

THE MARINE CELL

:: Discourse ::

Gregg Miller
Copyright © 2011

George Mason University
Bachelors of Individualized Studies Program

Academic Advisors

Professor Stephen Nash, Systems Engineering and Operations Research
Professor Jeffrey Gorrell, Education and Human Development
Colonel John Pope, U.S. Marine Corps Retired

Edited by

Eva Kaplan-Leiserson, Masters in Writing at Johns Hopkins University
Ruby Obeyesekere

Abstract

Despite a long history of success, the modern rifle squad and its component fire teams must now be able to do more than has been asked of them in the past. Today's model is not sufficiently adaptable, its roles not sufficiently distributed, control not sufficiently liberated for a battlefield of increasing complexity. This project proposes an alternative organizational system in an attempt to answer the simple question, "How should tomorrow's fire team and squad look?" Military evolution affects everyone, from the warfighter to the pre-schooler, yet it happens largely by accident. It is time to take an informed look at the root organization of teams in armed conflict.

Table of Contents

1. Introduction 1-1

2. Methodology 2-1

 Introduction..... 2-1

 Techniques Employed..... 2-1

 Specific Techniques NOT employed 2-3

 Summary 2-3

3. The Legacy Model 3-1

 Introduction..... 3-1

 The Legacy System 3-1

 Conceptual Systems Engineering..... 3-5

 Summary 3-8

4. The Cell Model..... 4-1

 Introduction..... 4-1

 Task Roles..... 4-2

 Force Roles..... 4-7

 Specialization 4-13

 Unit Instantiations & Role Recombinations 4-14

 Special Cases Example: Battery 4-19

 Analysis of the system..... 4-21

 A New Mission Statement..... 4-25

5. Conclusion..... 5-1

 The Cell 5-1

 Future Explorations 5-2

 Final Thoughts 5-3

6. Appendices 6-0

Appendix A: Bibliography..... 6-1

Appendix B: Glossary 6-5

Appendix C: Military Ranks and Weapons 6-10

Appendix D: Pocket Marine Cell Guide 6-11

1. Introduction

The Marine Corps operates under adverse conditions in most every environment in the world. The Corps continues to triumph because, as a force and as individuals, the organization can rapidly adapt to even drastic change. This ability to adapt is deeply cultural and stems from a strong sense of personal responsibility, initiative, and esprit de corps, as well as an organizational system that has evolved over millennia. While the US Marine Corps has only existed since 1775, the roots of battlefield organization are at least as old as the first bloody conflicts that differentiated the swordsman from the pikeman and the archer. Commanders across the ages have attempted to reduce the size of the maneuvering unit to make it more agile while maximizing its firepower (Tactics, 1997). This ongoing process has resulted in the modern rifle squad; a small unit system used across the infantry services.

Despite a long history of success, the modern rifle squad (henceforth referred to as *legacy*¹) must contend with an environment that forcibly breaks it into increasingly smaller pieces, a defining characteristic of urban and mountain warfare (Riper, 1997). Open battlefields where hundreds of combatants could stand shoulder-to-shoulder across from an entirely visible enemy have given way to narrow hallways, alleys, mountain passes, and caves. Becoming smaller and more mobile is also the intelligent response to weapons that allow very few people to kill very many people very quickly.

Faced with challenges such as the resultant steep learning curve and tactical situations that evolve faster than they can be communicated, small units such as squads and their component fire teams must be able to do more than those that preceded them (Amos, 2007). And they do. With better equipment and training, thirteen warfighters have more capability today than ever before. But today's model is not sufficiently adaptable, roles are not sufficiently distributed, control not sufficiently liberated for this battlefield of increasing complexity.

The UN estimates that world population grows by 150,000 per day. By 2025 it is expected that $\frac{3}{5}$ of the world's population (5 billion people) will live in cities (Riper, 1997). Urban terrain has begun to dominate the battlefield, complicated by the traditional contextual environments in which these developed areas reside such as desert, arctic, woodland, or jungle. This makes communication, coordination, and support increasingly difficult.

While the US military has progressed to a place of technological dominance, tactically and organizationally it has stayed entrenched in the fighting force model it fielded in Vietnam. This model is inadequate due to an insufficient distribution of roles and restrictive leadership. This project is the response to those shortcomings.

¹ A common military term used to describe equipment or practices that are being phased out. For example, during the later years of the Vietnam War, the M14 rifle was the legacy weapon.

It proposes a system (henceforth referred to as *cell*) which, when applied to Marine Corps infantry units, allows them to be faster and more efficient, increasing their capability. All of this is in pursuit of the answer to the question, “How should tomorrow’s fire team and squad look?”

It is not the purpose of this project to address the ethics or morality of war, both of which are charged topics for many readers. Nor is it the purpose of this project to address strategic or operational issues. Many components of warfighting, from weapon employment to ambush tactics, are already well-established, do not require review presently, or are far beyond the reasonable purview of this project.

In so far as it is possible, this project is about the bottom-level systems that have already been shown to lead to success. Evidence that certain practices have been successful is derived from many established sources and from concepts that are taken for granted in the military. Therefore, the project is limited to answering the following questions:

- What are the cardinal military roles utilized by the legacy system?
- How does the legacy system’s use of these roles limit their effectiveness?
- How do the cardinal roles of the cell system differ?
- Can it be shown that limitations in the legacy system are addressed by the cell system?

Despite the fact that this paper is about tactical-level combat, this project does not suggest tactics. Some tactical concepts and practices may be derived from this system. That is not, however, the purpose of this project. There already exist creative, talented, well-informed warfighters constantly exchanging and evolving those tactical ideas faster than any one person could follow. Rather, it is the role of the leaders and commanders to determine for themselves how best to employ their Marines on a constantly evolving battlefield.

This project addresses the most basic components of team design from the perspective of Conceptual Systems Engineering. CSE is the integration of Systems Engineering, Psychology and Communication, and Military Studies.

This work is important for several reasons, first and foremost because it has the potential to save lives. Combat inevitably leads to casualties on both sides. But the numbers of casualties in a single battle today, while tragic, are a pale shadow of the numbers lost in battle during wars of the past. No small portion of that reduction is due to the use of newer, better systems. Stated simply, better led, better trained, better equipped, and better organized forces take fewer casualties. This project is for the Lieutenant, the Sergeant, the Corporal, and the Lance Corporal. A newer, better system will save their lives.

This work is additionally relevant because tried and tested military organization informs civilian organization. The corporate world borrows heavily from the military, using many military terms, titles, and slang. The business world, schools, construction, and hospitals are modeled after the top-down, officer-enlisted format that is heavily dependent on individual responsibility and is organic to the military. For example, the relationship between doctors and nurses is nearly identical to that of officers and enlisted. Corporate culture and medical culture are clearly drawn from military cultural mores

regarding leadership and teamwork. A better military organizational system will improve these civilian organizations as well.

Lastly, and arguably most importantly, however brilliant and correct a political, social, or economic system a society may have devised, if their military system was not sufficient, that society ceased to be relevant in history (Meese, 1993). Among the countless examples are the peoples conquered by the Romans, the Zulu, and the Aztec. These societies were either completely destroyed or absorbed into the conquering civilization.

Military evolution affects everyone, from the warfighter to the pre-schooler, yet it happens largely by accident. Each new technology and technique that comes into practice is invariably the reactive result of a problem that could have been detected beforehand with careful consideration. It is time to take an informed look at the fundamental organization of teams in armed conflict.

2. Methodology

Introduction

This project proposes the application of the cell system to the Marine Corps in an attempt to answer the questions raised in the introduction. The project shows the contrast between the two models, outlining how a modern squad might be better organized. It integrates material from Systems Engineering, Organizational Psychology, and Communication, though its target audience is military thinkers. In accomplishing this integration, the subject is approached from these two directions:

- Fundamental tactical and organizational principles which can be used to create unit instantiations (Systems Engineering)
- Definition of and justification for the cardinal roles, their equality, and distribution (Psychology and Communication)

Systems Engineering, Psychology, and Communications are not fields necessarily associated with war. They are relevant, however, because even chaos is governed by a system. In the military, chaos is built from the decisions of people working in groups while under duress.

Systems Engineering is fundamentally about the incorporation of different areas of study regarding the behavior of organizations. While it can be used to model the movement of planes in air traffic control or the arrangement and distribution of goods in manufacturing plant organization, it is used here to differentiate components of the military organization and to define their roles. This will lead to a scientific perspective on the legacy and cell squads.

Consider Stephen Wolfram's book on cellular automata wherein a simple set of instructions could iterate out to very complex and even unpredictable structures (Wolfram, 2002). Many diagrams used in this paper will be formatted using Systems Engineering methodologies, as will much of the language.

Psychology and Communications provide insight into human behavior and current theories about team modeling. Specifically relevant concepts include job definition (to be used in appropriately defining and limiting roles) and parallel distributed processing (lateral decision-making). This serves to ensure the project does not get so caught up in theory that it loses touch with reality.

Techniques Employed

Derived Language

How it works

Derived language is created *a posteriori* or from what already exists, is observed, and understood. Language is clearly defined and unambiguous. This considers language currently in use, language once in use, and language not yet in use in creating a new cultural language.

Why it is necessary

Language has a generative capacity in that humans will find a way to express their ideas (Culy, 1985). The military employs a general language used across roles. These differ from service to service and specialization to specialization. The language in this project combines three very distinct cultural languages (Military, Systems Engineering, and Psychology). Despite sharing a common vocabulary the terms that are colloquial in one can be utterly foreign to the other two. Yet each profession has also been beneficial to the other two. It is hoped that, while the target audience for this project is the US Marine Corps decision-making body, the language used here will be accessible to all of the intended cultural audiences. It is hoped that this will provide a language for discussing military and non-military organization.

How it is applied

The cell system is described using intuitively understood terms wherever possible. Use of culture-specific terms is avoided where possible/practical. For example, the term *rifleman* makes sense in the context of a combatant but makes little sense to non-combat organizations. It is only an understanding of the fundamental role of this unit that leads to a more general term which makes sense across cultural platforms. The system is not necessarily tied to the terminology, but the chosen terminology is intended to keep the possible applications of the cell system open.

There are many old and new terms with unique applications to the two systems. They are intended to be easily accessible but, given their number, are likely to be difficult to assimilate. To help the reader keep track of these, there is a glossary of terms in the appendix which will explain how even common terms are used in the context of this project.

Applied concept

How it works

Taking a theory or concept, however it may have been generated, and applying it either physically or in the abstract. This is done to help explain the concept and to demonstrate its practicality and applicability.

Why it is necessary

Despite a firm grounding in the practical/established, this concept is almost entirely theoretical. Applying a concept reveals the system's limitations and its possible applications. Limitations exist in every system and, as has already been demonstrated, many systems have applications beyond the obvious or intended. It is crucial to understand these as early in development as is possible. Although the cell system is applied to the military in this project, it can be applied to any other organization.

How it is applied

This concept originates from intellectual work done over many years. The model and principles developed are applied to the Marine rifle squad. This is accomplished by inserting warfighters into the theoretical positions outlined in the concept. This serves three purposes:

1. Demonstrating some of the rudimentary principles of the cell system.
2. Pointing out just a few of the design flaws in the legacy system.
3. Showing that there are several ways to organize a unit

Specific Techniques NOT employed

There are a few techniques which, for one reason or another, were not applied to this project. The omission that likely stands out most sharply is *statistical analysis*.

Statistical analysis

How it works

Gathering, compiling, analyzing, and presenting numeric statistical data to support an argument or idea.

Why not

The cell system is entirely theoretical. The goal of this project is to describe the next evolution of military organization. In doing this, it is preferable to be less concerned about the collection of raw data and more concerned about cogent argument. That is, in placing a particular weapon with a particular Marine, it may be reasonable to state that 80% of military units do so. While this information will almost certainly be important, it does not belong in the argument. The argument should state that the Marine carries that weapon because it makes logical sense.

In military terms, while data is necessary to inspire the idea and to model the principle, it would have been very difficult to derive the idea of the ambush purely from statistical research. It required a creative leap on the part of an individual who understood conflict.

Summary

This project has considered the issues raised in the Legacy Model section and addressed them through the clarification of language, the application of a new concept, and the reduction of complex arguments into their simplest points. In addition, caution has been taken to argue with reason and without bias. As this is difficult in endeavors that have creative components, a conscious bias toward life-saving has been a good tempering solution.

It is very important in this work to separate opinion from fact. War is largely art, elements of which change with the times and with the artist. It is not the purpose of this

project to tell the artist how to paint. The purpose is to give them better materials and techniques with which to do it. In determining what works, basic reasoning and historic example have been used to separate the opinions from the fundamental practical ideas at their core.

The standard of proof, as in most endeavors rich with unpredictability, is common sense.

3. The Legacy Model

More often than not, instructions are guides, not rules.

Introduction

The man who revolutionized naval warfare in the 1800s had never served in a navy when he proposed a new way of exchanging fire with the enemy. John Clerk studied physics and mathematics extensively. He was also fascinated by accounts of the great sea battles of the day. He published a detailed work in response to the stagnant line of battle method used up to that point, where opposing ships came alongside one another in long columns. He proposed cutting the line, turning allied ships perpendicular into the enemy column, and diagrammed several methods to do so. When adopted by admirals of the day, it led to greater success, changing the way battles were fought at sea thereafter (Clerk, 1827).

This project will serve a similar purpose, but with a much smaller localized footprint. Machiavelli wrote about war winning. Clerk wrote about battle winning. Tzu wrote about both. This project is about skirmish winning. It is about John Poole's "Last Hundred Yards;" the small pieces of conflict that lead to overall victory (Poole, 1996). This is the fighting done by lieutenants, sergeants, corporals and privates. The skirmish is their piece of the greater battle.

The Legacy System

The first step in finding a better way to do anything is to understand the way it is already being done. Until as recently as the start of WWI, every soldier in a single unit carried virtually the same weapon. Squad-sized units were created for accountability, not maneuverability. Given the large number of individuals within a maneuvering unit, accountability could only be handled by grouping them and putting one member of the group in charge. This simple idea was likely the basis for purpose-built units, leading to utilitarian, expressive, and cognitive benefits (Bensimon, 2000).

