

PD-30 Thesis
Continuing Education



***The Importance of Training to the
Starfleet Marine Corps***

An Analysis by LGen Scott A. Akers

* Education Logo built by
Vice Admiral Kurt Roithinger with
Assistance from Admiral Chris Wallace

“The more your men sweat in peacetime, the less they’ll bleed in wartime.”

USMC Variation on ancient Earth – Chinese Proverb.

What are the essential differences between an armed mob, and an elite military force? The mob has guns, the military unit has guns. The mob has numbers to overwhelm, the military unit usually has smaller numbers. The mob can cause damage for a while, the military unit can inflict damage over a longer period of time. The mob will melt away when confronted, the military unit will dig in and resist. The mob has belief in its cause that varies from freedom, to anti-whateverism; the military unit has belief in itself and its leadership. What one element causes these differences that would allow the 10-40 members of a military unit to be able to withstand and often defeat the thousands in a mob, even when both armed with the same weapon?

Training.

That’s it, ... training.

Not even requiring a capital T, the simple act of teaching a skill to a soldier, and then having him practice it over and over again. Is this a surprise? Not to those who have taken the call to arms as their profession, not to those who studied the role of training in the military powers throughout history, and not to the Starfleet Marine Corps.

In this paper we will study the concept of continuing education / training for EVERY marine. Why it is a good concept to carry out, in what manner it should be done, who should go to what classes and at what point in their career, and what the end benefits to the Corps, Starfleet and the Federation will be in the long run.

As the work proceeded on the SU-30 paper “The Care and Feeding of the Marine Armored Cavalry Regiment”, this author began to see the need for continuity in Marine Education. The previous AR-30 paper “Whither Armor” itself was an outgrowth of the previous paper IN-30 “The Marine Fire Team”. Each paper in turn created questions that led to further research and then a paper to answer those questions. The SU paper resulted from a conversation with Colonel Matthew Copple on how such a larger formation like the ACR could be transported and supported. The CE-30 paper “Fort Lakota” resulted after another discussion this time with Brigadier General Aaron Murphy and Brigadier Sanford Berenberg on how an ACR would work with a fixed fortification in protecting a planet. Finally the CE-30’s research led to a discussion with Admiral Allyson Dyar on the role of Medical Branch and how triage would be different at different levels of marine combat / unit size.

Each in turn has led to more study, more research and more analysis. Thus leading to this paper on the importance of education for all troopers in the SFMC, from the Rifleman to the General, from the Cook to the Surgeon.

The layout of this paper will be in four sections. First: we will discuss the Recruits and Junior Enlisted personnel, from their arrival at the recruiting depot all the way through

their Advanced MOS training and cross training in other branches. Second: we will look at the Senior Enlisted and Warrants Officer, as they enter into the role of leaders and specialists, the experts that the officers must rely on. Third: that before mentioned Junior Officer, like the new enlisted, we will follow as they enter Officer Training School and up to their Advanced MOS training, and cross training in other branches. Finally: the Senior Officer as they enter into the role of advanced leadership, leading leaders, and combined arms operations. We will then recap the paper and answer the thesis premise on whether continuing education for ALL of the SFMC is a benefit to the Corps as a whole.

Part One: Training for the Recruits and Junior Enlisted Marines

As each new potential recruit signs the dotted line to join the Starfleet Marine Corps, they have a universe of experiences before them, but before they can truly call themselves marines, they have to complete the most rigorous introductory training in the galaxy SFMC Recruit Basic Training otherwise known as Boot Camp.

Before the new recruit even gets to enter Boot Camp, he or she will spend one to four weeks in the Recruit Depot phase. This is a two-step process where recruits are collected together on any of the member planets of the Federation, and then shipped to the Marine Corps Enlisted Training Facility on the Asteroid New Masada known as THE ROCK. Here they will enter the New Valley Forge complex on one side of the asteroid and begin Recruit Basic Training. However enroute to the facility, they will enter the

second phase, while housed in ship board barracks for approximately two weeks, the recruits will learn the basics of military life: sleeping-eating-working on the Corps schedule, making their racks, dressing alike, looking alike, and working as a basic team. Boot will be so busy for these recruits, that these basic essentials need to be learned before they even step foot on the asteroid.

Then there is Boot Camp. Much has been written about the grueling, demanding and necessary aspects of the thirteen weeks of Marine Basic Training. But in the end, the results are that recruits become Marines. They have been trained to work as a team, think as a team, and be a team. They have learned the traditions of the Corps, and how each of the member planets of the Federation have always had some elite large unit of warriors, that have led the charge, on land, air and sea. Now they are those warriors, but their learning has just begun.

For every Marine is in effect a rifleman, a member of a fire team. Every Pilot, Cook, Tanker, Medic must go to the Basic Combat School before they can go on in either Branch Training or specific Professional Development Training. Across a deep asteroid ravine from the New Valley Forge facility is a long narrow plateau called the New Guadalcanal Basic Combat School or PD-12 Marine Essentials Task Learning. Here the newly minted Marines are divided into teams of four, and squads of 12 with an instructor assigned to each squad. They will now learn how to use every man portable weapon in the SFMC Arsenal, how to work as a fire team, and how the fire teams work as squads. By the time the marine finished the additional thirteen weeks of combat

school, every newly minted Private First Class, will have the training to command and lead a squad of riflemen into combat.

Following the Advanced School, every marine will then choose one of the Combat Branches to attend and learn specialized skills. The vast majority will attend the Combat Infantry School, which is an even more in depth analysis and instruction in SFMC Infantry Operations. While every marine who finished the Advanced School can in a pinch revert to the role of rifleman, the Infantry Branch Marines, are so well trained in these operations, that they can figuratively perform these operations in their sleep. In addition there are the Branches of Armor, Mecha, Aerospace, Special Operations, Combat Engineering, Medical, Support, and Maritime Operations.

In addition there is the option of professional development for each of the junior enlisted have the option of taking PD-20 or one of the NCO courses. This work will help the junior enlisted learn some of those management skills required of a Marine Non-Commissioned Officer supervising units above the Fire Team level, such as squad or even platoon. These courses are also helpful in developing retention among what will become the backbone of the Marine enlisted cadre.

Following the branch training and any professional training, the junior enlisted as the option of taking study in advanced branch specialization or Marine Occupational Specialty (MOS). Each individual job in the corps has a MOS number assigned to it. From a 301: Light Weapons Specialist to a 302: Heavy Weapons Specialist, and a 711:

Mechanical Engineering Specialist to a 732: Combat Ecologist. Several hundred MOS's are available to fit all of the needs of the Corps. And each of these require either on the job training or special schooling or both.

Finally the junior enlisted marine, can and should seek specialty training. Each of the branches provides advance training within that branch. This provides more overall training in such fields as Armored Fighting Vehicles, Artillery, and Infantry Fighting Vehicles in the Armor branch, or Construction, Demolition, and Environmental Sciences in the Combat Engineering branch. These advanced classes are often referred to as Series 20 courses as well. Another avenue is for the Marine to become more specialized in his or her MOS field. For example, a 349 Light Infantry Armorer, may become an expert in the repair and modifications of the M-970A1 Compression Phaser Rifle. Finally Marines are encouraged to cross train, and Infantryman may train as an Armor specialist, or a Medic may train to serve in a Special Operations unit. Whatever the cross training, what it provides for the NCO or the Officer in Charge is more flexibility when the inevitable surprise occurs and the unit is in a bind. Then the Lt. is going to be very happy to find that Private Snuffy carrying the M-2A3 Heavy Phaser Rifle, did his first training with the Combat Engineers, and does in fact know how to use the explosives to blow a hole in the obstacles the Breen pirates left behind as they fled.

Part Two: Training for the Senior Enlisted Marines & Warrant Officers

After a marine finishes their first tour, usually of three to five years, they have the option of re-enlisting, if they have also shown the ability to serve as a non-commissioned

officer, a warrant officer, or if capable and willing to go to Officer Candidate School or the Academy and then become an officer. If so selected as an NCO, the marine will then go to two sets of trainings: NCO Training and Specialized MOS Training. For the Warrant grades, they will enter Warrant Training with a large emphasis on becoming the technical experts in some field needed by the Corps. For those entering the realm of commissioned officer, we will cover later in Part Three.

