating, 1 rating.

Chapter 6 : th -=TFW=- OClub

Pete Bonanni THE ART OF THE KILL A Comprehensive Guide to modern Air Combat Foreword Art of the Kill has been designed to teach you the fundamentals of Basic Fighter Maneuvers (BFM). As the name implies, BFM is the cornerstone of tactical fighter aviation.

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