By the end of WWI, units were built around the machine gun. The machine gun was used in units of 7 to 12 soldiers. Its high volume of fire made it dangerous for the enemy to move from cover or even return fire. This meant that friendly troops could move safely from one advantageous position to another with a reduced risk from enemy fire. The role of the infantryman at this time was to protect the machine gun, maneuver close to the suppressed enemy, and eliminate him by weapon fire, hand grenades, or close combat (Melody, 1990).

The machine gun today performs a nearly identical role to the historic machine gun: fixing the enemy in place so that friendly units can maneuver. The basic infantry

THE MARINE RIFLE SQUAD

squads (interchangeably called *rifle squads* in the legacy system) are built on this same principle. They are structured so that certain units² perform the task of fixing the enemy while others perform the task of maneuvering. This determines how units, squads for example, break down into sub-units.

The legacy Marine Corps squad is led by a sergeant (E-5) called the squad leader. Sergeant is a rank while squad leader is a billet. A rank is representative of a level of experience, while a billet is a specific job. The squad leader employs three fire teams to accomplish specific missions in support of its parent platoon which, itself, consists of three squads³. The squad leader directs each of the three fire teams through the fire team leaders and each fire team leader directs each of their three fire team members.

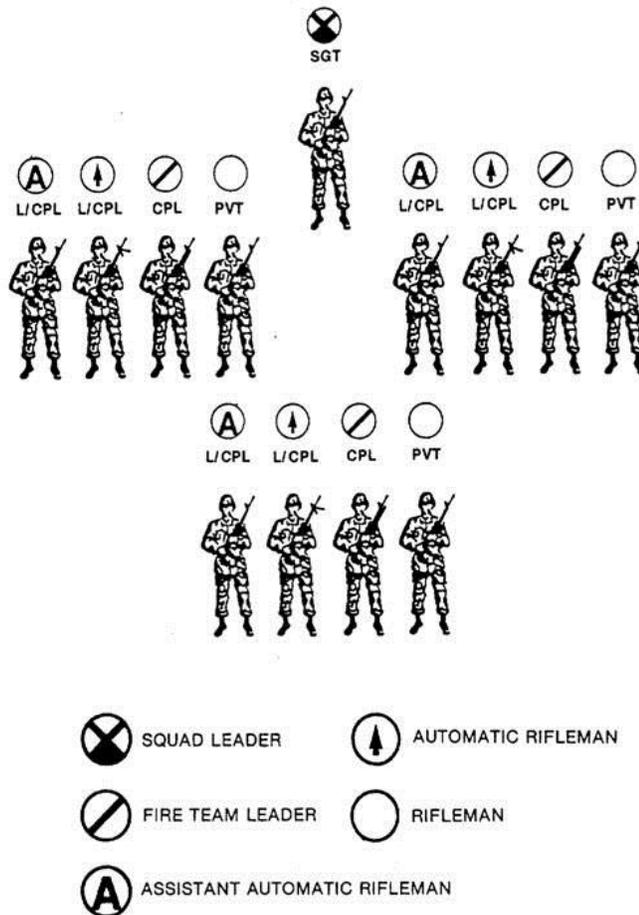


Figure 1: Legacy Marine Rifle Squad (Sergeant and three Fire Teams)

The very first material in the infantry manual, Marine Rifle Squad, is:

² A *unit* is any independently maneuverable entity.

³ An evaluation of Distributed Operations (Goulding, 2009) is beyond the purview of this project.

“The mission of the rifle squad is to locate, close with and destroy the enemy by fire and maneuver, or repel the enemy’s assault by fire and close combat.” (2002)

Broken into its components, there are two general roles in this statement – the offensive portion and the defensive portion. These can be understood as:

Table 1: Mission Statement Breakdown

Stance	Task	Method
<i>Offensive</i>	Locate: Find where the enemy is hiding.	Fire: Fix the enemy in place and keep the enemy from engaging by gaining fire superiority.
	Close with: Get close to the enemy.	Maneuver: Move to a more advantageous position from which to reduce the enemy.
	Destroy: Kill/Reduce the enemy.	
<i>Defensive</i>	Repel: Drive the enemy away.	Fire: Reduce the enemy’s will or ability to advance by reducing those who attempt to attack. Close Combat: Reduce those that have gained the friendly position by using bayonets, knives, E-tools, etc.

As explained, fixing the enemy involves bringing the firepower of the automatic weapon to bear on the enemy, which permits the movement of friendly forces. The machine gun used for decades until very recently⁴ was the M249 Squad Automatic Weapon or SAW, a weapon carried by each fire team in support of the squad.

The mission of the fire team is the same as the squad’s. It is unlikely that the legacy system would have succeeded for so long if these were different. That is, even if the responsibilities of individual fire teams within a squad differed, their mission must be the same or the system and its components could be working to opposing objectives. This may seem like an obvious point, but it is important to understand. A mission can be broad and general yet be broken into components and differentiated, so long as there is a path to re-aggregation – a path back to the original mission.

For example, imagine that different people are contributing effort to build a car. Their mission is to build a car. That mission could be broken into smaller missions and responsibilities such as designing the car, building the engine, painting the body, and so

⁴ The Marine Corps has recently procured a partial replacement for the M249 SAW called the Infantry Automatic Rifle (IAR) (M27 Infantry Automatic Rifle, 2010). This weapon answers many concerns with the M249 and neatly fills an empty slot in the proposed cell system.

on. Each mission is defined by the tasks necessary to accomplish it. But all of those missions can be re-aggregated back into the mission of building a car.

This framework can be compared to Edwin Hutchins’ *distributed cognition* in that intellectual work is spread out among members of an organization and each mission (or hypothesis) is consistent with the others (Hutchins, 1991). In this way, a mission is like a unit. The tasks into which a mission can be broken down determine the responsibilities that must be performed. This leads ultimately to the definition of individual combat roles.

The legacy Marine fire team has four members. Each performs a unique combat role. The mnemonic commonly used to recall these is *Ready-Team-Aim-Assist* (Marine Rifle Squad, 2002).

Table 2: Legacy Role Breakdown

Role	Rank	Weapon	Description
<i>Ready</i> (Rifleman) 	E1 – E3 (Pvt – LCpl)	M16 rifle and bayonet	The lowest-ranking, least experienced person in the fire team, the rifleman acts as the scout, locating the enemy for the fire team. This role is performed by moving ahead of the unit, utilizing cover provided by the fire team’s automatic weapon.
<i>Team</i> (Grenadier) 	E4 (Cpl)	M16 rifle with M203 underslung grenade launcher ⁵	Corporal (E4) is the first non-commissioned officer (NCO) rank in the Marine Corps. The corporal understands and exhibits the commonly understood characteristics of good leadership. The fire team leader employs the grenade launcher to engage groups of enemy and targets in defilade.
<i>Aim</i> (Machine Gunner) 	E3 (LCpl)	M249 SAW	The machine gunner operates the automatic weapon for the fire team, which is the weapon around which the fire team is built. The machine gun is a squad asset. This team member also acts as the assistant team leader.
<i>Assist</i> (Rifleman) 	E2 – E3 (PFC – LCpl)	M16 rifle and bayonet	The assistant machine gunner helps the machine gunner employ and maintain the M249, carries extra ammunition for the weapon, and is prepared to take over the weapon if necessary.

⁵ The Marine Corps has begun giving the grenade launcher to the assistant machine gunner, a practice common in the US Army.

With this understanding of how the legacy system works, a well-reasoned assessment of this system can be done. There are several different ways to approach this assessment, many of which would be deep but one-dimensional, viewed only through the lens of one role. Typically, that role would be the automatic weapon/machine gunner role. Traditional methods, such as the top-down approach, yield the perspective of a commander but not the perspective of the private.

There are three main considerations in assessing the practicality of the legacy system. Does it make sense technically, socially, and tactically? The field used to answer that question is Conceptual Systems Engineering.

Conceptual Systems Engineering

Conceptual Systems Engineering (CSE) is a field that pursues an understanding of people and systems in order to design better systems and yield better users of that system. The CSE, therefore, is not a specialist but a competent generalist.

Fields studied in CSE are understood to a depth that implies what is deeper, facilitating intelligent use of a field without surrendering pursuit of other fields in order to become a specialist. Here, CSE is built from the fields of Systems Engineering, Psychology and Communication, and the military experience of the author. Systems engineers design the operation and organization of systems, though normally electrical or mechanical systems. Psychology and communications are concerned with the behavior of people as learners and within organizations. The military is an organization built on a system which is run by people who are constantly learning. The integration of these into Conceptual Systems Engineering means that systems are designed around the organic behavior of people.

In each field, there are commonly understood concepts through which the Marine rifle squad can be viewed and interpreted. There are many aspects of the legacy system which can be shown to be flawed or limited in each of these fields. These are interesting issues to argue but they are so numerous that it would overwhelm the reader. Instead this project will address only the three most glaring issues under which most of the other issues reside.

I.1.: Systems Engineering

The system as written does not follow its own rules.

There are many SE issues with the legacy system, including but not limited to an appropriate review of stakeholders and a definition of requirements (Systems Modeling Language, 2007). The most glaring issue, however, is *iteration*.

Less a Systems Engineering concept than a mathematical one, iteration is the repeated application of an instruction or set of instructions in order to create increasingly complex structures. Figure 2 shows an example of two squares with an average color of gray. Following option (1), the two squares iterate up to a larger structure while maintaining tone integrity. Option (2) iterates down, breaking the structure into smaller constituent components. These two options, apart from increasing or decreasing in scale,

also iterate completely differently. This is only one very simple interpretation of the principle (Wolfram, 2002).

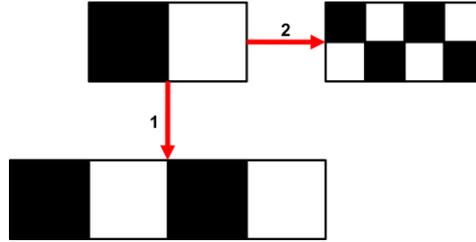


Figure 2: Two 50% Gray Fractals from One

Virtually everything known can be viewed from the perspective of the intricate as derived from the simple, from veins in a leaf to genetics to the human diaspora. Obeying similar principles, it is clear that the legacy system has a simple set of rules that it attempts to iterate in order to create more complex units. One basic rule is that every leader controls three units.

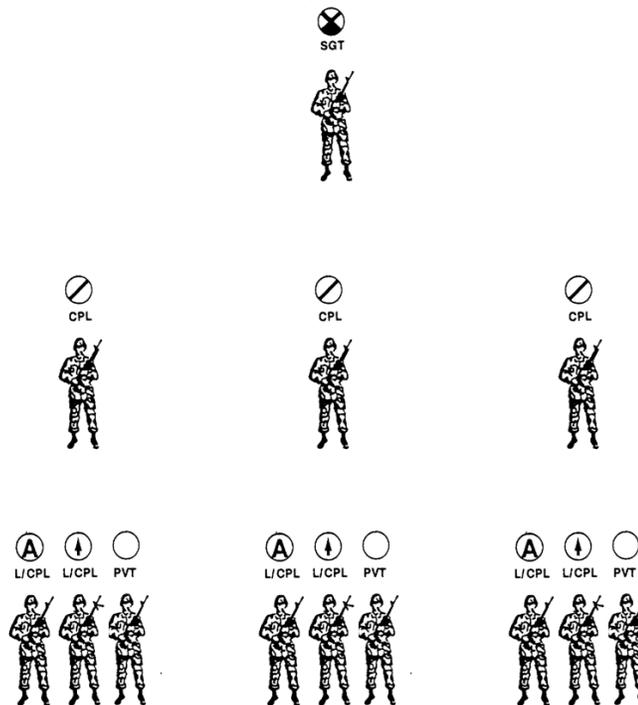


Figure 3: Legacy Squad Leadership Chain

The Marine Corps is built around a 1:3 system. That is, for every three units, there is one leader (Marine Rifle Squad, 2002). A squad, for example, consists of three fire teams and one squad leader. A fire team consists of three Marines and one team leader. Thus:

- 1 Squad = 3 Fire Teams + 1 Squad Leader = 13 Marines
- 1 Fire Team = 3 Marines + 1 Team Leader = 4 Marines

The obvious inconsistency in this system, though iterated here only twice, is that the ratio of 1:3 only works if only the first tier of leaders is considered. The squad leader leads three fire team leaders, for example. However, viewed from the perspective of unit scale, this is insufficient. That is, each time the system is scaled up a level, the ratio between leader and led gets larger. The leader must directly lead increasingly larger units, but without support staff comparable to that unit to assist in that leadership. At the fire team-level each unit, whether leader or led, is a single Marine. At the squad level, each unit is a fire team.

There is, however, no squad leader fire team. To address this discrepancy, squad leaders may unofficially create a headquarters fire team by adding a radio operator, a corpsman, and perhaps a guide or mission specialist. This is a clear example of Marines behaving in practice in a manner that differs from what is taught. This is perhaps the most compelling evidence of the discrepancy.

I.2: Psychology and Communication

Roles are insufficiently segregated, incompletely defined, and possess unnecessary limitations.

Organizational research into the workplace has been pioneered by thinkers such as Douglas McGregor who compared the starkly opposite views of low-level workers as either lazy or driven and Nancy Hartsock who described the conflict between dominant and marginalized culture⁶. In these two examples, the reasonable person must ask himself if the warfighter is personally driven and if the strong separation of officer and enlisted cultures is healthy. As with Systems Engineering, there are many issues with the legacy system when viewed through the lens of Psychology. However, the legacy system's poor, arbitrary, and limited definitions of roles lie at the root of most of these.

Psychology uses the term *job*, but both the legacy and cell systems use the term *role*, which is not a purely semantic difference. Indeed, *job* certainly sounds less official, less military than *task* or *role*. But *job* also suggests less of a part of the process for which the organization exists than *role* does. Having a role carries an implied deeper connection to the organization, which is why it is used throughout this project.

Psychology and Communication are in part concerned with job analysis and job definition. Job analysis is the process through which a job or role is understood (Riggio, 2008, p. 56). This process produces the job description, a principle of Industrial/Organizational Psychology which outlines characteristics of well-defined jobs (Riggio, 2008, p. 57). Every job has some specific characteristics that make it what it is. The generic term for these characteristics is *core job dimensions*. The most important of these characteristics, the relevant core job dimension (Riggio, 2008, p. 196), is *skill variety*. Skill variety is the number of differentiable skills needed to perform in a role.