NCO Training provides for the new non-commissioned officer classroom and field instruction in four fields: Leadership, Management, Tactical Combat, and Logistics. Basic NCO Training provides for the Squad and Platoon level NCOIC (non-commissioned officer in charge), while the Advanced Course provides from Company, Battalion and higher levels of NCOs. At the most basic levels of the Squad, the NCOIC is THE Leader. His or her example, élan, and ability to motivate the 12 or so marines following, will mean not only the difference in success or failure of the mission, but life or death of the squad. Thus the new NCOs learn that first and foremost they are their squad's leader, or at the platoon level, the Officer's right hand in the leadership of the unit.

In addition the NCO has to start learning the fine art of management: the supervision, control and direction of subordinates. This function is often more one of paperwork than personality, and requires the NCO to be able to sit at a desk or handle a PADD as well as working in the field or handling a Phaser Rifle. Knowing the needs and abilities of each of the troopers in the unit, when they need to go to their own training phases,

when they need to go on leave or liberty, and whose medical needs require special considerations are all part of the management of a squad, platoon or larger unit. Both Basic and Advanced NCO schools will provide the necessary instruction in the forms, requirements and regulations of the SFMC.

In addition to the management of the unit, the NCO needs to be concerned with the logistics for the troops, and equipment. Food, Water, Energy Packs, Repair Parts, Ammunition, all of these is vital to the exercise of combat operations. The NCO needs to be aware of the status of each of these and the other entire minutia necessary. Laundry and Cooking, as well as other chores performed by the unit on its own behalf are also considered part of the logistical needs of the unit. As a line trooper, the marine needs only be concerned with the activity of digging a latrine ditch per the sergeant's instruction. The sergeant has to be aware of the need for the latrine and where would be the best place to locate the latrine, how it will affect the local water supply, and what other sanitary concerns will need to be addressed.

Finally the NCO needs to be concerned with tactical combat, stepping up from concerns on Fire Team and Individual combat skills, to deployment of multiple fire teams, and squads, as well as weapons teams, and specialty units such as CE-sappers as well as Aerospace forward fire control spotters. The NCO needs to be able to see a bigger picture much like the officers, and as the larger unit's officer's right hand, the NCO needs to be able to advice and relate to the officer the needs of the men during such tactical level combat situations.

In all NCO training, both basic and advanced covers all four of these concerns for the new and veteran sergeants, and is a major reason why so many of the SFMC officer cadre comes through the NCO ranks.

Next for the senior enlisted NCO is specialized MOS training. Like the junior enlisted the NCO will train to be more proficient in some sub-specialty of their chosen MOS. However unlike, the junior, this is REQUIRED for the senior NCOs. They are expected to know more about their MOS, and as many (if not all) of the sub-specialties therein. For the senior NCO is the first line of education for new troopers, and even for some of the junior officer. In the combat branches, each senior NCO will be expected to have already completed advanced training and at least one MOS specialty for each rank advancement thereafter. It is these senior NCOs who become the instructors at the various SFMC schools, experience and knowledge a powerful combination. Likewise in the support branches, advance training and MOS specialty training is required for continued rank advancement. Finally the more senior NCOs are expected to cross train in other Branch Basic if not Advanced schools. No marine is an island, and neither is their MSG, skills are valuable, and the more skills the marines have the more valuable that unit is when it comes time to pay the price of combat.

Next, we will discuss training and the Warrant Officer Program. While the current policy of the Starfleet Marine Corps is and has been to not utilize this program. This writer thinks this is a sadly misguided policy, and several of the Starfleet Regions have

adopted it, on a local command authority. Warrant Officers in the Starfleet Marine Corps, often called "Gunners" for their traditional role of being "THE" experts in combat weaponry, are senior enlisted personnel whose expertise is so acute, that they 'warrant' a position as an officer, even though they often do not merit a 'commission'. The Warrant Program allows local and regional commands the ability to recognize that these experts need to be allowed some command authority over junior officers, though commissioned are not as 'informed' about the subject matter as the Warrant Officer. While it is a wise First Lieutenant who will listen his top sergeant on weapons usage and placement, they are not required to do so. However if a Chief Warrant Officer Four or higher tells that same First Lieutenant to get his men away from this or that weapon, now!!! They better be moving away from that weapon with the junior officer taking the lead in respecting the Warrants knowledge AND rank authority.

When an enlisted specialist moves up to Warrant Officer, he or she will receive a four-part training course. First, Leadership AND Management training: this will hone both of these skills they have learned while advancing as an NCO, theoretical studies on motivation and needs based management of people and of resources. Second, they will undergo intensive specialty training in their chosen fields, both from other Warrants, Senior Officer, and Civilian Specialist (many of whom are retired Marines themselves). Third, they will all undergo instruction training; the most important usage of the Warrant Officer is training and teaching new marine recruits, and junior officers. It is the very need to keep and pass on the years of experience carried by these marines, that the Warrant Program exists. Finally: Advanced and Cross Branch weapons training. While a Senior Sergeant can focus on the intricacies of the M-2A3 Heavy Phaser Rifle, a

Warrant Infantry Gunner will need to know every weapon that a Marine grunt will have access too, Current, Obsolete, Archaic, and Potential Future Weaponry.

Part Three: Training for the Junior Officers

The career path for officers in the Starfleet Marine Corps is quite different than that of the fleet side of Starfleet. A larger percentage of the officers come up through the enlisted ranks before entering the Academy than their counterparts in fleet; forty-five percent versus fifteen percent. During wartime this percentage rises to a staggering seventy-five percent. What this means is that nearly half of all new peacetime officers in the Corps have had some experience in the Corps, and have seen life through the eyes of the enlisted marine for two or more years.

For the Junior Officer then there are three parts to their continuing education, which is by necessity customized to their past experiences and current capabilities: The Academy to earn their commission, Branch Training to earn their position, and Specialty training to give them the proficiency to lead other Marines.

As the new marine officer candidate enters the Academy he enters a three-stage program. First is the acquisition of his Bachelors Degree. This has been and remains a prerequisite for Marine Officers for almost 500 years. The Marine Officer while a warrior is also a scholar. If the candidate already has his Bachelor's he may at his request and per the needs of the Corps, perform advanced graduate studies, or he may select to go directly to the Officer Training School portion of the Academy Program. This portion

conducted over a three-month period of time, instructs the new officer to be in the management and logistical needs of his new position to be. Long hours of classroom work, with both Management and Leadership theory being studied. The next portion is that all OTS graduates (even the prior enlisted) will go through “Bulldog”, a special and even more intensive version of “Boot Camp” Basic Training. This is so that every officer knows what his troops have gone through, and what they are capable of. Finally as every marine is a rifleman, the officer candidates will go through an equally intensive version of the Basic Combat School at New Guadalcanal. Again, like their enlisted brethren they are assigned to twelve man squads with an instructor Squad Leader and put through the rigors of learning what combat will be like, and how a squad must operate as a team. They will learn how to deploy multiple squads; each candidate in turn will take the role of the squad leader, and as a platoon officer, (three squads of 12 candidates, make up one cycle’s class number by year and class “72-12”, these classmates will be friends for decades, and will keep track of each other through reunions and subspace communications). When the new Second Lieutenant gets his first platoon, he will know intimately what the capabilities of each of his squads are, and how they work together.

Following the Basic Combat School, Officers like the enlisted marines will begin Branch Training, however, this will automatically include Professional Development training such as PD-20. Officers are as a group expected to be able to both lead AND manage their units. From the newest 2nd Lt. to the most experienced General, management is an important tool, and a means to the ends of effective leadership. Following PD-20,

the new officers will go on to Branch Training, those prior enlisted marines who have stepped on to being officers will be able to skip the more basic/introductory courses, but will still devote as much time in total to their field of specialty, sometimes even acting as assistant instructors for their classmates. Finally every officer, prior enlisted or not, will need to learn an Officer MOS skill commensurate to their branch and specialty there in such as **340 Light Infantry Commander**, (Officers commanding infantry units receive the MOS of 340 which indicates training in all aspects of light infantry operations.) Or the **415 Armor Commander**, (Commanders of companies and larger Armor units are assigned this MOS).

The Junior Officer cannot stop there, if they want to continue in their advancement in the Corps, and if they want to increase the chances for the survival of their unit, and themselves. Advanced branch training is a must for all junior officers, from AE-20 to MD-20, each branch offers overview training to both the enlisted and commissioned personnel. For example, after the Marine 1st Lt. finished AR-20, even though he is a Patton driver first and foremost, he will better understand how Mechanized Infantry and Artillery fit into the entire Armor Branch and modes of operation in the armor attack.

In addition to the advanced branch training, every junior officer, should seek advanced MOS training. Skills and knowledge as a **340 Light Infantry Commander**, can be supplemented, allowing the 1st Lt. or Captain the ability to step up to command a Battalion if necessary or to be able to operated in joint mode with other branches platoon or company level units to exploit situations at a minutes notice. For the junior

officer much of the advanced MOS training encompasses C-3 skills (Command, Control and Communications) as they are supposed to be able to focus on the entirety of the battle and direct subordinate units, as opposed to the junior enlisted who has taken advanced MOS training to better facilitate removing that threat vector 200 meters in front of the unit.

Finally the junior officer will need to be cross-trained, with the other branches. Just as the advanced branch trainings, familiarizes the junior officer with the other specialties within their branch, the cross training will familiarize them with the basics of the other branches. As well the C-3 skills learned before will be enhanced so that Infantry Commanders can call in Aerospace Support, Medical Commanders can call in Armored Evacuation, and Combat Engineers can call for an assist from Mecha units. Once a junior officer can understand the capabilities of their brethren from the other branches, and HOW to communicate with them, they can work as unified team, under any circumstances.

Part Four: Training for the Senior Officer

After a marine officer has finishes their second or third tour, usually a period of eight to twelve years, they are eligible for promotion to the rank of Major. This is the first of the Field Grade ranks (2nd Lt., 1st Lt., and Captain being the Company Grades), and along with Lt. Colonel, Colonel and Brigadier make up that classification of rank. The four General Ranks are also known as Flag Ranks. Once reaching the level of Field Grade, a marine officer is considered a Senior Officer, and will be required to have completed

or soon complete various courses from both the SFMC-Academy and the main Starfleet Academy on Earth. In addition like the senior enlisted grades the senior officer is expected to become an expert in their Branch as well as having secondary knowledge in the conduct of military operations, beyond the scope of just the battle before them.

First the Senior Officer will need to visit the Starfleet Academy branch nearest his duty assignment for Officer Command College. This school in the theory and practice of command is a pre-requisite for all Fleet Officer who wish Command (or even Executive Officer positions) aboard a Starfleet Starship, and the Corps has decided that the same skill sets are useful for command of Regiment size units, and even helpful at the Battalion level. Following this the officer will return to the SFMC-Academy to take the Leadership Series of courses completing with a Leadership Seminar and Thesis program currently taught by Dr. Wess Roberts. These courses are mostly theoretical in nature, and thus it is currently Corps policy that the aspiring regimental commander will first return to his field command (Battalion or Regimental level), and put that which is learned into practice for a few years. This will help the senior officer better understand what is learned, and be able to adept those skills to their own individual personality. Following this, the Corps is very willing and encouraging for those officers wanting to enter the flag ranks to go to the SFA main campus in San Francisco to take the Flag Officer School series from the legendary Vice Admiral Helen Pawlowski. Highly informative and refined over many decades of instruction these courses have been said by some, should be used as the basis of the Officer Command College mentioned above.

Parallel to this leadership training the Senior Officer must also become an expert in their chosen branch. This includes Professional Development, Advanced Branch Training, and Combined Arms Training. Advanced Professional Development goes hand in hand with the Leadership Courses, and many an officer will also take officer version the NCO Courses, so that they will know what their Sgt. Majors and Gunnery Sergeants are thinking. The epitome of the Professional Development series is the PD-30 Independent Study program, resulting in an analysis and thesis on some area of concern for all senior officers, for example “Continuing Education in the SFMC”.

Following or concurrent with this training, the senior officer will go to Advanced Branch Training. Following the XX-20 taken as a Junior Officer, the Senior Officer will begin to take advanced and theoretical studies in their chosen branch, becoming like the senior enlisted marine, the “expert” in their field. Know not only ‘how’ a tank works, ‘why’ a tanks works, but ‘when’ a tank should be used in combat, and ‘when’ artillery would be a better option, or bombardment from space. Many of the XX-30 Theses papers that are a result of this study, have become texts in and of themselves, and have changed Marine Doctrine to the betterment of the Federation. Lessons learned by these Senior Officers while in the field, translate to scholarly papers that have endured and are used to teach the next generation of marine officers.

Finally, the senior officer will need to attend Combined Arms Training. Not just taking classes in the other branches, but specialized training on how the different fields of

service can and should work together to deliver the maximum effective force upon the enemy at a point the Senior Officer chooses, and with the maximum exploitable result. An officer trained in combined arms tactics will know instinctively when to commit his armor assets here, his Mecha forces there, and when to keep infantry and aerospace assets in reserve. When to move Combat Engineers forward to exploit a gap, is as important as knowing when to get the Medical units evacuated so the marines with guns can deliver their special skills all over the field of battle. The new General Staff College of the SFMC-Academy and its series of Combined Arms schools is going a long way to providing these skills to our senior officers in the Corps, and even some Flag Officers from the Fleet are attending to see how the Corps can extend their own resources in traditionally non-fleet situations, especially with the use of Aerospace/Mecha assets.

Finally, the senior officer needs to acquire some specialty training. In addition to the Combined Arms training, the Senior Officer should become proficient in at least one if not more additional branches of service. They need to take advanced coursework in management and administration. And finally Combat Theory needs to be studied and learned. Threat Forces that the Federation will have to deal with in the future, will have new capabilities, new tactics, new strategies, and it will be by a true understanding of the underlying theories of combat that the SFMC will be able to defeat these threats as efficiently as possible.

The concept that the Senior Officer should be both Combined Arms trained AND multiple branch trained is a recurring philosophy that is currently once again in vogue.

A colonel or general who is trained as a tanker and a pilot, will know in much more intimate detail the capabilities of both, and how they should and could interact. The same logic extends to each additional branch the senior officer spends the time becoming qualified in. The one caveat is that the officer will have to determine a balance between advanced expertise in their field, and adequate knowledge in many fields.

In learning the skills of the management and administration of Corps assets the senior officer will learn what is call “The Corps’ Management Control Process” The Corps’ Army’s approach to management control is based on the fundamental philosophy that all commanders and managers have an inherent management control responsibility. SFMC unit HQs are responsible for establishing sound management controls in their policy directives and for exercising effective oversight to ensure compliance with these policies. Commanders and managers throughout the Corps are responsible for establishing and maintaining effective management controls to ensure that operations are effective and resources are protected and used appropriately. The Corps’ management control process supports commanders and managers in meeting these inherent responsibilities by providing two additional management control mechanisms: a process for periodically conducting detailed evaluations of management controls in selected areas and a process for developing and supporting an objective annual statement of assurance for the Commandant of the SFMC that fully discloses known material weaknesses.

The Corps' management control policy and process are implemented and emphasized through four key components. First and foremost is leadership emphasis. Second is education and training to ensure that commanders and managers understand their management control responsibilities. Third is an administrative approach that clearly defines fundamental requirements and establishes accountability, while minimizing the workload burdens that ultimately detract from enthusiastic acceptance management and administration objectives. Fourth, and the ultimate goal, is an effective process to detect, report and correct recurring management control deficiencies. None of the processes to accomplish these goals comes automatically. Proper training of the senior officer at both the General Staff College, and at advanced private institutions is necessary. Often you will see Flag Officers of the Corps with Masters or even Doctorates of Business Administration in command of the Divisions and Corps sized units of the SFMC. Likewise many leaders, managers and CEOs of private corporations are retired Flag Officers of both the Corps and the Fleet with this advanced training.

Finally the senior officer's specialty training and education is complete one they have gone through a complete regiment in Combat Theory. This can be defined as a study of military combat being a subset of the broader category of military conflict, which in turn is a subset of sentient conflict in general. (see Appendix Three) Military combat is defined as purposeful, controlled violence carried out by means of deadly force between opponents, each attempting to carry out a mission, the achievement of which has value to that side and denial of which has value to the other side. Wars of course involve

deadly force, as do campaigns within wars, but it is only in combat that deadly force is directly and actively applied against the enemy. Combat is the active agent of warfare, the crucible in which war aims are decided.

Included within combat's boundaries are the preparatory steps taken by each side immediately before active use of deadly force and the disengagement actions before interaction between the two sides ceases. The phrase "use of deadly force" encompasses the threat of deadly force when it has an effect on combat. The theory does not bind the scope of combat either by the kinds of weapons employed nor by the size of forces or geographical area. Interplanetary delivery of mutagenic weapons or subspace warheads is a combat action on a grand scale. Contiguity of mission is the best determinant of what constitutes combat.