The issue with skill variety, and the dominant issue with Psychology in the legacy system, results from an incomplete separation of the components of the roles. There is no connection between the weapon role and leadership role. The fire team leader role, for example, is fused with the grenadier role. There is no argument that states that the fire team leader must have this weapon in every instance. This connection is arbitrary, based

⁶ Both of these relate to the nature of the relationship between commanders, leaders, and the led.

only on temporal perspective. It is clear that otherwise unrelated tasks are simply not separated from one another. These individual roles should be differentiated individually and distinctly defined.

I.3: Military

Despite many available options, there is only one type of consistently applied dilemma.

The issue with the legacy's dilemma is that it primarily utilizes only two roles: the gunner and the rifleman. The dilemma is one of the basic skills of combat. It is a concept that anyone can grasp and immediately implement. The simple idea is to put the enemy into a situation from which it appears that the outcome of all available decisions will be horrible (Tactics, 1997).

Napoleon was a brilliant implementer of this idea. When attacking line infantry bearing rifles with fixed bayonets, he would have the cavalry charge at them from an unprotected direction. Their response was to form a tight square with three rows of bayonets sticking out of it in every direction. Horses, being even less suicidal than humans, would not charge into the formation. But that was not a problem, because this tight square was an excellent target for artillery. In response, the enemy soldiers would open up their formation, spreading out and facing the fire in ranks, which caused the least damage to them should a cannon ball land among them. Of course this was, again, a perfect target for the cavalry. The infantry commander was faced with a dilemma. Form a line or form a square? Without time to consider other options, the unit would almost certainly be wiped out by one of the two French units (McConachy, 2001).

To bring that back to the present, imagine two Marines firing at an enemy soldier hiding behind a log. One of them starts to fire his weapon at the rapid rate, keeping the enemy's head down, while the other throws a grenade behind the log. The enemy soldier has a decision to make: stay in place and be killed by the grenade, or run from the grenade and be killed by rifle fire.

The legacy system, by mission and role definition, only utilizes the fix and maneuver method covered at the beginning of this section. This underutilizes the other roles and their available weapon systems. The grenadier role is not defined as an active tool in dilemma creation. The role of the marksman does not even appear at the squad or fire team level outside of special operations, and is also not utilized in dilemma creation. Creative leaders and commanders have improvised alternatives to this, utilizing the gamut of what is available, but it does not agree with doctrine. This is yet another example of what is taught and what is practiced differing.

Summary

The first important message to take from this is that, despite this Dutch Uncle-criticism, the legacy system does work. It is unlikely that even highly committed troops would continue to use it as a guide if it did not. It does, however, have some glaring flaws and limitations. In review, they are:

Table 3: Legacy Issues

Issue	Areas of Study	Summary of Issue
I.1	Systems Engineering	The system as written does not follow its own rules.
I.2	Psychology and Communication	Roles are insufficiently segregated, incompletely defined, and possess unnecessary limitations.
I.3	Military	Despite many available options, there is only one type of dilemma that is consistently applied.

These flaws are apparent to even the least experienced leader, because at some point each must decide to do what is scripted in doctrine or to do what they believe will work. Overwhelmingly, the warfighter follows instinct instead of doctrine, and to their benefit. The result is that warfighters simply do not apply the prescribed model. Weapons are issued and units are constructed according to the situation.

Warfighters should not be compelled to adhere to a model that does not reflect their situation. Leaders and commanders wisely allow this and even encourage it. For this reason, this paper only addresses the doctrinal legacy system. That is, the problems addressed in the legacy system are directed at what is taught in manuals, not at what is actually practiced. When encountering material in this paper that disagrees with what the reader may have actually experienced, consider how what was practiced is distinct from doctrine.

Smart warfighters will alter or completely ignore a system that does not work. This is useful for getting around a problem but does not fix it. Instead, a well-reasoned option should be laid on the table. In the simplest metaphorical terms, the legacy system is a game of checkers; barely more than one-dimensional from the perspective of the pieces, and limited in options. Future chess players are stuck in this system, only able to operate in prescribed manners or compelled to ignore the rules. They are looking for a system that will allow them do more.

Evolution of the military system has increased the decision-making authority for those lowest in rank. On today's battlefield, just one combatant can cripple a unit of five or ten soldiers⁷. Small, dispersed bands of fighters make the advantage of overwhelming firepower almost moot. Better personal equipment helps mitigate this effect, countering enemy in general, but a better foundational system can change everything.

⁷ As a former U.S. Marine Mortuary Affairs Specialist, this author has observed this phenomenon directly in IEDs.

4. The Cell Model

Introduction

In this section, the basics of the cell model will be explained in general terms and applied to the Marine Corps to create a unit comparable to the legacy squad. Designing a squad may appear at first to be a large task, but military leaders do this as a matter of routine. They shift leaders and roles around within their units. They decrease their numbers in order to move faster. They borrow machine gun, anti-tank and mortar units in order to increase their firepower. They make these changes both within the confines of the legacy model, and beyond it. At most this project proposes only moderately greater, though fundamental, changes that are not far beyond what is already in practice.

Winning the skirmish and winning the war may appear to be far removed from one another, but they clearly must share the same goal. The purpose of war and the mission of the squad are thus intertwined. In order to understand this it is important to understand the a-political point of war. Warfighting, a manual issued to Marine Corps staff and officers, provides this perspective on war:

“The object in war is to impose our will on our enemy. The means to this end is the organized application or threat of violence by military force.”
(United States Marine Corps, 1997, p. 4)

Similarly, Merriam-Webster online defines war as:

“a struggle or competition between opposing forces or for a particular end” (Merriam-Webster, 2011)

From these, the functional purpose of any military system can be derived. For the purposes of this project, it is:

- To reduce⁸ the enemy capability.
- To conserve and/or distribute the preferred disposition⁹.

⁸ In this project, *reduce* generally refers to the above interpretation of the term to be accomplished by reducing the enemy’s number or condition of combatants and materiel.

⁹ *Preferred disposition* refers to a desired state in the opinion of friendly forces, whether or not it can actually exist. Examples of this include the conservation and distribution of democracy, prohibition, or any desired end state. For the purposes of this project, *preferred disposition* generally refers to the conservation of friendly forces and the quickest conclusion to armed conflict.

What follows is not a reinvention of the wheel. Rather, it is largely what is already in practice and accepted, broken into components practical across specializations, and structured to reflect the nature of the stakeholders. This begins with the definition of roles in the cell model.

Military roles are traditionally defined by the weapon carried: grenadier, pikeman, etc. However terms that are not directly linked to a weapon tend to survive technological advancement. Terms like cavalry and artillery are still in use today, centuries after their first use, while terms like archer and musketeer have dissolved into history. In a world where technology evolves weapons, not in hundreds of years, but in a decade, it is more appropriate to define roles by their fundamental mission. The cell system, therefore, is based on task roles (physical), force roles (mental), and specialization.

Before proceeding, consider just one example of a person in this system, called an *instance*¹⁰. Figure 4 is a graphic that represents an instance of an undifferentiated Marine. Differentiation is a term used in biology to describe the specialization of organic cells assuming various roles in an organism. A stem cell, for example, is an undifferentiated cell blank that is able to differentiate into needed cell types. An undifferentiated unit (in this case, a single Marine) is similarly a blank waiting to be specialized to a particular kind of unit.



Figure 4: Base Marine

This undifferentiated instance of a Marine (henceforth, *base* Marine) carries the following weapons:

- M16 A2 assault rifle with selector switch for semi-automatic and three-round burst
- M7 bayonet
- M67 hand grenade

In the examples that follow, this basic Marine is placed into a generic, atemporal¹¹ environment wherein thought experiments may be performed.

Task Roles

Task roles are physically performed. They are derived from the mission statement of the organization to which the cell system is applied. In this project, that organization is the Marine Corps. Therefore, the Marine Cell task roles are derived from the existing combat roles used by the legacy system, made clearer and more general by language and definition. Here, the task is defined by the executor's relationship to the enemy stakeholder. The question can be asked, "What does the unit see? What does the unit do?" These roles will be explained by offering a short definition, then presenting a short case of the base Marine in this role followed by appropriate examples.

¹⁰ An engineering term, an *instance* is a representation or manifestation of something abstract. Here it represents a generic form or example; a standard.

¹¹ While *atemporal* typically refers only to the cessation of time, here it includes the countless other events taking place on the battlefield. For example, a battlefield not defined by period in history or even the passing of events in the same battle. Compare this to controlling for temperature in physics or education level in psychology, in order to focus on what is important.

Name: Intruder

Traditional Name: Rifleman



Role Defined: Engages enemy from closest possible range, physically violating the enemy's space from a direction the enemy cannot easily defend.

Base Marine: The Marine observes that the enemy is covered¹² and is not engaging him. The Marine realizes that the enemy can be closed with, simultaneously reducing the enemy and gaining the enemy position as an advantage. The Marine assumes the role of the Intruder. The Intruder realizes that he¹³ can get to the enemy position without putting himself at great risk by moving quickly and approaching the enemy from a direction or in a manner in which he is unable to defend. The Intruder fixes the bayonet on his rifle and moves out of cover.

Historic Example: Intruders are the horns of Shaka's impi swarming around and behind the enemy, the swift-footed Roman light infantry, the American cavalry, and the entire Lakota armed resistance. The Intruder is a role best represented by the knight, leaving the safety of the familiar to engage the enemy in areas where they should feel safe. The Intruder is the foundation for many military systems. This is almost certainly because an area is not taken until an Intruder is standing there. Until very recently, warfare was defined by the claiming of territory. This meant that a person had to physically occupy ground. Whatever else that person's role may be, in the moment of seizing ground, that person is an Intruder.

Name: Arrestor

Traditional Name: Machine Gunner



Role Defined: Strongly and directly engages with the enemy, making any activity on their part hazardous.

Base Marine: The Marine observes that the enemy is engaging him or attempting to maneuver on him. He realizes that he must gain control of the enemy by the most direct means. The Marine assumes the role of the Arrestor. He must fire his rifle on burst at the rapid rate to keep the enemy from moving or returning fire, killing the enemy if an opportunity is presented.

¹² Cover: Protection from enemy fire.

¹³ For simplicity, male pronouns will be used where gender specificity arises.

Historic Example: The Arrestor makes up the center of most armies in history. They have been the pikemen in every civilization that had them, from Europe to Asia to Africa. Their function has always been to bring enemy activity to a halt, removing the enemy's options, thereby increasing their own. A frontal attack into a hedgerow of pikes or a machine gun tends to substantially reduce the combat effectiveness of the attacking unit, breaking the attack. In opposing the machine gun, any attempt to move or return fire puts the enemy unit at risk. If the enemy cannot move or return fire, then they must wait helplessly under cover. This is the basis for the concept of firepower superiority.

Name: **Fusilier**

Traditional Name: Grenadier



Role Defined: Engages targets in defilade¹⁴ in such a way to make that cover a liability.

Base Marine: The Marine observes that the enemy cannot be engaged directly due to the enemy's cover or his own. He realizes that he must make the enemy's position untenable. The Marine assumes the role of Fusilier. He takes out a grenade, pulls the pin, and throws it.

Historic Example: The Fusilier role has been represented by massed archers, cannons, catapults, mortars, and almost everything that explodes. The Fusilier engages targets in defilade that cannot be engaged directly by other methods. He makes it impossible for the enemy to stay in the safety provided either by distance or cover without being killed.

Name: **Excisor**

Traditional Name: Marksman¹⁵



Role Defined: Engages high value targets and targets of opportunity from a position of impunity.

Base Marine: The Marine observes an enemy who is unaware of his presence, or the Marine is beyond the enemy's engagement range but within his own. He realizes that he can reduce the enemy without revealing his position. The Marine assumes the role of Excisor. He must fire one well-aimed shot at the enemy. He switches his weapon to semi-automatic, takes careful aim, and fires.

¹⁴ Defilade cover denies the enemy the ability to engage directly (with a predominantly flat-trajectory weapon like a rifle). Being in defilade could be a matter of being on the reverse side of a hill or being inside of a building.

¹⁵ Explaining the need for and increased use of squad and fire team-level designated marksmen is beyond the purview of the project (Harris, 2000).

Historic Example: The Excisor in history has been epitomized by Genghis Khan’s horseback archers and American Civil War sharpshooters. From a position of impunity (created by distance, obscurity, or other tactical conditions), the Excisor carefully selects and reduces specific targets based on priority and opportunity.

These tasks roles are defined, not just by the fact that they reduce the enemy, but by the fact that they take choices away from the enemy. They are constantly driving the enemy either into or out of cover, in either case against the enemy’s preference. Dilemmas can be created by bringing any two or more task roles to bear. This can be accomplished by simultaneously forcing the enemy into and out of cover or by concentrating only on cover or open, utterly removing the opposing option. While this can be done in many ways, here are all of the ways in which they can be paired up with just a few examples of how that pairing might work.

Table 4: Table of Possible Dilemmas

Roles	Base Marine Example	Historic Example
Arrestor – Fusilier	<p>The Arrestor fixes the enemy in place with a high volume of fire while the Fusilier hurls a grenade into the enemy position.</p> <p>Dilemma: Stay and be blown up or move and be mowed down.</p>	<p>This is comparable to the practice of walking artillery up behind an enemy unit, forcing them to leave cover and move toward friendly gun emplacements. If they stay, then they are blasted out of or buried in their hiding places. If they advance, they are gunned down.</p>
Arrestor – Intruder	<p>The Arrestor fixes the enemy in place with a high volume of fire while the Intruder maneuvers safely into the enemy position.</p> <p>Dilemma: Stay and be overrun or move and be mowed down.</p>	<p>As explained in the Legacy Model section of this paper, this is already the standard practice. Lt Col Millet used this technique during the Korean War to great effect. His machine gunners pinned down the enemy while riflemen charged into the enemy positions with bayonets fixed (Glenn, 2002).</p>
Arrestor – Excisor	<p>The Arrestor fixes the enemy in place with a high volume of fire while the Excisor selectively engages targets poorly covered or attempting action.</p> <p>Dilemma: Stay and be picked off or move and be mowed down.</p>	<p>An enemy hastily seeking cover or distracted by the dominant “voice” of the machine gun often leaves some part of themselves or an ally vulnerable to a marksman. The Civil War battlefield saw marksmen used in this way. Once an enemy unit had fully committed to a fight (their movement arrested), marksmen on the flanks could pick off staff and officers without drawing attention to themselves (Benson,</p>

2007).