Military combat cannot be treated apart from the campaign and war of which it is a part, and so the theory must include within its purview the external context that forms the boundary conditions for combat and affects its course. Before combat commences and while it proceeds, combat activity is influenced by the direction, impetus, and constraints imposed by the external context, and combat results feed back their influence upon the external context.

As foundation for the theory, the course has narrowed a larger list of possible axioms of combat to the following six:

Axiom 1 Military combat involves deadly interaction between military forces.

Axiom 2 In combat each side seeks to achieve a goal, called its mission, which has perceived value.

Axiom 3 Combat potential is embodied in military forces.

Axiom 4 The commander of each side activates combat potential to create combat power in furtherance of the mission.

Axiom 5 Domination of the opposing military force is the ultimate means of accomplishing a mission.

Axiom 6 Uncertainty is inherent in combat.

It is believed that by an understanding of the theoretical underpinnings of combat and military actions the Flag Officer will be better prepared for the rapidly evolving and ever changing face of combat operations, and that this officer will not be surprised by such actions as an overwhelmed enemy resorting to weapons banned by interstellar treaty, or terrorism used by either non-governmental organizations or interstellar governments.

Closing

In review we have looked into the roles, lessons, and options open to the different levels of Marines: Commissioned, Warranted, and Enlisted; within the realm of Education and Continuing Education in the STARFLEET Marine Corps. What has been revealed, and what has the reader learned? For the Recruits and Junior Enlisted we have seen that

the Corps has a pressing need to bring the once civilian up to speed as a Combat Marine in as short and efficient time and manner as possible. But, that this educational process does not have to end there. Through the entirety of their first tour, the Corps will provide opportunities AND then benefit from the Marine continually improving their knowledge and skills. This will also continue as the Marine returns for subsequent tours as they become the senior enlisted NCOs and even the Warrant Officers of the Corps. These then become the instructors for the next generation of junior enlisted marines and junior officers. As the officer transitions from either enlisted or civilian they have as steep of a power curve learning to be both marines, but also leaders and managers. Finally we've seen how the officer's training never ends, and that even Generals will return as students and can learn from Sergeant Majors, Warrant Officers, Captains, and even civilian experts. For all of this the Corps benefits. The Smart Marine is a Live Marine. And it is the job of the Corps to wreck havoc on the enemies of the Federation, and that requires Live Marines, not body bags.

Where does this research lead this writer to go next? Obviously, the attending of the SFMCA General Staff College and its subordinate schools therein: the Combined Arms Command School, the Military History School, and the School of Strategy and Tactics (when fully opened). These schools will each initially be made up of the three courses.

The Combined Arms Command School was founded as a means to teach Marines the fundamentals of overall command of units involved in Combined Arms operations. Due to the fact that Combined Arms operations involve more than one branch of the

SFMCA, it is necessary that the student has some knowledge of the other Branches of Service in the SFMC and be a trained leader. There are currently three courses available at the Combined Arms Command College:

CA-40: Basic Combined Arms Command: This course will acquaint the student with basic operational terms and tactics used in Combined Arms combat operations and how the various Branches of combat forces work together to accomplish the stated mission. Pre-requisites for this are IN-20, and the xx-30 level course from any other SFMC Combat Branch (AR, AE, ME, SO) and from any SFMC Support Branch (CE, MD, SU), LD-20 and PD-12.

CA-50: Advanced Combined Arms Command: This course will give the student the opportunity to think critically about the application and use of Combined Arms forces. Prerequisite for this course is CA-40, Basic Combined Arms Command.

CA-60: Combined Arms Command Independent Study: The final step of the Combined Arms Command Education Program, applicants for this course must submit a Combined Arms topic for approval. This course is designed to allow the student to demonstrate the knowledge he has learned by writing a paper on some aspect of Combined Arms Command that interests the student. Upon receipt of topic approval, the student will write a paper covering the topic in depth. Successful students will receive a Master of Military Science Degree with a concentration in Combined Arms. Prerequisite for this course is CA-50, Advanced Combined Arms Command.

The School of Military History will welcome the student to a new series of studies entitled -Studies in Military History. These courses are not like any that they may have taken before from the Star Fleet Marine Corps Academy. These courses are based on a series of writings that allow the student to grow in their knowledge of Military History as they go through the courses.

The student will be required to stretch their knowledge while taking these courses. These courses will allow the student to learn the -how's- and -why-s of Military History. The student will look beyond what is written in the standard history books and discover a new meaning of the history written.

MH-40: Basic Military History: This, the first course in Military History, will be a written essay on two quotes relating to Military history. The student will be asked to state if they agree or disagree on them and then state why. This will act as a springboard for the student to move on to the second and third courses. Pre-requisites for this course are IN-20, and the xx-30 level course from any other SFMC Branch (preferably a support arm such as CE, MD, or SU), and PD-12.

MH-50: Advanced Military History: This course will build upon the basics learned by the student in MH-40. In the second course, which will be divided into two separate parts A/B, the student will be asked to look at two different military actions and compare and contrast them, in terms of military history with each other. Why are these two different

military actions similar, but yet so totally different? Why were they chosen? In the second part of the same course, the student will then be asked to do the same for Military leaders, thinkers, and philosophers.

By this means, the student, in Part A, will begin to see that all Military History is connected in one-way or another. In Part B, the student will see how and why some of the great Military leaders/thinkers were influenced by their education--both formal education and Military education. Pre-requisite for this course is MH-40, Basic Military History.

MH-60: Strategy and Tactics Independent Study: The third and final part, the Student will put what they have learned in Parts One and Two and to actually write a military historical event. This history will be of an engagement of the Star Fleet Marine Corps, anywhere from the Colonial Marines to current date. Examples of this style of writing can be found in each of the Branch Manuals for the different Branches.

Concurrently with these studies, this writer will be working on his own PD-40 project, Maritime Operations Branch. With all of the branches in the SFMC: Armor, Aerospace, Infantry, Combat Engineers, Mecha, Support, Medical, and Special Operations, but one thing is missing in the Starfleet Marine Corps. What does the anchor in our logo represent? A long ago past, that no longer matters to the realities of 24th century combat? Or maybe it is just a pretty device that looks good on our Dress Blacks? Of course not, the Anchor represents the Maritime in the Starfleet Marine Corps. Today

people most often think of that as it being part of Starfleet, sailing from star to star on ships loaded for whatever planet side battle that may face the Federation. But this neglects not only history, but also the reality of Class M planets and humanoid species. Water matters, water means life, water means a planet that can support life. And usually do to the particulars of Class M planets distances from their primary stars; it means a LOT of water ranging from 40-90 percent of the planets surface. Where there is water, where there is sentient life, and where there is a need for the protection of the SFMC, there is a need for a wet-water maritime force. Armor's hovercraft don't have the distance, Aerospace can bomb but not control the sea lines of communications, Mecha cannot operate for prolong times on or under the water, that leaves a specialized service whose training, personnel, equipment and tactics are dedicated to Maritime Operations. And thus, this bring us to this the ninth Branch of SFMC Service, the Maritime Operations Branch. This thesis will present the manual for said Branch and all of the requirements to serve in, operate and lead, and the details of a Marine Maritime Operations Strike Group.

As we have seen in previous branch analysis – no branch is in and of itself isolated from any others. Aerospace relies on Infantry to secure airfields, and ground facilities, Special Operations requires Aerospace to get them to the insertion points, Mechas would be sitting ducks if not properly supported. Infantry is in itself nearly self sufficient, but even there requires the logistical support, medical support, and even fire support provided by Support, Medical and Armor branches. Also within the Armor Branch and specifically within the Marine Armored Cavalry there is also a need and means of self

sufficiency but again, they borrow and make organic Support, Medical and to a large extent Aerospace branch personnel. Following the earlier research into Infantry and Armor, there has been discussion on the importance of Support, Combat Engineering and Medical Branches as part of the entire whole of the SFMC galaxy of roles. But as the introduction has show something is missing. Are the SFMC and Starfleet doomed to ignore water planets, or be content with controlling the skies above the water, and possibly even the surface of those seas?