Fusilier – Intruder	<p>The Fusilier hurls a grenade into the enemy position while the Intruder maneuvers toward it.</p> <p>Dilemma: Stay and be blown up or move and be chased down.</p>	<p>This technique has been used to soften targets and is the basic principle of room clearing, starting with a grenade and following with a team maneuvering into the enemy’s position (First floor building entries. 2401, 1997). This principle is also demonstrated by the example of Napoleon’s artillery and cavalry covered in the Legacy Model section.</p>
Excisor – Intruder	<p>The Intruder moves into the enemy position while the Excisor selectively reduces targets fleeing cover or attempting to engage.</p> <p>Dilemma: Stay and be overrun or move and be picked off.</p>	<p>This is the idea of overwatch, wherein a unit moves while a marksman observes, prepared to engage anyone that is pressured by the advancing unit to leave cover. A simple example of this can be seen in duck or quail hunting, wherein a dog (Intruder) “flushes out” the game and the hunter (Excisor) shoots them down singly.</p>
Fusilier – Excisor	<p>The Fusilier hurls a grenade into the enemy position while the Excisor selectively engages targets fleeing cover.</p> <p>Dilemma: Stay and be blown up or move and be picked off.</p>	<p>Using the previous example, a thrown stick would fulfill the role of Fusilier, flushing out the game. Neither the grenade nor the single round are likely to reveal the location of friendly forces.</p>

There are a lot of options available in the chart so it may be difficult to figure out when to use the different roles and how. First, a good way to think about the distinction between the roles is to consider the enemy’s disposition. If the enemy can be engaged directly (i.e., not behind, inside, or under something), then the correct roles are the Arrestor and Excisor. Both of these are line-of-sight roles. They rely on directly observing and engaging the enemy. If the enemy cannot be engaged directly, then the correct roles to employ are the Intruder and Fusilier. They operate on the premise that the enemy *can* be reduced, even when not directly observed. In general, if the enemy can be seen, use direct engagement. If the enemy cannot, use indirection engagement.

The next factor to consider is whether the enemy requires general or precise engagement. General engagement is for multiple targets (clustered) or limited time frames where accuracy or stealth is of minimal concern. Precise engagement is for single targets or somewhat more time or greater stealth. The Arrestor and Fusilier are both general engagement roles. The Excisor and Intruder are both precise. In general, if the enemy knows where you are, use general engagement. If the enemy does not, use precise engagement.

A guide for when to employ specific roles follows.

Table 5: Task Role Employment Guide

	Direct	Indirect
General	Arrestor	Fusilier
Precise	Excisor	Intruder

It should be clear that any Marine in any task role should be able to perform the role of any other task role should the circumstances necessitate it. The base Marine has the ability to perform all four task roles as the situation dictates. If the primary weapon carried only supports one or two task roles, then an additional weapon which can support the remaining task roles, even if to a lesser degree, must be added.

In the case of the base Marine, the M16 fulfills two roles on its own: Arrestor and Excisor. The rifle could also be modified with a bayonet to allow the individual to perform the role of Intruder. But a grenade must be carried in order to perform the role of Fusilier. Because each Marine is a complete package capable of performing all roles, all roles and the dilemmas that they can create can be brought to bear by any unit, though most effectively by those assigned that particular task role.

A set of task roles for a business or a hospital will be very different from those established here for the Marine Corps. The conceptual dimensions of engagement, however, are constant: Direct and Indirect, General and Precise. Consider material in education which can be taught by lecture (General) as compared to other material that must be taught one-on-one (Precise).

Force Roles

Whereas task roles are physical, force roles are mental. They are the manifestation of experience and communication in the cell system. The term “force” is used to represent the unit – or force. It is used in the same manner as Air Force, Special Forces, and Force Recon.

Force roles are derived from the Boyd Cycle. John Boyd, a military strategist, speculated that individuals and organizations make decisions cyclically. He explained that if a combatant could process this cycle faster than the enemy, then the combatant would have a decided advantage. He created the acronym OODA, which stands for *Observation-Orientation-Decision-Action* (McManus, 2000).

This idea is now widely accepted in psychology and business, though particularly in the military community (Tactics, 1997) where it can be directly observed and applied (Vandergriff, 2010). It is applied, however, only in the cognitive process. If the idea of the OODA loop is viewed instead as the contact process, the process of contact through which a unit encounters external threats, then the roles of a team can be laid down alongside it. The cell system does so in the following manner:

- Observation → Security
- Orientation → Function

- Decision → Control
- Action → Support

These particular terms were selected for two reasons:

1. To avoid confusion with the Boyd Cycle
2. Because they more accurately represent organizational thinking instead of individual thinking

These, therefore, are the four force roles of the cell system. The terms used by Boyd are correct for their purpose but bring to mind only a process within an individual (or an individual unit), not roles within a unit. Changing how they are identified also signifies that these “steps” need not occur in a strict order but can take place independently. If these steps can occur independently, then the force roles in a unit can also **act** independently.

Before proceeding, it is important to understand the distinction between task roles and force roles. Task roles are often connected to a physical tool. When giving a unit a task direction, for example, that direction is in the correct employment of that tool or that role. Task directions are *how* directions and tend to be specific. Force roles are often connected to rank or experience. When giving a unit force direction, it is generally an idea of what must be accomplished. Force directions are *what* directions and tend to be general.

From this understanding, the force roles of the cell system can be defined.

Name: **Security**

Equivalent OODA Stage: Observation



Role Defined: Directs the employment of Function. Second most experienced unit utilizing the second least employed task role, concerned with the short-term activities that might compromise unit welfare.

Detail: Security is competent, confident, and experienced. Security is not burdened with the weight of controlling the entire unit, but focused only externally on threats to the unit. Security has the authority to bring the most powerful tool of the unit, the task role assigned to Function, to bear at a moment's notice without going through the chain of command. Security's principle source of information is not the unit leader, but the environment. From the buildings to the tree line, Security drinks in the overwhelming information from sources that might contain enemy or pose a risk to the unit. He uses this information to intelligently employ Function. Because Security is likely to be the first to observe a threat to the unit, Security's task role is likely the first role brought to bear on contact. This responsibility prepares Security to one day become Control.

Name: **Function**

Equivalent OODA Stage: Orientation



Role Defined: Second least experienced unit utilizing the most employed task role. Responds to the direction of Security, immediately bringing the unit's most powerful task role to bear.

Detail: Function is the unit around which the greater unit is built¹⁶. It is the reason that the greater unit exists. With limited experience, Function remains under the watchful eye of Security. This most important role is directed by the two most experienced units, Security and Control. Task direction comes from Security. Force direction comes from Control. For example, Control may say, "Cover our advance on the left." Security may follow with, "Provide cover from the bank to the market. Reload with a fresh belt and be ready." Function knows his job and understands the greater mission. This crucible forges an experienced, confident, and competent future Marine.

Name: **Control**

Equivalent OODA Stage: Decision



Role Defined: Most experienced unit utilizing the least employed task role. Concerned with long-term activities that will lead to accomplishment of the greater unit's mission. Provides general force direction to the Function and Security pair, and detailed task direction to Support.

Detail: The unit leader, Control takes advantage of the extra time granted by Security's immediate response. This time is used to understand the developing situation and its implications. Control then chooses an action for the unit, or unit components, to execute. Control is able to finely direct any sub-units individually, but tends to focus only on Function-Security as a combined unit. He tends to only finely direct the employment of Support. Experience in this role prepares Control to follow many different career paths.

¹⁶ Ex: A car is built around an engine and a knife is built around the cutting edge. The thing is built around the component that most defines its purpose.

It is important to note here that Function is not being overwhelmed by direction from two leaders. Control sees the Function-Security pair as one unit and does not generally distinguish the two.

Name: **Support**

Equivalent OODA Stage: Action



Role Defined: Least experienced unit utilizing the second most employed task role. Receives task direction from Control.

Detail: The Support Marine represents the “messy space¹⁷” for the Control Marine. This relationship is direct and does not travel through the two more experienced Marines (Function and Security), except in Control’s absence. The Support Marine tends to stay in close proximity to the Control Marine. If Support must do something apart from the unit, Control will normally lead/guide the activity. Support also provides direct security to Control and can be thought of as junior Security.

As with task roles, within just one undifferentiated Marine exists the ability to perform all four force roles. Just as any one Marine can arrest or intrude, any one Marine should be able to perform personal security or execute a decision. But, also like task roles, force roles work in pairs and more.

As should be obvious at this point, each force role is paired up with a task role. Consider the Control-Fusilier or the Function-Arrestor, as these two already exist in the legacy system. It is no surprise that task roles and force roles have been paired up this way in the previous system. It may make intuitive sense that Security should be the Excisor or Intruder. The Excisor looks ahead stealthily and the Intruder physically moves ahead. Both are, by definition, good at detecting threats. But consider Security as the Arrestor, providing recon by fire, or even the Fusilier who may first lob a grenade into an occupied room before it is cleared¹⁸. Consider also Security as the spotter on a sniper team. It is not the machine gun that must be brought to bear but the marksman’s rifle. In this case, the shooter serves in the role of Function-Excisor.

¹⁷ The idea of messy space accounts for things which cannot be accounted for in advance. In the words of Cohen and March, it acknowledges the limitations in the “*primacy of rationality* (Cohen, 1986)” as there is not always a series of steps or checklist available to the decision maker. Messy spaces allow the decision maker to improvise and adapt.

¹⁸ Different schools disagree about whether this should be the first or second person in the stack.



Figure 5: Example Function-Excisor

The lateral connections between the force roles should now be clear. Figure 6 below shows a comparison of vertical leadership (1) (complete delegation), pyramidal leadership (2) (no delegation), and cell leadership (3) (derivative delegation¹⁹) all using this system. Note that task direction in the cell model flows from the more experienced in the pair to the less experienced, but force direction flows from the Control unit to the Function pair.

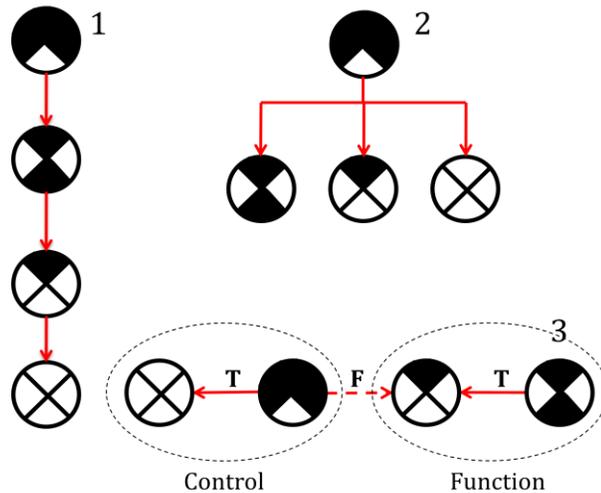


Figure 6: Leadership Models using Cell Symbols

When thinking about force roles, it is first important to clarify that the Function unit in the Function set does not have two leaders in the practical sense. Function receives task direction from Security and force direction from Control. Control might plan to advance with Support and direct Function to cover their advance toward a building. Function prepares to do this immediately. Security may direct Function to prepare by reloading his weapon or covering a specific sector. Compare this to having binocular vision, where Security is the shooting eye, Control is the non-shooting eye, Function is at center as the shooting-hand, and Support is the non-shooting hand.

Note that the two most experienced units control the two least experienced units, who in turn employ the primary and secondary roles of the greater unit. That is, the least experienced units in this system employ the most utilized task roles. The most experienced units in the system employ the least utilized task roles, but direct the actions of the other two. There are three reasons for this.

¹⁹ Responsibilities delegated by derivation of roles which can take place repeatedly until the individual level.

1. The inexperienced units will become experienced by performing their task roles often.
2. The experienced units are able to observe²⁰ more, which would be limited by constant task role obligations.
3. The experienced units are presumably competent enough that when their task roles *are* needed, they will be employed judiciously.

Experience is linear in this system. View each force role as a rank from 0 to 3 by counting the number of filled-in pie slices in its representative symbol, each of which represents a degree of experience. The more slices a unit has, the more the unit is focused on force and the less it is focused on task. No unit is ever entirely force-focused. This retains the idea that every unit is fundamentally a combat unit (every Marine a rifleman). However, the junior-most unit is completely focused on task. A balance of experience is maintained by ensuring that a comparable number of slices (the sum) exists between sister units.

Determining which unit is assigned which task role is almost as simple. Task role assignment requires two inputs instead of one: unit rank and task need. Unit rank refers to the 0-3 scale above. Task need indicates that different task roles are expected to be utilized more or less often. For example, one can presume that the most used weapon in a legacy fire team is the machine gun. The fire team leader, however, may not use the grenade launcher very often. In the absence of constant need, the fire team leader is freer to make tactical decisions. However, if the grenade launcher must be employed more often, the fire team leader may issue the weapon to another team member. Below are two tables explaining this distinction.

Table 6: Unit Rank Equated to Force Role and Task Need

<u>Unit Rank – Force Role</u>	<u>Task Need</u>
0 – Support	A – Needed most often
1 – Function	B – Needed 2 nd most often
2 – Security	C – Needed 2 nd least often
3 – Control	D – Needed least often

Unit rank and task need pair up in the following way:

- 0 – B
- 1 – A
- 2 – C
- 3 – D

This makes logical sense, given that the two highest ranking units need to be focused less on employing their own task roles and more on directing those of others. Control is assigned the least employed task role. Security is assigned the second least

²⁰ Refers to a superior battlefield awareness and dynamic intuition. (Bakken, 2003)

employed. At this point, the reader may wonder why Function gets the most utilized role while Support only gets the second most utilized. Recall that, in the process of training Marines, the junior-most unit pairs up with the senior-most unit. At this stage, the inexperienced unit is still adopting cultural norms, learning what is important, and how to function as part of a team. The senior-most unit, however, cannot both direct the actions of the most utilized role in the unit and the actions of the unit as a whole. The solution is to allow the second most ranking unit to direct the moment-to-moment actions of Function. General direction can be provided to the two units as one body by Control as necessary.

The complete unit enters combat in this manner, roles divided according to their anticipated need as part of the unit-design. If the situation forces this unit to break into smaller pieces (due to the funneling effect of the urban environment, received casualties, etc), all of the capabilities of the larger unit will still be present, though reduced.

This allows the unit to operate with a specific purpose, bringing substantial effect to the enemy, yet allowing the unit to adapt to the changing situation. Consider an Excisor unit, the Function unit carrying an M110 sniper rifle, entering a small structure with the intention of engaging targets in support of another unit. The Function pair (Function and Security) might move to an upper floor and cover the specific direction that they have been assigned. The Control pair (Control and Support) prepare to cover an alternate route with Support in the role of Arrestor. An opportunity may present itself wherein the Excisor role would be the superior option for Support, but that role is otherwise assigned. Instead, one of the two Control pair members (either Control or Support) engages the target as a stand-in Excisor.

Specialization

In the cell model, specialization is distinct from differentiation. Differentiation is derived from the mission, disassembling a general unit into specific task and force roles. Specialization comes from the opposite direction. It posits that the individual determines what task role is preferred. This differs from being assigned a role.

In the cell system, there are three specialization categories: primary, secondary, and utilized Task roles. The primary role is the first task role choice of the individual. This choice is not a guarantee, but it helps to place Marines in the role where they will be most effective. The utilized role is what task role the unit is actually assigned.

The secondary role provides a backup option in the event that the unit is not assigned the preferred primary role. More importantly, it gives the unit a secondary specialization which can be applied if the primary specialization is not appropriate to the situation. Recall the earlier example wherein the unit had to improvise use of the Excisor role in an unexpected direction and manner. Success would lend itself in this situation to assigning the temporary role of Excisor to someone for whom it is a secondary preference.



Figure 7: Example Primary Arrestor with Secondary Excisor

If Marines may be assigned roles against their preference, then why give them a choice at all? To answer this, consider a comparison between the Arrestor and the Excisor. It takes a particular breed of person with a certain degree of arrogance to take up a machine gun and point it at a group of people, drawing their ire and most intense resistance. In small conflict, the machine gun will be the loudest and most constant beat of the battle. It is oppressive in its force of will. This Marine wants to take the enemy on directly. Therefore, it is often the loud, brash, impatient Marine with a strong sense of team unity and identity that is likely to take up the Arrestor role.

The Excisor, conversely, is often the colder, quieter, sterner, more distant Marine. These qualities make it possible to operate alone or nearly so, point a rifle at a single person who may be a threat, see his face in detail, and kill him. The Arrestor and Excisor are two distinctly different Marines. Their differences mean that they will likely pursue different roles and experience those roles differently. Their styles of warfare and leadership are unique, yet equally valid.

These are not the only kinds of individuals who might choose the two roles – anyone can. The point illustrated is that each role requires a particular mindset that some Marines may be more strongly drawn to than others. Only the individual will know with any certainty if a particular role suits his nature.

It is possible, despite challenges, for any individual to fill any role. Just as any lance corporal can take over as a platoon commander, any rational person should be able to teach art, and any emotional person should be able to teach science. While probability might suggest that these roles stay largely filled by those naturally suited to them, it is not for others to say which role an individual should choose. A person must be permitted as much latitude in the selection of his path as is practical.

The utilized role (presumably the primary role) is the role performed in combat. However, if an incident or opportunity requires it, the unit can employ its secondary role. Presumably this role has been trained for nearly as thoroughly as the primary role. Specialization is not the sole purview of individual Marines, but also of units of all sizes.

Unit Instantiations & Role Recombinations

Applying the preceding principles, instances of historic²¹, legacy, and new units can be created. In this section units are defined by the number of individuals within them. The benefit of thinking about them in this manner is that, regardless of how a unit arrived at that number (whether intentionally or otherwise), there is some protocol that will allow them to reorganize efficiently and to maximum effect.

²¹ WWII and older.

Security and Function roles. For each individual, one of the two task roles is the primary specialization. The other role is secondary.

Detail: A set is the result of the pairing of roles. The set is the most basic two-unit. A two-unit can be seen as two conjoined one-units. Each unit within the two-unit is like a hemisphere of the brain, dividing up responsibilities. How these are applied has been covered in previous sub-sections. What is important is that, with only two units, one prioritizes task, while the other prioritizes force. A good way to think about the effectiveness of the set is to think about binocular vision. One eye is the dominant shooting eye and the other detects motion. One eye sees the target, the other sees the environment surrounding the target. In the set, one Marine can “flinch,” responding immediately to situational stimuli, while the other can plan the next action. Set examples include the traditional sniper team (Excisor set) and the gun team (Arrestor set). In both cases one individual identifies the target while the other individual engages the target.

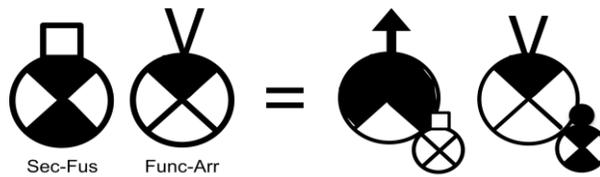


Figure 9: Example Arrestor Set

Name: **Team**

Size: 4

Type: One-unit



Definition: A team consists of two sets. Each of the four individuals in the team is responsible for one team task role and one team force role.

Detail: A simple way to view this is to consider Control and Support as force, while Security and Function are task. This approach is useful because the task role assigned to Function is the role around which the team is built and the role that supports the larger unit. Figure 10 is an example of just one of the many team arrangements. In deference to the legacy model, it is built around the machine gun, with roles distributed similarly. The leader of the larger unit identifies the team by the task role assigned to Function and force role the team performs.

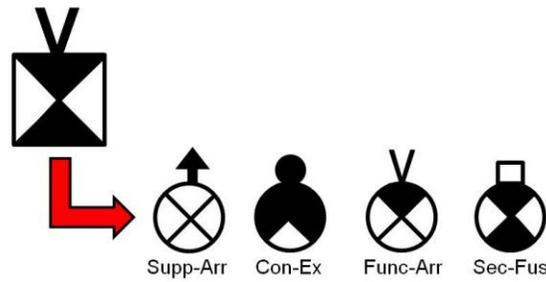


Figure 10: Sample Security-Arrestor Team

Name: **Element**

Size: 9

Type: Two-unit



Definition: An element consists of two teams. Like the set, one team is principally responsible for the task role of the element and the other is responsible for the force role. The senior team, determined only by the experience of the team leader, adopts the force roles Control and Support, which it distributes between its two sets. The junior team adopts the force roles Security and Function, which it also distributes between its two sets. An element leader²² controls these two teams.

Detail: This 9-person unit is comparable to the Army’s currently fielded squad except that, in the cell system, there are many possible task/force arrangements available to the leader. It is perfectly reasonable to think of the element as two teams (or legacy fire teams). However, remember that a unit, when viewing just that unit, must have all roles present and dispersed. That is, from the perspective of the unit leader, all roles must be easily identifiable. This view will change as scale changes. The individual sees himself as containing all eight roles. The set sees itself as evenly dividing those roles into four and four (two task and two force each), even though each member still possesses all eight. The team divides these roles into two per member (one task and one force), even though the sets and individuals still have their original capability. Here, the element divides these roles one step further, with each member assigned a task or force role. This keeps management of roles simple for leaders, makes accountability straightforward, yet still leaves maximum capability available at each level. Recall that more slices represents more experience (in the leader) and balancing experience is fundamental.

²² The presence of unit leaders is important but beyond the purview of this project. In brief, there is one leader (enlisted) for every two-unit of the next higher scale. There is one commander (officer) for every one-unit of the next higher scale. This holds true even when considering just one individual. They are represented by a circle (representing an individual) inscribed in the shape of the unit that they direct. Thus, a team leader could be represented by a circle inscribed in a circle.

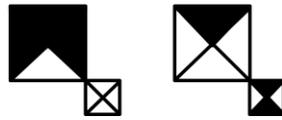


Figure 11: Element Force Role Distribution



Figure 12: Sample Individual Perspective

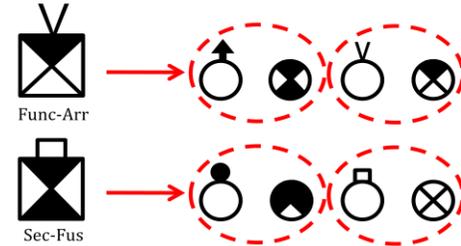


Figure 13: Sample Element Leader Perspective

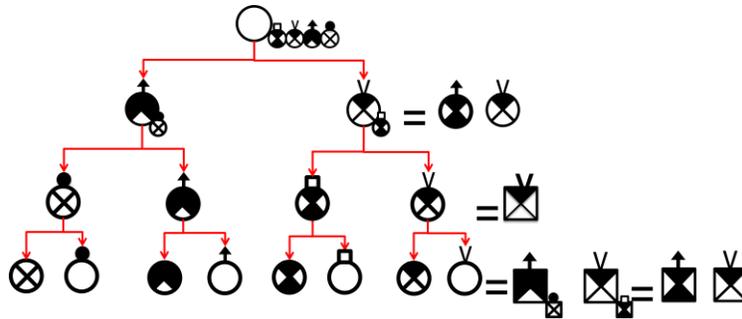


Figure 14: Piecewise Breakdown of the Element

Name: **Squad**

Size: 19

Type: One-unit



Definition: A squad consists of two elements or four teams. Each of the four teams is responsible for one squad task role and one squad force role. The Function task role in the squad supports the larger unit. The squad is led by a squad leader (force element leader), assistant squad leader (task element leader), and a squad commander.

Detail: Each team member has a task role that supports the team. Each team is built around a task role that supports the squad. The squad is built around a task role that supports the larger unit. The most powerful task role employed by the squad is in the

squad's Function team. Figure 15, a sample squad (simplified) modeled loosely on the legacy squad, clarifies this.

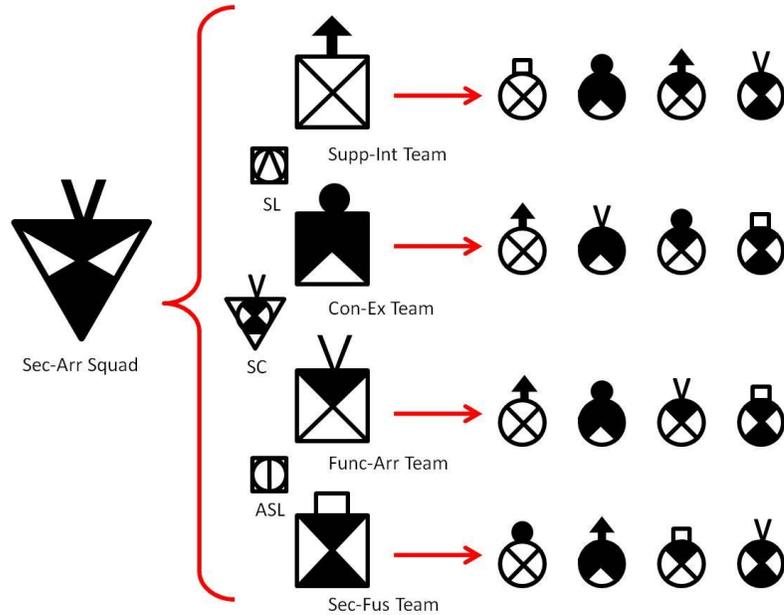


Figure 15: Sample Individual Perspective of Arrestor Squad

Note that while every individual's task and force role is shown here, the squad leader and commander are not concerned with what task roles particular squad members hold. Their only concern is that each team presents the different Function task role in the manner which they prescribed. Team leaders are similarly only concerned that each member presents a different Function task in the manner in which they prescribe. For example, the squad commander is not concerned that the Support individual in two teams is assigned the Intruder role. He is only concerned that the team's Function roles are what he assigned. Each level of leadership only sees the most powerful tool, the task role assigned to Function at each level, in that unit.

Many points have been addressed so far. The important things to understand are:

- All eight roles are present and distributed in a balanced manner throughout any unit. This is discernable from the individual level or at any level higher.
- The task role assigned to Function determines what that unit contributes to the greater unit. Units are built around Function.
- Leaders and commanders only see to a functional depth – down to the level of Function – for each of their units.

Special Cases Example: Battery

The possible number of units which can be built using this system is enormous. This is not accomplished merely by exponential values of 2 or by building up units using the patterns already mentioned. There are many necessary units that do not follow a regular mathematical pattern. These are realized by following the three principles of task role, force role, and specialization. One particularly useful special unit is the Battery.

Batteries, in the traditional sense, are artillery units that contain several identical guns in order to mass their fire²³. A cell battery is any unit containing more than one function sub-unit with the same task role. It is denoted by two task role indicators. Consider the example in Figure 16, a team Function-Arrestor Battery. Here, an additional machine gun dramatically increases the firepower of the team and allows at least one gun to continue to suppress while the other is reloading, maneuvering, or clearing a jam.

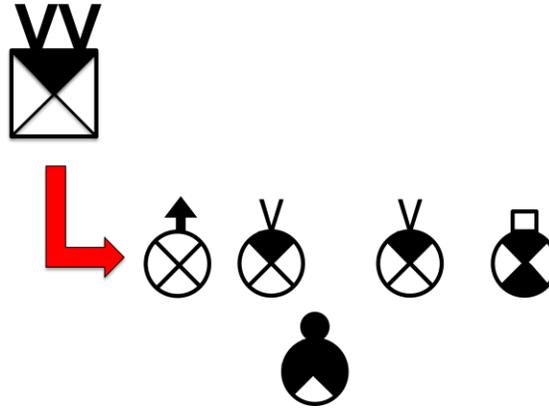


Figure 16: Sample Team Arrestor Battery

The legacy squad could be considered a cell Squad Arrestor Battery given that each team is built around the machine gun. This may appear to be an unusual configuration, but light mortar teams already use this model²⁴. (Special considerations, 1992) Note a few important points:

- The two like-units in a battery need not carry the same or even very similar weapons. They can certainly both carry an M249 automatic rifle. However, taking their set partner into account, the one paired with the Sec-Fus might carry an M240 medium machine gun while the Marine paired with the Supp-Int might carry an MP7 personal defense weapon or an M27 IAR.
- Between the two Function Marines in the example, the one attached to Support has more experience. While further explanation of this is beyond the purview of this project, this individual can be seen as “soon to be promoted to Security.”
- Figure 16 is not perfectly symmetrical. The team leader (Control) lies slightly left, nearer the less experienced set (fewer total pie slices) to denote that he gives them more direction.
- Batteries at lower levels only show up in diagrams at upper levels if the duplication of units exists at the level below. A squad Battery, for example, has two Function teams. A squad, however, is not called a Battery simply because its Function team is a team Battery. Figure 17 shows a sample Arrestor squad that is not considered a squad Battery despite having a team

²³ Massing fire is bringing the firepower of several weapons to bear on one target.