This paper will be laid out differently than most of the academic analyses that have been done on the various branches. While it will have the standard opening and closing formats, the body itself will be a Branch Manual, with the standard five part set up of: History and Traditions, Organization, Equipment, Tactics, and the Appendices. The History and Traditions will cover the History of Maritime Operations on Earth, Andor, Alpha Centauri, Tellar, and the dearth of it on Vulcan. The Traditions section will cover: the maritime motto, the maritime slogan, the maritime device, the maritime distinctive clothing item, and other maritime traditions.

In conclusion, we proposed that Continuing Education was a necessary requirement for the SFMC as an institution and for the Marines as individuals. We suggested that there were benefits to the individual, their unit, the Corps, and the Federation. Overall, we have more than adequately shown that this is case. The more informed, trained, and skilled the Marine is, the more likely they will be able to survive combat, to succeed in combat, and after the latest war is over, and they return to the civilian life, the more

likely they will be able to reintegrate. Or, if they choose to remain in the service of the Federation, the more valuable they become in the long run, and then in time, it will be their turn to be the teachers, the instructors, the examples for generations of Marines to come.

"Education is the key to unlock the golden door of freedom."

George Washington Carver

Appendix One

History of The USMC Warrant Program

Introduction

Though they have existed for barely over eight decades, the Marine Warrant Officer has become part of the Corps' folklore. Despite this fact, little history has been documented on this small band of Marines.

It was just prior to World War I that the rank of "Warrant Officer" was placed among those that already existed. It was early in 1916 that the Commandant of the Marine Corps recommended to the Secretary of the Navy that the warrant grades of Marine gunner and quartermaster clerk be created. Those selected for such positions would be appointed from the noncommissioned officer ranks of the Corps.

World War I

The Act of Congress of August 29, 1916 to increase the Corps' strength provided for the rank of "warrant officer" and, in fiscal year 1917, 41 quartermaster clerks and 43 Marine gunners were appointed. Henry Lewis Hulbert was believed to have been the first to pin on the bar and "bursting bomb". Unfortunately little else is recorded about the man. Under the pressure of officer shortages in WW1, all but three of the appointees of 1917 were commissioned temporary second lieutenants. The Warrant Grade of Pay Clerk was added in 1918.

On 22 May 1917, "temporary appointments" were authorized for World War I. The temporary rank had its beginnings long before the outbreak of World War I. During the War with Spain, forty-three (43) temporary officers were appointed in the Marine Corps from civil life or Non-Commissioned Officers from the Corps. The last of these Officers appointed only for service during the war was discharged on 16 March 1899. Even earlier, during the Civil War, the Navy made a large use of Volunteer Officers. When the press of war had passed by 4 December 1865, most of these 7,500 Volunteer Officers had been discharged and returned to civilian life.

In contrast to the easy promotion of the war years, the post-World War I years saw Marine Officer promotions being resolved into a survival of the fittest. Beginning 4 March 1925, if an officer failed twice to qualify for promotion, he would, if of less than ten (10) years service, be honorably discharged with one (1) year's pay. If of service beyond ten (10) years, he would be retained but ineligible for promotion. Not until 30 June 1942 did Congress relax these stern provisions, and then only for the period of World War II.

Life after the war became exacting for the new warrant officers. Although in June 1926 Congress established the commissioned warrant grades of chief Marine gunner, chief quartermaster clerk and chief pay clerk, it took the warrant officer six years of service, and an examination to qualify for promotion from warrant to chief. The rigid guidelines existed for the warrant officer until a few months before Pearl Harbor was attacked, when Congress provided that under a temporary appointment "in time of war or national emergency", warrant officers, like NCOs could be jumped to Captain, keeping such temporary status until six months after the end of the war or national emergency.

World War II

In the middle of World War II, Congress abolished the lengthy titles of chief Marine gunner, chief quartermaster clerk, chief pay clerk, Marine gunner quartermaster clerk and pay clerk and established in lieu of them the grades of commissioned warrant officer and warrant officer. Attention was again focused on the warrant officers in 1949 when pay grades of W-4, W-3 and W-2 were established for commissioned warrant officers and W-1 was established for warrant officers.

Change hit the warrant officer ranks again in 1954 when the title "chief warrant officer" replaced the of "commissioned warrant officer" for those in pay grades W-4, W-3 and W-2.

The practice of temporary appointment (hitherto a wartime privilege which was authorized for World War I and enormously increased in World War II) received sanction for peacetime use. On 18 April 1946, Congress authorized male officers of the Marine Corps Reserve, Officers of the Regular Marine Corps without permanent appointment, and warrants with temporary appointments in higher grades to receive permanent appointment in the Regular Marine Corps - but not to a grade any higher than that held previously on active duty.

Then, the Officer Personnel Act of 1947 provided that a peacetime temporary appointment could be revived by any Commissioned Officer, Warrant Officer, and Staff Noncommissioned Officer. Only a Commissioned Officer could be appointed to a higher temporary rank than Captain. An Officer holding a permanent appointment in one grade and a temporary appointment in a higher grade would be held to serving in the higher grade. Regarding eligibility for selection, promotion, and involuntary retirement, however, he would be considered at his old grade. An Officer could be retired in the rank which he held on a temporary appointment, but no increase in retirement pay would accrue solely as the result of this advancement in rank. *Any Officer who had been commended for combat duty would be placed on the retired list with the rank, but not the pay, of the next highest grade.*

Post World War II

On 17 August 1956, the time-honored title of Marine Gunner was restored for qualified personnel appointed as non-technical Warrant Officers. As first drafted, the proposed directive would have permitted certain women Marines to be designated as Marine Gunners. Since the title was being revived specifically to lend deserved prestige to the old fighting line Marine, the word "male" was inserted, thus insuring that only males would bear the title of Marine Gunner.

Just three years later, on 10 September 1959, new appointments in the non-technical Warrant Officer Military Occupation Specialties were discontinued with the adoption of a new Warrant Officer program which did not provide for the appointment of Marine Gunners. As a matter of fact, the conversion of all non-technical Warrant Officers to technical specialties began, but personnel already designated Marine Gunner were permitted to retain the distinction. Thus for five years, there were to be no new "Bursting Bomb" awarded.

In October 1964, the designation Marine Gunner was reinstated for Warrant Officers who were initially appointed in the Infantry, Artillery, Tank, Amphibian Tractor, and Operational Communication fields.

With the outbreak of hostilities in Korea, the Marine Corps again made wide use of the Temporary Officer, tapping its large source of qualified Enlisted Marines and Warrant Officers. Notwithstanding their valuable wartime service, practical peacetime considerations directly related to personnel strengths and requirements of the Corps necessitated a gradual return to its normal Officer Programs with the goal of stabilizing its Officer structure on a long-term basis.

The various integration programs after the Korean War helped many temporary officers to obtain permanent commissioned status, but as late as November 1956, there were still 1,900 Marine Officers serving with temporary commissions. Any future decreases in the Temporary Officer group were intended to be phased out in such a manner as to meet the best needs of the Corps, while at the same time allowing as many temporary officers as possible to retire at their current status.

Vietnam

Increased American involvement in Vietnam during the Spring and Summer of 1965 again caused the Marine Corps to turn to its greatest reservoir of potential officers - its experienced active duty Staff Non-Commissioned Officers and Warrant Officers. In November 1965 it was announced that effective immediately, and continuing in three increments through February 1966, more than 2,300 new Second Lieutenants and Warrant Officers would be selected from the ranks of eligible Warrant Officers and Staff Non-Commissioned Officers. These temporary promotions were to be effective for three to four years unless the appointees were subsequently selected for a Limited Duty Officer program or for permanent Warrant Officer.

After being discontinued yet again in 1974, the Marine Gunner program was revived in 1989 and the first class of Marine Gunners graduated from the Warrant Officer Basic Course in Quantico, Virginia. The Marine Gunners are still alive and the minimum requirements for eligibility to wear the "Bursting Bomb" is a minimum of sixteen (16) years of active duty service and be at least a Gunnery Sergeant. The Marine Gunner today is designated as an Infantry Weapons Officer (MOS 0306). They are found in Infantry & Light Armored Reconnaissance Battalions, Infantry Regiments, and the Schools of Infantry. They are the "duty experts" on all infantry weapon systems within the Marine Corps inventory. Upon selection for Marine Gunner, the Marine is automatically advanced to the Commissioned Grade of Chief Warrant Officer, CW02.