²⁴ If one disregards the Ammo Bearer.

Arrestor Battery. Figure 18 shows an Arrestor squad that *is* considered a proper squad Battery.

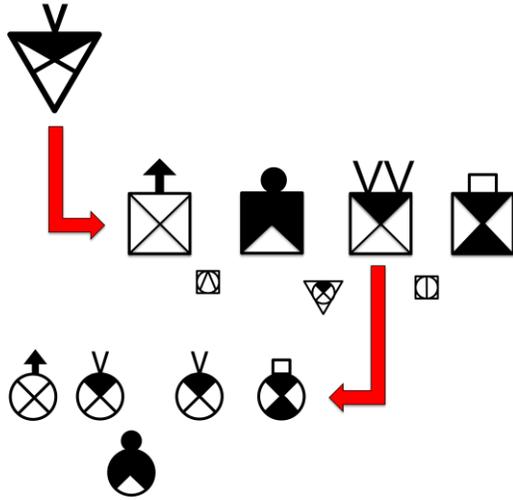


Figure 17: Sample Arrestor Squad with Team Arrestor Battery

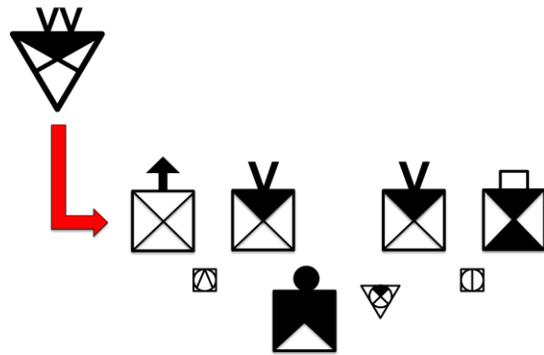


Figure 18: Sample Squad Arrestor Battery

The endless variations and applications of just this one type of special unit become obvious when one considers that 1) each of the two function teams in Figure 18 could themselves be converted into batteries and 2) every unit contains a function component. Thus, although the basic squad has 19 members, applying this one kind of special unit can affect that number substantially.

Analysis of the system

There are three basic premises to the cell system:

- Task roles – an expression of physical responsibility
- Force roles – an expression of organizational responsibility
- Specialization – an expression of the value to an organization of unique differences among its members

Given this understanding of the system, some simple questions can be asked. What are the key differences between the legacy and cell system? Were the issues in the legacy system actually resolved? And when doesn't the cell system work?

Distinctions

The Marine cell system, being based on the legacy system, shares many attributes with it. However, there are some important differences between the two. The first and most obvious distinction is the use of a completely new team language based around a fundamental division of roles. As addressed, names of weapons and arbitrarily connected billets do not inform the names of roles in the cell system. While it is perfectly acceptable (and probably inevitable) that legacy terminology will be used to describe the task roles expressed here, the broader description offered by the more general terms should stay in the minds of the stakeholders. There are no unnecessary unit descriptors. For example, the word *fire* is dropped from the term *fire team*. *Fire team* implies a particular role, one that uses a high volume of fire to force the enemy into cover – the description of the Arrestor. There are several kinds of teams in the cell system. The same is true for the term *rifle* in the *rifle squad*. Because of this difference, the legacy system can be modeled using the cell system, but this does not work in reverse.

The second major distinction is the differentiation of units. Rather than all units operating as clones of one another (as is the case in the legacy system), each unit is specialized to perform a specific function. The leader of a unit determines how it is constructed/designed (Senge, 1990). This process is flexible and creates units that are endlessly adaptable. The only constraint is that the unit must meet the mission established by the next higher unit leader. For example, the squad leader is not concerned with who carries the grenade launcher in a team, only that the Function of the particular team be Excisor.

An additional distinction is that, in the cell system, the less experienced unit performs the principal task role and the more experienced unit performs the force role. Consider the legacy system, wherein the machine gun is operated by the assistant team leader, who is then assisted by a more junior Marine. In the cell system, this is reversed. The machine gun would be operated by the less experienced Marine while the assistant team leader directed its employment. This relationship of the junior operator and the senior director has a long demonstrated history of success with snipers, drivers, and many other technical fields.

This relationship allows the experienced person, who is not directly employing the weapon, to focus on the larger picture. This also allows the less experienced person to learn from the experienced person through observation and interaction. The single defining characteristic of the cell system, exemplified by this relationship, is freedom with guidance.

Lastly, when one applies the cell system to the legacy system, as has been explained here, it becomes clear that the legacy views task roles as scalable. That is, task roles can be assigned to just one person or a unit of several people, which is sensible and agrees with the cell system. However, the legacy system does not appear to see force roles in the same way. Force roles reside in one person in the legacy system, whereas in the cell system, all roles are scalable. There exist in the cell system Control individuals

and Control units. This results in a different way to think tactically, which inevitably leads to a different kind of combat.

Issues Revisited

I.1: The system, as written, does not follow its own rules.

Recall that the legacy system iterates in a manner that creates an increasing ratio between leader and led. Leaders compensate for this by creating filler roles. The cell system grows units and leadership according to simple proportionality which is similar at every level. Rather than being based on a 1:3 system, it begins as a 1:1 system and moves up to a maximum of 1:2. What that means is that, from the perspective of the leader or commander, he will always lead at a ratio between 1 and 2. A team leader leads one set and one Marine. To the team leader, the set is one unit. The element leader leads two teams. Within those two teams is a Control individual for the element that acts as assistant element leader, essentially providing a set to coordinate the other sets. The squad commander leads two elements. One of the elements contains the Control team for the entire squad, helping to coordinate the other teams. If a leader or commander needs to more finely control specific units, it is perfectly acceptable to adjust that ratio, but the system works best without that kind of micromanagement.

I.2: Roles are insufficiently segregated, not defined, and possess unnecessary limitations.

In the legacy system, specific weapons are tied to specific ranks. This connection is arbitrary and self-limiting. The roles defined in the cell system are adapted from roles and principles already used in the legacy model. In the cell system however, there is nothing permanently tying any rank (force role) to any weapon (task role). Specialization allows a Marine to stay with the weapon type of his preference, learning from experienced leaders and later teaching people in that role. In addition, specialization provides alternative skill sets that may also reflect the individual's natural inclinations. Ultimately each Marine, and each unit viewed in isolation, has the ability to employ any of the roles. The limitations in their arrangement and application exist only in the creativity of the Marine.

I.3: Despite many available options, there is only one type of dilemma that is consistently applied.

From its mission to the fire team's main weapon, the legacy system makes a clear statement that its particular preferred dilemma is fix and maneuver. This limits the legacy system predominantly to the Arrestor and the Intruder roles. The glut of possible dilemmas available to the cell system at each level, beginning with any two roles and expanding, make this issue moot. Recall the dilemmas of paired task roles offered in Table 4 and consider that those merely represent one level of complexity.

Deeper Benefit

Freedom

A unit is at a disadvantage if it can only change or act when it is ordered to do so by the unit leader, because it cannot adapt fast enough. Likewise, the unit is also at a disadvantage if it can change only when prompted by enemy action because it becomes reactive instead of proactive. In the cell system, units can make decisions for themselves

with limited input from their leader or the enemy. Freedom is one of the defining characteristics of the cell system.

The unit must respond to the enemy first because the unit must be able to save itself before being concerned with an order. However, in the cell system, decisions are made with respect to the unit leader's intent. The system allows the unit to be dynamic. The unit must understand the context that it is in, the function of its team within the larger organization, and the input from higher and junior personnel and the enemy.

Consider a team engaged with the enemy. The team leader must understand the environmental context (urban desert, for example), but he must also understand his team's task and force role within the squad (i.e., Security-Arrestor). He must receive and respond to input from the element leader, from his team members, and from the enemy. The team leader combines these three kinds of information to make practical, in-the-moment decisions that are both operationally advantageous and executed as quickly as possible. This is loosely comparable to the *Auftragstaktiks* (mission tactics) of the German Army in WWII, as regards intent, but the intent comes from three sources instead of one (Uhle-Wettler, 1993). This understanding leads to initiative unavailable to the more regimented units of the legacy system.

Leaders and commanders need not release all of their charges to the whims of their junior leaders, but they also need not maintain a strangle hold on them. Each new situation requires a different approach and a specific balance of freedom and control. Intelligent Marines have a long history of working that out.

Learning & Development

“Nurturing” is probably not the first word one would associate with the military, but it is another defining characteristic of the cell system and of the legacy system as well. Nurturing in this context refers to the cultivation and development of future leaders. Social learning theory posits that people learn from observing and interacting with experienced others (Driscoll, 2005). They are encouraged, punished, recognized, and rejected all through ordinary social exchange which encourages individuals to make appropriate decisions.

The cell system promotes this learning by pairing the inexperienced with the experienced at every level, making the learning process integral to the application of the system. The legacy system largely does this by accident, placing Marines in either a learning, leader, or action role, but never at the same time and not according to experience. When compared to the leadership models expressed earlier (Figure 6), the legacy system can behave as either example 1 or 2 but not as 3 without violating the system.

The Support Marine in the cell system subsumes Marine culture and the positive characteristics of the Control Marine. Here, the junior most Marine in the team learns directly from the senior most Marine. When promoted to the Function role, the Marine learns from the second most experienced Marine: the Security Marine. In each stage, he develops confidence through competence. Part of that competence comes from teaching, something that the Marine Corps does very well. Teaching creates leaders and leading creates teachers.

Caveats

Every system has limitations. Both the legacy and cell systems rely on the initiative, experience, and creativity of their users. People who carry weapons do not often refer to themselves as creative, but in their areas of specialty, they are. They are problem-solvers who can understand a situation and expertly apply their wealth of knowledge to achieve a unique, contextually-specific end.

The legacy system (and many systems which preceded it) prefers to view humans as predictable, interchangeable parts of a machine, as in the machine metaphor (Miller, 2009). This is understandable in an environment where casualties need to be replaced and funneling breaks up units. If the machine gunner in the legacy system is killed, another person can pick up the machine gun or another machine gunner can be brought in. Presumably the role will be executed in a virtually identical manner. Of course this is not necessarily the case. A person's secondary preference (not even an available perspective in the legacy system) effects how the primary preference is employed. Consider that the original gunner may have had the secondary role of Excisor while his replacement may have been an Intruder. The role has been filled, but the differences lead to two different styles of weapon employment.

Though some other limitations may come to mind, this is a symptom of what seems to be the most serious one. That taking even a single casualty hurts the unit more; more even than it does today. The unit has the tools and capability to recover from it, but every unit can be broken into very small, very close-knit units. There is no charge of 500 men across a battlefield as in the Civil War, the loss of one or twenty of whom would barely be noticed until after the battle. Every life is important and so the loss of any life would have the potential to affect the larger unit. This is a severe concern for a combat system.

A New Mission Statement

According to Fugazotto, a mission statement is a brief explanation of what an organization does (2009). It can be used as a guiding light, as inspiration, and as a measure of success. It states what is to be accomplished but not how. It does this because, as the organization evolves, the means for continuing to accomplish that mission will change. Mission statements should not change, even as methods do.

With this understanding comes the realization that the mission statement for the legacy squad and fire team is insufficient. Recall that the mission of the Marine rifle squad is:

“...to locate, close with and destroy the enemy by fire and maneuver, or repel the enemy's assault by fire and close combat.” (Marine Rifle Squad, 2002)

This mission statement serves its purpose as an inspiring idea that will move the warfighter to action. Only the statement “Find the enemy and kill him,²⁵” might have been more moving. It would also have left the young legacy leader with more tactical

²⁵ From Richthofen to Patton, many warfighters in history have used these words.

options. The legacy mission statement, as it stands, is based on the system's nearly exclusive reliance on the Intruder and the Arrestor. It instructs the squad or fire team leader to find, get close to, and kill the enemy or drive him off. It prescribes using firepower dominance to facilitate maneuver. A mission statement, however, is not an instruction.

Mission statements do not, and should not, contain instructions. The Marine Corps agrees with this by separating the Mission from the Execution in its five-paragraph order and describing the mission as “[a] clear, concise statement of the task which the squad must accomplish (Squad five-paragraph order., 1991).” The *how* is kept separate in the Execution section. This disconnect in the same book between the broad mission of the squad described in the mission statement and the definition of what standard missions should look like is understandably vexing.

The cell system relies on many roles to fulfill its mission but what is the mission? “Kill the enemy,” seems woefully inadequate, even if it strikes the right chord. The cell in this project is applied to the Marine Corps, an organization that fights wars. In the Legacy Model section, war was defined in dictionary and military terms. From that, an overarching mission of warfighters was expressed. This purpose for war can be seen as a mission statement, given that all stakeholders invested in it have this as an overarching goal. It is sensible that the mission of the warfighter should be the same for every component of the organization to which the warfighter belongs. Thus the mission for units utilizing the Marine Cell system is:

- To reduce the enemy capability;
- To conserve and/or distribute the preferred disposition.

This is perhaps not as poetic as the previous mission statement but it is exactly what the individual, the team, and the squad must accomplish. It contains within it a way to measure success. And it is broad enough to allow the warfighter to determine how this will be accomplished. It is additionally easily broken into component missions. This new mission statement is likely to have an effect on tactics, leadership, and culture.

5. Conclusion

The Cell

It should be clear by now that the term *Marine Rifle Squad* is inherently limited. The idea of a rifle unit is limited. Even the base Marine described in this project was not a rifleman (Intruder). His bayonet was not constantly fixed. When not on safe, his rifle was on semi, not burst as would be the case for the Arrestor. And he did not walk around with a grenade in his hand as might the Fusilier. As the standard legacy Marine, he was a marksman (Excisor). This is sensible given that the Marine Corps prides itself on marksmanship. But the role of Excisor is a specialization, one of many possible. There is no generic unit that one can simply summon up to answer all problems. Units are built to purpose.