Warrant Officer Ranks Revised

The promotion and management of the warrant officer ranks have been completely overhauled with legislation signed into effect in the FY92 and FY93 Defense Authorization Act.

Called the Warrant Officer Management Act, the law establishes a Chief Warrant Officer (CWO) 5 rank and provides for all future warrant officer promotions, continuations, and retirements to be based on the Marine Corps needs rather than on a fixed formula.

The creation of the CWO5 rank was actually an Army initiative. That service has very young warrant officers--many of them are helicopter pilots--and it had trouble retaining

these expensively trained personnel once they were promoted to CWO4 and had nowhere else to go. The Navy and Marine Corps originally were reluctant to go along with the creation of a new rank, but with minor modifications to the Army policy it was approved. One of Secretary of the Navy H. Lawrence Garrett's changes was that the Marine Corps will cap the number of CWO5's at 5 percent of the warrant officer ranks.

The new law also eliminates the dual promotion track for warrant officers, doing away with temporary and permanent promotions. As of 1 February 1992, when the law took effect, all Marine warrant officers will receive permanent promotions, and those holding temporary promotions will be permanently promoted to that rank.

The Marine Corps now considers for promotion the best qualified based on the needs of the Service, not just those fully qualified because of time in grade. Previously, the law required that no fewer than 80 percent of those with enough time in grade be promoted. Now, time in grade will be only one consideration for eligibility, and the law now allows for 10 percent below-zone promotions. There is no longer a statutory requirement for annual promotion boards.

Because of downsizing, the new law allows for selective early retirement of certain warrant officers, and it provides a 6-month period between a second passover for promotion and actual discharge or involuntary retirement. Before, the grace period was 60 days.





<http://www.gunnerg.com/gunnerpage/>

Appendix TWO

Current SFMC Warrant Insignia

Warrant Officers

Warrant Officers are taken from the senior enlisted ranks to perform specific officer duties. They are considered experts in their field of study and are highly respected if not for their knowledge, but for their experience.

| Grade | Insignia | Naval Rank | Marine Rank |
|--------------|---|------------------------------|----------------------|
| CWO4 |  | Chief Warrant Officer (CWO4) | Master Gunner (CWO4) |
| CWO3 |  | Chief Warrant Officer (CWO3) | Senior Gunner (CWO3) |
| CWO2 |  | Chief Warrant Officer (CWO2) | Chief Gunner (CWO2) |
| WO1 |  | Warrant Officer (WO1) | Gunner (WO1) |

<http://www.geocities.com/Area51/2292/rank.html>

Appendix Three

Introduction to "A CONCISE THEORY OF COMBAT"

A CONCISE THEORY OF COMBAT

Edmund L. DuBois
Wayne P. Hughes, Jr.
Lawrence J. Low

in collaboration with
The Military Conflict Institute

Institute for Joint Warfare Analysis
Naval Postgraduate School
Monterey, California 93943

Naval Postgraduate School (NPS)

The Naval Postgraduate School mission is to increase the combat effectiveness of U.S. and Allied armed forces and enhance the security of the USA through advanced education and research programs focused on the technical, analytical, and managerial tools needed to confront defense-related challenges.

Institute for Joint Warfare Analysis (IJWA)

The Institute for Joint Warfare Analysis was founded in 1994 with the mission of addressing the problems of the joint defense arena with the academic disciplines resident at NPS. It sponsors a wide-ranging research program, curriculum development focused on joint warfare, and interaction with numerous services and DoD organizations.

INTRODUCTION

What to Expect From This Theory

A Concise Theory of Military Combat propounds a structure intended to relate comprehensively and consistently all elements and activities of every form of organized combat. Our goal is a unified description that is rigorous as to definitions, components, and the dynamics of all combat phenomena.

This theory is explanatory, not prescriptive. Its aim is to describe "what everyone knows is true" about combat. Military professionals and others knowledgeable about military affairs will find no parts of the theory that are new. Our objective is to integrate all parts into a unified whole. Our intention is to be scientific in the sense that art and practice

must precede the codification of practice into an organized body of knowledge. The reader will find no attempt to say how to fight better and no recipes for victory. This (or any other) theory is practical only to the extent that knowledge of any subject has practical value. After all, one does not fight or even train with a book in hand.

About Terminology and Definitions

What follows is grounded in the proposition that a theory of combat must be an extension of physical and biological science. When the human factor is excised, the components must behave like physical systems. Our approach is to describe what is added by the presence of human combatants. Definitions and descriptors should link the familiar terms of physical theory to combat theory and vice versa. Here is an example. Combat *force*, meaning a compulsion imposed on an enemy, has been said by some writers to be an analogy to physical force. The theory presented here asserts that combat force is not an analogy but a real phenomenon. We know it is real because, like physical force, its effects can be observed. But its effects are richer than physical force because they act on humans as well as machines. The force imposed by one side upon the other in a battle has not only physical but also mental and spiritual consequences. We know this because we observe not only casualties but fear and demoralization in soldiers subject to intense fire.

To label the compulsion "force," however, would perpetuate a longstanding problem of the terminology of warfare. This theory reserves the term *force* to mean an organized body capable of fighting an enemy. Compulsion, says this theory, derives from combat energy. The energy is converted into combat power which in turn produces observable results. The results are the measure of combat power achieved.

The term *combat power* has itself been used ambiguously to mean both the latent combat energy embodied in a military force and the rate at which the energy is exerted on the battlefield. To make the distinction clear, the theory refers to the latent energy as *combat potential* and says that combat power occurs only during combat. Thus, in a campaign a commander deals with the development, deployment, and sustainment of his force's combat potential. Only when the force engages in combat does he transform potential into combat power that is felt by the enemy.

Development of the Theory

The authors wish to credit the work of The Military Conflict Institute (TMCI) as the basis of this *Concise Theory of Combat*. For more than a decade TMCI's objective has been to advance an understanding of organized warfare in all its aspects. TMCI was founded in 1979 by Dr. Donald S. Marshall, General George Blanchard, and the late Trevor Dupuy. From the outset TMCI has guarded its independence from the armed forces and private institutions alike. TMCI is incorporated as a nonprofit organization, international in scope and open to all points of view.

But the roots of this document lie deeper than TMCI. On 27 September 1977, the Office of Naval Research of the Department of Defense sponsored a conference at Leesburg, Virginia, which expressed the need for a theory of combat to guide and undergird

models, simulations, and analyses of warfare. Subsequently, a small group of operations analysts held several meetings in 1979 and 1980 at the Naval Postgraduate School in Monterey, California, at the behest of Professor Michael Sovereign who was then Chairman of the Department of Operations Research. The hope of these gatherings was for a more solid foundation of theory to guide operations analysts in the development of models of combat, including computer simulations and war games. Attendees were operations analysts experienced in quantitative historical study and military operations research, including Herbert Weiss, Lawrence Low, Robert Helmbold, Paul Moose, John Wozencraft, Wayne Hughes, James Taylor and several others from on and off campus.

After the first Working Meeting of TMCI at the Army War College in June 1982, these efforts fused, combining those who emphasized quantitative methods with those who emphasized descriptive methodology. The result is this document, a coalescence of both points of view that can serve as a basis and reference point for combat modeling and as a description of combat for officers who believe that art and practice will be stronger when based on a foundation of theory.

The early meetings of TMCI comprised a diverse set of attendees and presentations. Nineteen working meetings have been recorded and archived by Doctor Marshall, who maintains TMCI's files and library at his home in Salem, Massachusetts. At the meetings many points of view were represented, discussions were spirited, and cohesion sometimes resulted, but was always ephemeral. A large number of people looked in on TMCI's meetings. Many who did so made valuable contributions but most were impatient to get to their own favorite issues and fell away after a few sessions, especially since TMCI was unfunded and most attendees bore their own expenses. The corporate Army lost interest when it became apparent that TMCI's aims would not solve immediate problems confronting decision makers. To the extent that the other Services were aware of the effort at all, they were similarly indifferent toward work that offered no immediate payoff. Nevertheless, the Army War College and Naval Postgraduate School continued generously to provide space for meetings, as did several other organizations, notably SAIC, Institute for Defense Analysis, SRI International, and Center for Naval Analyses.

By the mid-1980s, it was clear that biannual sessions of a few days could not be sufficiently focused, and so two six-week retreats were arranged, at the Naval Postgraduate School and the University of California at Berkeley. Those sessions were attended by a hard core of TMCI working members. By 1990, the essential material was more or less in hand for this theory, but other sections planned to cover practical applications and modeling were far from complete. The larger work seemed still some years off, so the present authors undertook to assemble the document you are reading. Progress was slow because all of the work was volunteer and in large part unfunded. Meanwhile, the Naval Postgraduate School had established an Institute for Joint Warfare Analysis to foster independent, scholarly, but utilitarian basic military research and defense analysis. *A Concise Theory of Combat* is one of its first publications.

Withstanding the Test of Time

It is just as well that some twenty years have transpired since the Leesburg Conference. The manifold changes that have occurred since then have provided a breadth of perspective against which to test the robustness of the theory. We have seen:

- A reorientation of tactics and operational plans in the U.S. Armed Forces from combat against the Soviet Union to regional conflict and operations other than war.
- Radical changes in technology, which have led to a new vocabulary of terms such as dominant battlefield awareness, operational maneuver from the sea, information warfare, command and control warfare, and precision strike.
- Profound organizational realignments that flowed from the Goldwater-Nichols Act. The fallout is manifest in extensive changes to doctrine with added emphasis on joint operations.

Over the same 20 years, changes in military operations research have been nearly as extensive. Analysts now lean more heavily on computer simulations that aim to enhance battlefield realism. War games span the possibilities from simple seminar games to computer-assisted games and distributed interactive simulations. Field exercises using instrumented ranges have expanded in territory covered and number of forces in play. Computer-based virtual reality reaches far beyond the realism of early aircraft simulators. The mathematics of chaos, complexity, fractals, self-organizing systems, and other new explanations of phenomena may open other doors to understanding warfare.

Yet the changes in military affairs, in science, and in computer technology have required no substantive changes to the theory. In fact, this theory has anticipated many of them:

- Object-oriented programming is consistent with our combat theory's fundamental notion that combat is fought by elements that exist in states and perform functions.
- Computer simulations that attempt to relate several echelons of battlefield activity depend for viability on the proposition of our theory that combat elements and their actions can be aggregated and decomposed within a hierarchy that exhibits congruency throughout every echelon.
- We see recent emphasis on "information warfare," and yet the importance of information gathering, transfer, and processing have long been important features of the theory.
- Emphasis on maneuver versus firepower has re-emerged in contentious contemporary debate. The theory has recognized from the outset that fire and maneuver both make essential contributions to combat power, along with other factors, such as deception, shock, posture, and surprise.
- Suppression and demoralization by firepower, the effect of which was so evident in the Gulf War, were given prominence in the theory a decade ago.

In addition, the theory frames other concepts recognized in a general way but seldom incorporated in specific terms by the operating and analytical worlds:

- There is a difference between battlefield reality and perceptions of reality by all combatants.

- Chance, probability, risk, and other aspects of uncertainty in combat have specific places and weight in combat theory.
- Functions performed by each side (such as command, fire, and maneuver) must be distinguished from processes, in which the results of combat (such as destruction, suppression, demoralization, and motivation) are formed by interaction of the two sides.
- The actions of nature and effects of the environment are given the status of a third party in combat.
- The theory is careful to distinguish combat potential as latent combat energy embodied in a force not in combat, from combat power, which is the rate of delivery and effectiveness of a force's energy directed against the enemy.
- The mission has a top-down vectoring influence on all combatants, and external influences also have an important impact.

The theory parallels current thought, which treats command as both a function and a process, and carries the notion further by specifying command-control to be the process that transforms combat potential into combat power vectored toward the objective, whether that be enemy forces or another focus specified in the mission statement.

About Clarity, Brevity, and Further Study

There will be readers who say the theory is neither clear nor concise. Can't it be reduced to something more easily grasped? Something brief? For the individual who wants an extreme distillation, the six axioms and associated definitions found in Chapter 1 are a minimal expression of the necessary basis for a general theory. How well the axioms will serve by themselves is another question. Newton's three laws of motion may have been sufficient for several centuries of progress, but scientists and engineers spent lifetimes understanding their implications and applying them usefully. Living-systems theory says that the whole hierarchy of plant and animal life can be described as matter, energy, and information and the transformation of one into another. To apply that theory to living systems in a useful way is something else again.

As for brevity, are you really surprised that a description of combat cannot fit on a one-page executive briefing? War is a highly complicated human endeavor, and combat is its pinnacle. It should be no surprise that a description of combat takes more than a few pages, and that understanding it entails close study.

Finally, the reader should bear three things in mind: first, comprehension comes from grasping the theory all of a piece. If it doesn't all hang together, then it has failed. Second, if this work has merit, then testing, rework, and extension are to be expected. Third, an understanding of the theory will allow the reader to know combat only in the way a spectator in the stands knows football. To play in a position on the team requires more than understanding the theory.

Acknowledgments

The ideas of those who contributed in TMCI meetings and retreats are so intermingled through these pages that it is impossible to credit them adequately. It is similarly

impossible to acknowledge original sources, or write a bibliography that does not omit significant authors; there are simply too many authors and sources. In military affairs it is hard to say who "discovered" anything. F.W. Lanchester did not invent Lanchester equations (J.V. Chase anticipated him by 13 years). The principle of concentration is discovered by boys on a playground long before they become acquainted with lethal conflict. The principles of war have evolved over centuries. All propositions in military theory come from military practice because, in the most fundamental sense, science follows and conceptualizes art. The pedigrees of most ideas herein are mongrel-like because, as we said at the outset, they are "what everyone knows."

Only the synthesis of the ideas breaks new ground, and here we cannot overstate the role of TMCI, the dedication of its core membership, and the persistence of its co-founder, leader and mentor, Dr. Donald S. Marshall. We must thank those people who were generous in their support, most notably Donald Nielson of SRI International and Peter Purdue and Paul Moose of the Naval Postgraduate School, who helped Low and Hughes abandon themselves to this project, often for weeks at a time. Michael Sovereign contributed liberally over many years both as active participant and in lending research support. We are also grateful to Shirley Hentzel for tough-minded editing; Therese Bilodeau for preparation of text, figures, and index; and Annie Howard who worked magic in combining three nearly obsolete computer formats into one modern language. Danielle Kuska, Martha Wring, and Tracy Snell of the Naval Postgraduate School staff were indispensable in the process of publishing by the Institute for Joint Warfare Analysis.

Lawrence J. Low Edmund L. DuBois Wayne P. Hughes, Jr.

DEFINITIONS

Listed below are definitions of terms as they are used in this document.

Action - an act performed by a single or aggregated element to change the state of one or more other elements, its own state, or both.

Activity - see **combat activity**.

Agent element - see **element**.

Attribute - a qualitative or quantitative modifier of a combat element. Attributes are of three kinds:

Spatial conditions: the time-space characteristics of elements, including location, spatial orientation, and motion.

Physical properties: descriptors of elements that can be stated and measured in physical terms, such as dimensions, weight, shape, and configuration.

Qualities: nonphysical, subjective descriptors of elements, such as those relating to motivation, reliability, and durability. Qualities are the only attributes of cognitive elements.

Available combat potential - the latent capacity of a force to achieve useful results in combat with its existing organization, training, equipment, support, motivation, and leadership.

Chance event - an event that occurs without discernible human intention or cause.

Cognitive element - see **element**.

Cognitive entropy - the ratio of what is not known about the combat situation to complete knowledge of the combat situation; the measure of unknown relative to knowable, hence a measure of confusion, disorder, and uncertainty in the combat arena.

Combat activity - one or more combat elements each taking an action that impacts one or more other combat elements, themselves, or both, thereby producing a result that changes the attributes of the impacted elements. The term "combat activity" is synonymous with the term "combat process" except that in the process, results are expressed in terms of the primary combat processes rather than in general terms. See also **combat process**, **primary combat process**, and **element**.

Combat arena - the three-dimensional location where combat takes place, including locations remote from the main combat action from which actions are carried out that directly affect combat.

Combat environment - the geophysical space and features of the combat arena.

Combat friction - unproductive energy expended on any wasteful result that occurs in a force when an agent element carries out an action impacting an object element. In the aggregate, combat friction at any time is the summation of wasteful results occurring at that time from many elemental actions at the lowest level of combat.

Combat function - an action taken by one or more elements of either side in combat to achieve an intended result. See **primary combat function**.

Combat mission - an objective to be achieved or a task to be performed in combat, together with the purpose of achieving the objective or performing the task. The objective or task is stated explicitly, but the purpose is sometimes implied.