The idea that a rifle unit is the fundamental unit from which all units are built dissolves with the cell system. Instead, an undifferentiated unit consisting of the most basic of the four categories is the fundamental unit, yet still specialized. Selecting the unit's primary task role, and therefore principal weapon, determines what type of unit it is. But this system is not just about weapons, not just about the Marine Corps. What this project introduced was:

1. a new organizational system and language (both verbal and graphic);
2. one particular application of it (Marine Corps).

At its core, the original purpose of this project was to offer a system that better reflected the natural behavior of the stakeholders: the unit, allies, and enemy. However, simply by changing the language, new tactical options become available.

The legacy model does work. And where it does not, leaders wisely disregard it. The cell system does not change or even drastically affect the tactical practices already in use. It has been no surprise that the system in place works well. If it did not, the doctrinal rifle squad would not be used at all. The casual user of the system will barely notice the organizational change at all because the cell system is designed to behave in a manner that more closely reflects what the warfighter does naturally. The legacy system, conversely, restricts the user, compelling him to act beyond its direction.

So why is this system called the *cell*? A fortunate accident resulted in a surprising relationship between the cell system, which during its development bore a different name, and the processes of biological organisms. A biological cell in an organism contains all of the genetic information necessary to become any other cell in the organism. Their genomes are identical, whether a cell is taken from the hand or the heart. Consider the process of meiosis, where an embryonic stem cell responds to external stimuli and divides. As each cell divides it differentiates, expressing itself differently according to its interpretation of the DNA. Each cell has the information and ability to create or become

any other cell in the body, but it specializes in the particular role that is needed (Campbell, 1996).

A unit is initially formed similarly to the fertilization of an ovum. In the cell system, the force role is the ovum and the task role is a single sperm cell. In biology the stimulus (or trigger) to divide and differentiate comes from chemical cues affecting the cell. For the cell system, this can come from friendly or enemy forces, cues within the unit, or even the environment in which the unit finds itself. As the cell specializes, so do units in the cell system.

Figure 19 and 20 demonstrate this.

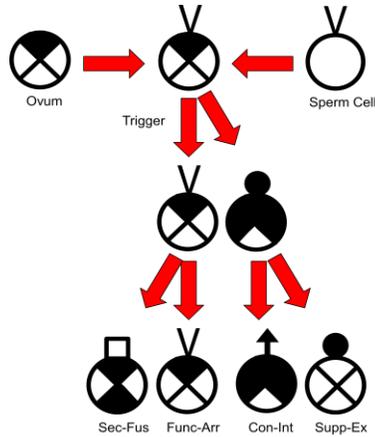
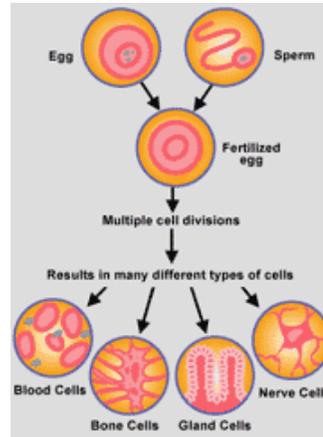


Figure 19: Cell System Specialization



(Zikovic, 2006)

Figure 20: Cell Differentiation

Each individual possesses the information necessary to build an entire unit, just as each cell in the body contains the coding necessary to build an entire organism. As DNA can express itself in a nearly infinite variety of organisms, cell system principles can as well. The number of possible uses is, for all intents, limitless. Units do not exist in a vacuum. They exist in a particular context which influences how they behave and what they carry. The decision to change, to act, to be, must ultimately come from within. No entity can be pushed, cajoled or compelled to act against their will. The power of the cell is in the freedom of the unit to determine what is best on its own.

Future Explorations

If the world of the cell is a car, then the portion covered in this paper has been the supposition of internal combustion coupled with a description of just one kind of piston. This work, metaphorically a few pounds of carefully arranged aluminum and steel, implies much more material, offers the potential to answer many other questions, and can be applied to many non-military fields.

A great deal of research, analysis, and conceptual work did not make it into this paper. The cell system, and its Marine application, is the result of years of research and analysis. It is drawn from many books, documentaries, observations, and conversations. Many of the areas of study which contributed substantially to this are not or are only lightly addressed in this paper. A few areas may have appeared utterly unrelated unless many pages were spent in their explanation. Each represents large additional bodies of

work waiting to be written. The most pressing of those are the iterations, applications, and implications of the system.

Iterations

There are many unit instantiations that exist in between the units expressed here. This system needs deeper explanation of roles and the units covered including examples of units, how they might be armed, and how they might behave based in real-world examples (as was done with sets). An exploration of larger units and the effects of scale on time are critically important. These aspects and more represent parts of this system that are simply waiting to be written.

To facilitate this, the entire system can, and should, be modeled in the Unified Modeling Language²⁶ (UML), the standard for system design (Systems Modeling Language, 2007). This utility is normally employed to remove ambiguity from complex processes, making the correct decision a matter of matching the situation to the protocol. This has been an invaluable resource in computer programming and large operations with many moving parts to include everything from air traffic control to manufacturer. With the cell, the modeling would be used to show organizational structure and what options were available in different areas within the organization. It would not, however, dictate how those options are to be employed.

Applications

Despite this project's focus on the military application, it should be clear that organizational systems from any period in human history can be modeled using the cell system. The system can be applied merely by reviewing that organization's mission statement and deriving task roles. The cell system was applied to the Marine Corps in this project through the definition of Marine-based task roles and a Marine mission statement. Of personal interest to this author for future application are the educational system and the space program.

Implications

What does the use of this system mean for the rest of society? How does it affect culture, management, and technology? What affect does it have on the fields that have contributed to it? Interpretations of communities of practice, personal responsibility, and the creation of organizational contributors are waiting to be explored.

Final Thoughts

For the first time in history, we no longer hear about war only in terms of numbers lost or units defeated in battle. Word of success or failure does not travel one hundred miles on horseback to a town over three days with only statistics: Company G, 3rd Battalion wiped out, 250 killed. Instead we see the individual faces of the dead one at a time. They can be searched on the Internet, viewed over and over, and remembered. War today is very personal, even for those who are not connected to it directly.

²⁶ UML, like Systems Modeling Language (SysML), "is a general-purpose graphical modeling language for representing systems..." (Friedenthal, 2009)

It could be argued that a single life today, at least in the eyes of those who command and those who record battle, is more valuable. In economic terms, once you have factored in a public education, a minimum age requirement of eighteen, an ad campaign to coerce an all-volunteer military, boot camp, advanced combat training, military occupational specialty (MOS) training, weapons and equipment, transportation, ad infinitum... one modern warfighter is undoubtedly much more expensive than a traditional one. That statement may have appeared callous but it makes an important point. One should not think of the warfighter as disposable, at least in part because it is immensely economically wasteful.

Of course, human lives are ultimately the most valuable asset. If that were not the case, million-dollar jets would not have ejector seats. Our warfighters are the parents, siblings, and children of our citizens. They are not ants to swarm a termite hill, each with a chance of being killed tied to the roll of a die. The idea of the expendable pawn needs to vanish from military thinking. It largely has already. But the cell system goes a step further. It treats every piece on the board, pawn or otherwise, like the queen, both powerful and valuable, to be employed wisely and not to be wasted.

When this project was begun, it was with two ideas in mind:

1. Create a system that does its share to create good people.
2. Give those people the freedom to use their good sense.

Both of those ideas are rich with subjectivity and bias, but that is where creative endeavors begin. War is fundamentally art, the intersection of the rational and the irrational; the predictable and the unpredictable. All art is the quest for formlessness. It begins with a journey to do a thing well: to paint a likeness or to throw a punch. But on the other side is mastery where the artist simply creates without structure or form and the thing that is created could not have otherwise come into existence. It is the attempt of the artist to take into the self an understanding of the world and push back out an interpretation of it using the tools and medium appropriate to him. Art is by nature unpredictable and chaotic. The artist fails when what is created ceases to be unique, when the tools used are not employed with technical proficiency, and when the innate ability of the artist is not carefully, deliberately nurtured.

Battles are not won because a leader gave the right order. Battles are won because intelligent, willful persons were placed in challenging situations and had the freedom to act. This freedom may have been given by a higher authority or it may have been taken by the person under the trying condition. In either case, immediate action is most correct when it is born from a talented artist in the moment. The cell system creates that owner-of-moments and sets him to work.

6. Appendices

- A. Bibliography
- B. Glossary
- C. Military Ranks and Weapons
- D. Pocket Marine Cell Guide

Appendix A: Bibliography

- Amos, J. (2007, March). Marine Corps operations in complex and distributed environments. *Marine Corps Gazette*, 91 (3), pp. 12-14.
- Bakken, B. G. (2003). Dynamic intuition in military command and control. Why it is important, and how it should be developed. *Cognitive Technology Work*, 5, pp. 197-205.
- Bensimon, E. N. (2000). What teams can do. How leaders use - and neglect to use - their teams. In M. Brown, *Organization & governance in higher education* (pp. 244-257). Baltimore, MD: Johns Hopkins University Press.
- Benson, B. (2007). *Berry Benson's Civil War book. Memoirs of a Confederate scout and sharpshooter.* (S. Benson, Ed.) Athens, GA: University of Georgia Press.
- Campbell, N. (1996). Meiosis and sexual life cycles. In N. Campbell, *Biology*. (4th Edition ed., pp. 228-234). Benjamin/Cummings Publishing, Inc.
- Clerk, J. (1827). *An essay on naval tactics*. Edinburgh: Adam Black.
- Cohen, M. M. (1986). Leadership in an organized anarchy. In C. Brown, *Organization & governance in higher education* (pp. 16-35). Harvard Business School Publishing.
- Culy, C. (1985). The complexity of the vocabulary of bambara. *Linguistics and Philosophy*, 345-351.
- Driscoll, M. (2005). Self-efficacy beliefs. In M. Driscoll, *Psychology of learning for instruction*. (3rd ed., pp. 316-319). Boston, MA: Pearson Education, Inc.
- Friedenthal, S. M. (2009). *A practical guide to SysML. The systems modeling language*. Burlington, MA: Morgan Kaufmann Publishers.
- Fugazzotto, S. (2009). Mission statements, physical space, and strategy in higher education. *Innovative higher education* (34), 285-298.
- Glenn, J. (2002, February). Cold steel in Korea. *Military History*, 18 (6), pp. 54-61.
- Goulding, V. (2009, December). The rifle company experiment. A looking glass to change. *Marine Corps Gazette*, pp. 67-69.
- Harris, M. (2000). The case for squad sharpshooters. *Infantry* (September-December 1999), 23-28.

Hutchins, E. (1991). The social organization of distributed cognition. In E. Hutchins, *Perspectives on socially shared cognition*. (pp. 283-307). Washington, DC: American Psychological Association.

M27 Infantry Automatic Rifle. (2010, March 25). Retrieved March 18, 2011, from Wikipedia: http://en.wikipedia.org/wiki/M27_Infantry_Automatic_Rifle

McConachy, B. (2001, July). The roots of artillery doctrine. Napoleonic artillery tactics reconsidered. *The Journal of Military History*, 3 (65), pp. 617-640.

McManus, K. (2000). How fast is your OODA loop? *Institute of Electrical Engineers Solutions*, 32 (2), p. 18.

Meese, M. (1993). Institutionalizing maneuver warfare. The process of organizational change. In R. Hooker, *Maneuver warfare. An anthology*. (p. 194). Novato, CA: Presidio Press.

Melody, P. (1990). *The infantry rifle squad. Size is not the only problem*. Fort Leavenworth, KS: United States Army Command and General Staff College.

Merriam-Webster. (2011, February 21). *War*. Retrieved February 21, 2011, from Merriam-Webster: <http://www.merriam-webster.com/dictionary/war>

Miller, K. (2009). Classical approaches. In K. Miller, *Organizational communication. Approaches and processes*. (5th Edition ed., pp. 17-18). Boston, MA: Wadsworth Cengage Learning.

Poole, J. (1996). *The last hundred yards. The NCO's contribution to warfare*. Emerald Isle, NC: Posterity Press.

Riggio, R. (2008). In R. Riggio, *Introduction to Industrial/Organizational Psychology*. Upper Saddle River, NJ: Pearson Education, Inc.

Riper, P. (1997). A Concept for Future Military Operations on Urbanized Terrain. In C. Division, *Warfighting Concepts for the 21st Century* (pp. VII-3). Quantico, VA: Marine Corps Combat Development Command.

Rumelhart, D. H. (1986). A general framework for parallel distributed processing. Cambridge, MA: MIT Press.

Senge, P. (1990). The leader's new work. Building learning organizations. In C. Brown, *Organization & governance in higher education*. (pp. 287-304). Cambridge, MA: MIT Sloan School of Management.

Systems Engineering Handbook Development Team of INCOSE. (2007). Systems Modeling Language. In *Systems engineering handbook. A guide for system life cycle*

processes and activities. (3.1 ed., p. 7.7). International Council on Systems Engineering.

Uhle-Wettler, F. (1993). Auftragstaktik: Mission Orders and the German Experience. In R. Hooker, *Maneuver warfare. An anthology*. (pp. 236-245). Novato, CA: Presidio Press.

United States Marine Corps. (2011). *Enlisted Ranks*. Retrieved April 22, 2011, from Marines.com:
http://www.marines.com/main/index/winning_battles/ranks_responsibilities/enlisted_ranks

United States Marine Corps. (1997). First floor building entries. 2401. In *Military operations on urban terrain* (MCI 03.66b ed., p. 2.17). Washington, DC: Marine Corps Institute.

United States Marine Corps. (1997). Gaining Advantage. In U. S. Corps, *Tactics* (Vols. MCDP 1-3, pp. 46-47). Washington, DC: Headquarters Marine Corps.

United States Marine Corps. (n.d.). *Marine Corps Leadership Traits*. Retrieved April 27, 2011, from Strategic Leadership Studies:
http://www.au.af.mil/au/awc/awcgate/usmc/leadership_traits.htm

United States Marine Corps. (2002). *Marine Rifle Squad* (Vols. MCWP 3-11.2). Quantico: Marine Corps Combat Development Command.

United States Marine Corps. (1997). Nature of War. In *MCDP 1-1: Warfighting* (p. 4). Washington, DC: Department of the Navy, Headquarters United States Marine Corps.