Combat outcome - the actual end results that accrue as the final states of all elements of all parties in combat when combat has been concluded.

Combat output - the cumulative results (measured as the new states of elements of both sides and the combat environment) of combat power acting over time on the combat situation. Combat output is the time integral of combat power. At the end of combat, combat output equates to combat outcome.

Combat power - the realized capability of a force at any instant of time to achieve results in combat in furtherance of a particular mission against a specific enemy force in a specific combat environment.

Combat process - one or more combat elements each taking an action that impacts one or more other combat elements, themselves, or both, thereby producing a result that changes the attributes of the impacted elements. Each element taking its action is an "agent element" and each element being impacted is an "object element," including the agent element if it impacts itself. Both the agent elements and the object elements may be from either or both sides in combat and/or from the combat environment. The only difference between the terms "combat process" and "combat activity" is that the results from activity are expressed in general terms, whereas the results of process are expressed in terms of the primary combat processes. See also **combat activity**, **primary combat process**, and **element**.

Combat result - the changed state that occurs in a single or aggregated element from an elemental or aggregated combat activity.

Combat situation - the totality of the states of both sides and of the combat environment at any point of time during combat.

Designed combat potential - the precombat, latent designed capacity of a force to achieve useful results in combat when organized, trained, equipped, supported, and led according to the force design against a design threat. See also **available combat potential**.

Element - a material or intangible thing of any kind, whether animate or inanimate, that exists in combat and can change the state of another element or itself. The following are subordinate categories of elements:

- **Agent element** - an element that performs an action impacting an object element, itself, or both.
- **Object element** - an element that is impacted by the action of an agent element, thereby having its attributes changed.
- **Cognitive element** - (a) an element with cognitive capability; (b) the product of cognition.
- **Physical element** - an element that has weight and physical dimensions.

External context of combat - everything outside the combat arena that has any influence whatsoever, no matter how indirectly, on what is done by either side during combat; this includes all manner of persons, material things, documents, communication sources, political activity, strategic directives, military forces, and the like.

Internal context of combat - the military forces of the two adversarial parties in combat, together with their mental and physical states, and the combat environment.

Military combat - purposeful, controlled violence carried out by direct means of deadly force between opponents, each attempting to carry out a mission, the achievement of which has value to that side and the achievement of which is opposed in some degree by the other side.

Military conflict - an antagonistic state between two or more parties in which military forces and weaponry of each of the parties are used or are available for use and use is intended if needed.

Military force - any body of persons that combines for the purpose of waging or threatening to wage aggressive or defensive military conflict with respect to any other body of persons.

Object element - see **element**.

Physical element - see **element**.

Primary combat function - a generic category of like actions taken by elements of either adversary in combat to achieve an intended result. The complete set of primary combat functions is defined to encompass all functions occurring in combat, so that any single combat function will fall under one or another of the primary combat functions.

Primary combat process - combat activity of any kind that produces a common generic result. The complete set of primary combat processes is defined to encompass all

combat activity, and thus all combat results, so that any single combat activity will produce results that fit under one or more of the primary combat processes.

Result - see **combat result**.

State - the condition of existence at a point in time of a single or aggregated element, as determined by its cognitive and physical attributes, including its spatial condition.

Uncertainty - a state of doubt about the combat situation, including the outcome of combat.

Vector - used as a verb: to direct the actions of a force toward a specified mission or goal. - used as a noun: directed actions that are in accord with a specified mission or goal.

Appendix Four

PD-30 Thesis Submission and Approval

Proposal Submitted: February 26th, 2002

Proposal Approved: February 26th, 2002

From: John Roberts [mailto:johnroberts1@qwest.net]
Sent: Tuesday, February 26, 2002 11:49 AM
To: 'Scott A. Akers'
Subject: RE: PD-30 thesis proposal

Scott,

I like the outline and the paper is approved for you to write and submit to me for scoring as soon as you have it finished to your satisfaction. The only question I have is: Why warrants when there are none in the current structure of the SFMC?

Good luck and I look forward to seeing this paper when you finish it.

John Roberts

From: Scott A. Akers <chunone@nwlink.com>
Sent: Tuesday, February 26, 2002 11:34 AM
To: John Roberts <johnroberts1@qwest.net>
cc: Jim Monroe <daiuy19@earthlink.net>

Subject: PD-30 thesis proposal

Below is my proposed PD-30 Thesis, Introduction and Outline.

Please let me know if this will be acceptable.

LGen Scott A. Akers

Thesis Proposal proper

“The more your men sweat in peacetime, the less they’ll bleed in wartime.”

USMC Variation on ancient Earth – Chinese Proverb.

What is the essential difference between an armed mob, and an elite military force? The mob has guns, the military unit has guns. The mob has numbers to overwhelm, the military unit usually has smaller numbers. The mob can cause damage for awhile, the military unit can inflict damage over a longer period of time. The mob will melt away when confronted, the military unit will dig in and resist. The mob has belief in its cause, that varies from freedom, to anti-whateverism, the military unit has belief in itself and its leadership. What one element causes these differences that would allow the 10-40 members of a military unit to be able to withstand and often defeat the thousands in a mob, even when both armed with the same weapon?

Training.

That’s it, ... training.

Not even requiring a capital T, the simple act of teaching a skill to a soldier, and then having him practice it over and over again.

Is this a surprise? Not to those who have taken the call to arms as their profession, not to those who studied the role of training in the military powers throughout history, and not to the Starfleet Marine Corps.

In this paper we will study the concept of continuing education / training for EVERY marine. Why it is a good concept to carry out, in what manner it should be done, who should go to what classes and at what point in their career, and what the end benefits to the Corps, Starfleet and the Federation will be in the long run.

Proposal Outline

OPENING

- A. Introduction
 - 1. Anecdote
 - 2. Suggestion
 - 3. Thesis
 - B. Reference to Previous Works
 - 1. SU-30
 - 2. CE-30
 - 3. MD-30
 - C. Layout of Paper
 - 1. The Recruits and Junior Enlisted
 - 2. The Senior Enlisted and Warrants
 - 3. The Junior Officer
 - 4. The Senior Officer
-
- I. The Recruits and Junior Enlisted
 - A. Basic Training
 - 1. Recruiting Depot
 - 2. MBT Proper
 - 3. Every Marine is a Rifleman
 - B. Branch Training
 - 1. Professional Development
 - 2. Branch Training
 - 3. MOS (Sub-Branch Training)
 - C. Specialty Training
 - 1. Advanced Branch Training
 - 2. Advanced MOS Training
 - 3. Cross Training
 - II. The Senior Enlisted and Warrants
 - A. NCO Training
 - 1. Leadership
 - 2. Management
 - 3. Tactical Combat
 - 4. Logistics
 - B. Specialized MOS Training
 - 1. Combat Arms
 - 2. Subsidiary Branches
 - 3. Combined Arms
 - C. Warrant Officer Training
 - 1. Leadership & Management
 - 2. Specialty Training
 - 3. Instruction Training
 - 4. Weapons

- III. The Junior Officer
 - A. The Academy
 - 1. Officer Training School
 - 2. Marine Basic Training
 - 3. Even Officers are at heart Riflemen
 - B. Branch Training
 - 1. Professional Development
 - 2. Branch Training
 - 3. MOS (Sub-Branch Training)
 - C. Specialty Training
 - 1. Advanced Branch Training
 - 2. Advanced MOS Training
 - 3. Cross Training

- IV. The Senior Officer
 - A. The Academy
 - 1. Officer Command School
 - 2. Leadership 10,20,30
 - 3. Flag Officer School
 - B. Branch Training
 - 1. Professional Development
 - 2. Advanced Branch Training
 - 3. Combined Arms Training
 - C. Specialty Training
 - 1. Secondary Branch Training
 - 2. Management and Administration
 - 3. Combat Theory

CLOSING

- A. Review of Paper
 - 1. The Recruits and Junior Enlisted
 - 2. The Senior Enlisted and Warrants
 - 3. The Junior Officer
 - 4. The Senior Officer
- B. Refer to Future Research
 - 1. MH: 40-60
 - 2. CA: 40-60
 - 3. MO project
- C. Conclusion
 - 1. Thesis-Suggestion
 - 2. Thesis-Decision
 - 3. Anecdote

APPENDIX

- One The Warrant Program
- Two Current SFMC Warrant Insignia
- Three Thesis Submission
- Four Combat Theory