United States Marine Corps. (2011). *Officer Ranks*. Retrieved April 22, 2011, from Marines.com:
http://www.marines.com/main/index/winning_battles/ranks_responsibilities/officer_ranks

United States Marine Corps. (1992). Special considerations for the 60-mm mortar section. In *Tactical employment of mortars* (FMFM 6-19 ed., pp. 8-2). Washington, DC: US Army.

United States Marine Corps. (1991). Squad five-paragraph order. In U. S. Corps, *Marine rifle squad* (pp. E-1). Quantico, VA: Marine Corps Combat Development Command.

United States Marine Corps. (1997). *Tactics*. Washington, DC: Headquarters Marine Corps.

Vandergriff, D. (2010). When do we teach the basics? *Joint Force Quarterly*, 3rd Quarter (58), pp. 69-74.

Wolfram, S. (2002). *A New Kind of Science*. Stephen Wolfram, LLC.

Zikovic, B. (2006, December 7). *From two cells to many. Cell differentiation and embryonic development*. Retrieved April 28, 2011, from Science Blogs:
http://scienceblogs.com/clock/2006/12/from_two_cells_to_many_cell_di.php

Appendix B: Glossary

Term	Definition	Reference
<i>Arrestor</i>	Makes strong direct engagement with the enemy making any activity on their part hazardous	Cell System
<i>Assimilate</i>	“1.b. to take into the mind and thoroughly comprehend.”	Merriam-Webster
<i>Automatic</i>	“3. Firing repeatedly until trigger is released”	Merriam-Webster
<i>Battery</i>	"5a: a number of similar articles, items, or devices arranged, connected, or used together"; (for the purposes of this project) any unit composed of at least two single-iteration sub-units with the same role	Merriam-Webster
<i>Cell</i>	An individual or group of individuals consisting of basic characteristics, guides, etc which can be adjusted to reflect different roles within the greater organization	Cell System
<i>Commander</i>	(for the purposes of this project) Officer or individual holding the position of an officer	Cell System
<i>Concealment</i>	Protection from enemy observation	USMC
<i>Concept Stage</i>	First stage of systems engineering life cycle consisting of 1) identifying stakeholders' needs, 2) exploring concepts, 3) proposing viable solutions	INCOSE 3.4
<i>Conceptual Systems Engineering</i>	Pursuit of an understanding of people and systems in order to design better systems and yield better users of that system. The CSE is not a specialist but a competent generalist.	
<i>Condition</i>	"4a: a state of being"; "4e: attendant circumstances"; (for the purposes of this project) a circumstance, defined by supportive and disruptive characteristics, in which individuals and units of different disposition must function	Merriam-Webster
<i>Control</i>	Most experienced unit utilizing the least employed task role.	Cell System
<i>Cover</i>	Protection from enemy fire	USMC
<i>Decentralization</i>	"1: the dispersion or distribution of functions and powers; specifically : the delegation of power from a	Merriam-Webster

THE MARINE RIFLE SQUAD

	central authority to regional and local authorities"	
<i>Defilade</i>	A position offering protection from direct engagement. See <i>cover</i> .	USMC
<i>Differentiation</i>	"2: development from the one to the many, the simple to the complex, or the homogeneous to the heterogeneous"	Merriam-Webster
<i>Dilemma</i>	A situation wherein all apparent options have negative outcomes	USMC
<i>Direct</i>	Linear, line-of-sight relationship	USMC
<i>Distributed Operations</i>	"...technique applied to an appropriate situation wherein units are separated beyond the limits of mutual support." - Amos, J (Complex Environments)	(Amos, 2007)
<i>Element</i>	Two teams; Four sets (~8)	Cell System
<i>Esprit de Corps</i>	"the common spirit existing in the members of a group and inspiring enthusiasm, devotion, and strong regard for the honor of the group"	Merriam-Webster
<i>Excisor</i>	Engages high value targets and targets of opportunity from a position of impunity	Cell System
<i>Fire</i>	Discharging a weapon (ie, friendly fire, enemy fire)	USMC
<i>Fire Team</i>	Four Marines	USMC
<i>Force</i>	Greater abstract body (Special Forces, Force Recon, Air Force, etc...); Tend not to require tools	Cell System
<i>Force Role</i>	Roles that are mentally performed. They utilize the Boyd Cycle to apply task roles in support of the unit.	Cell System
<i>Function</i>	Second least experienced unit utilizing the most employed task role. Responds to the direction of Security, immediately bringing the unit's most powerful task role to bear.	Cell System
<i>Fusilier</i>	Engages targets in defilade in such a way that makes that cover a liability.	Cell System
<i>Grenadier</i>	Employs the grenade launcher to engage groups of enemy and targets in defilade.	USMC

THE MARINE RIFLE SQUAD

<i>Gunner</i>	The machine gunner operates the automatic weapon for the fire team, which is the weapon around which the fire team is built. The machine gun is a squad asset. This team member also acts as the assistant team leader.	USMC
<i>Indirect</i>	Non-linear, asymmetrical relationship	USMC
<i>Individual</i>	" a function or part performed especially in a particular operation or process"	Merriam-Webster 2
<i>Instance</i>	A representation or manifestation of something abstract	INCOSE 3.4
<i>Intruder</i>	Engages enemy from closest possible range, physically violating the enemy's space from a direction which the enemy cannot easily defend	Cell System
<i>Job Analysis</i>	"[t]he systematic study of the tasks, duties, and responsibilities of a job and the qualities needed to perform it."	(Riggio, 2008, p. 56)
<i>Job Description</i>	"[a] detailed description of job tasks, procedures, and responsibilities; the tools and equipment used; and the end product or service ."	(Riggio, 2008, p. 57)
<i>Leader</i>	(for the purposes of this project) Non-commissioned officer of rank E-5 or above	Cell System
<i>Legacy</i>	A common military term used to describe equipment or practices that are being phased out. For example, during the later years of the Vietnam War, the M14 rifle was the legacy weapon.	USMC
<i>Marksman</i>	"a person skilled at shooting..."	Merriam-Webster
<i>Operational</i>	Winning the current battle (taking the city)	USMC
<i>Preferred (Preference)</i>	A condition desired by the community	Cell System
<i>Preferred Disposition</i>	Desired state for self and the community of which the self is component.	Cell System
<i>Reduce</i>	Reduction of the enemy's ability to resist by the number or condition of enemy personnel and equipment.	Cell System
<i>Rifleman</i>	The lowest-ranking, least experienced person in the fire team, the rifleman acts as the scout, locating the enemy	USMC

	for the fire team. This role is performed by moving ahead of the unit, utilizing cover provided by the fire team's automatic weapon.	
<i>Role</i>	"2. a function or part performed especially in a particular operation or process <played a major <i>role</i> in the negotiations"	Merriam-Webster
<i>Security</i>	Directs the employment of Function. Second most experienced unit utilizing the second least employed task role, concerned with the short-term activities that might compromise unit welfare.	Cell System
<i>Semi-Automatic</i>	"2. able to fire repeatedly but requiring release and another pressure of the trigger for each successive shot"	Merriam-Webster
<i>Set</i>	Two Individuals (~2)	Cell System
<i>Specialization</i>	"2a: a structural adaptation of a body part to a particular function or of an organism for life in a particular environment"	Merriam-Webster
<i>Squad/Corps</i>	Legacy: Three fire teams (13) Cell: Two elements; Four teams (19)	USMC Cell System
<i>Stakeholder</i>	Any entities involved in or affected by the behavior of a system	Systems Engineering
<i>Strategic</i>	Winning the conflict (ending the war)	USMC
<i>Support</i>	Least experienced unit utilizing the second most employed task role. Receives direction from Control.	Cell System
<i>Tactical</i>	Winning the current fight (taking out a gun position).	USMC
<i>Task</i>	Tends to require tools	Cell System
<i>Task Role</i>	Roles that are physically performed. They are derived from the mission statement of the organization to which the cell system is applied.	Cell System
<i>Team</i>	Two sets (~4)	Cell System
<i>Troop Welfare</i>	Preservation of the unit. Principle concern of the leader	
<i>UML/SysML</i>	Unified Modeling Language/System Modeling Language; the standard graphical language for systems	INCOSE 7.2

THE MARINE RIFLE SQUAD

engineering design

Unit

Any independent maneuverable entity.

Cell System

Unit Set

Any two units in direct connection

Cell System

Appendix C: Military Ranks and Weapons

Table 7: Enlisted Marine Rank Structure

Grade	Rank	Full Rank
E1	Pvt	Private
E2	PFC	Private First Class
E3	LCpl	Lance Corporal
E4	Cpl	Corporal
E5	Sgt	Sergeant
E6	SSgt	Staff Sergeant

(Enlisted Ranks, 2011)

Table 8: Marine Officer Rank Structure

Grade	Rank	Full Rank
O1	2Lt	Second Lieutenant
O2	1Lt	First Lieutenant
O3	Capt	Captain

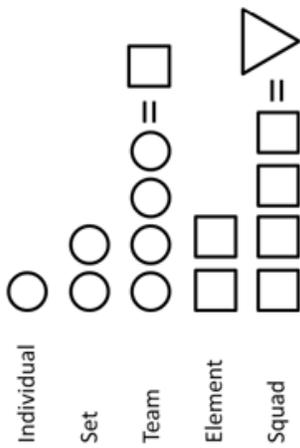
(Officer Ranks, 2011)

Table 9: Task Roles and Suggested Appropriate Weapons

Task Role	Example Weapon	Support Level
<i>Intruder</i>	M4 Assault Rifle w/Bayonet	Individual
	M590 Shotgun	Team
	MP7 Personal Defense Weapon	Squad
<i>Arrestor</i>	M16 Assault Rifle w/Burst Fire or M4 w/Automatic Fire	Individual
	M27 Infantry Automatic Rifle	Team
	M240 Medium Machine Gun	Squad
<i>Fusilier</i>	M67 Hand grenade	Individual
	M4 Assault Rifle w/M203 Grenade Launcher	Team
	M32 Multiple Grenade Launcher	Squad
<i>Marksman</i>	M16 Assault Rifle w/Scope	Individual
	SAM-R Squad Advanced Marksman Rifle or Mk 12 SPR	Team
	M110 Sniper System	Squad

Appendix D: Pocket Marine Cell Guide

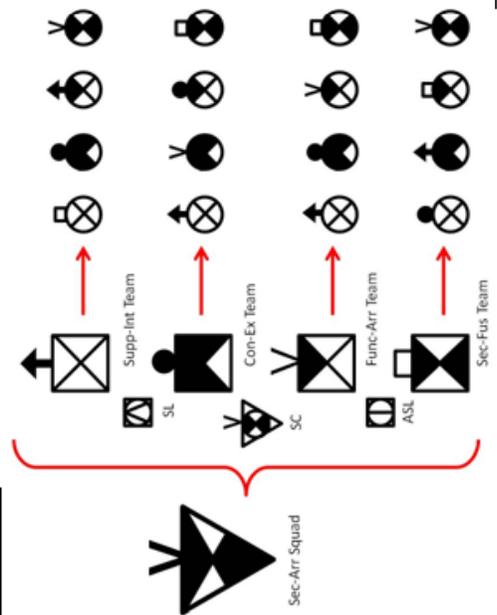
Units



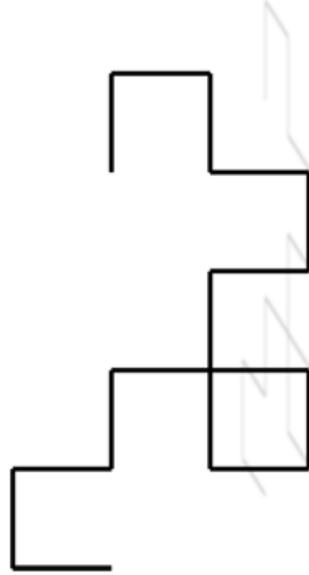
Leaders



Sample Squad



Pocket Guide
to
The Marine Cell



Mission
 To reduce the enemy capability and
 To conserve and/or distribute the preferred disposition.

Gregg Miller
Millergh75@gmail.com
 17-May-2011

Task Roles

Task Roles are physically performed. They are derived from the mission statement of the organization to which the cell is applied. The following roles are specific to the Marine Corps.

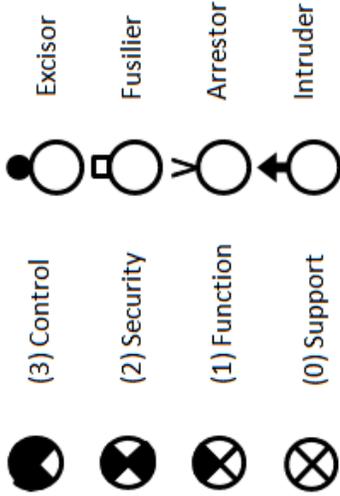
Name	Short Definition	Long Definition
Intruder	Physically violates the enemy space	Engages enemy from closest possible range, physically violating the enemy's space from a direction the enemy cannot easily defend.
Fusilier	Compromises enemy cover	Engages targets in defilade in such a way to make that cover a liability.
Excisor	Reduces individual enemy at distance	Engages high value targets and targets of opportunity from a position of impunity.
Arrestor	Fixes enemy in place	Strongly and directly engages with the enemy, making any activity on their part hazardous.

Force Roles

Force Roles are the manifestation of experience and communication in the cell system.

Name	Definition
Security	Directs the employment of Function. Second most experienced unit utilizing the second least employed task role, concerned with the short-term activities that might compromise unit welfare.
Function	Second least experienced unit utilizing the most employed task role. Responds to the direction of Security, immediately bringing the unit's most powerful task role to bear.
Control	Most experienced unit utilizing the least employed task role. Concerned with long-term activities that will lead to accomplishment of the greater unit's mission. Provides general force direction to the Function and Security pair, and detailed task direction to Support.
Support	Least experienced unit utilizing the second most employed task role. Receives task direction from Control.

Force Roles



Direct

General	Indirect
Arrestor	Fusilier
Excisor	Intruder

Unit Rank – Force Role

Unit Rank	Force Role	Task Need
0 – Support		A – Needed most often
1 – Function		B – Needed 2 nd most often
2 – Security		C – Needed 2 nd least often
3 – Control		D – Needed least often



Sample Sec-Arr Team

