

MOBILITY...  
ONE ASPECT  
of  
THE ART OF WAR

THE LAST CAVALRY CHARGE IN BATTLE OCCURRED RATHER DIFFERENTLY THAN ONE MIGHT THINK. ON 19 MARCH 1942, A BRITISH OFFICER RIDING THE "BEST POLO PONY IN BURMA" LAUNCHED A HEADLONG CHARGE AGAINST A JAPANESE MACHINE-GUN EMPLACEMENT AT THE HEAD OF HIS COMPANY OF THE BURMA FRONTIER FORCES. HE DIED AS HE PROBABLY WOULD HAVE CHOSEN TO DIE AND WITH HIS DEATH CONCLUDED A LONG AND MEMORABLE CHAPTER IN THE HISTORY OF WAR. THE CAVALRY FOR HUNDREDS OF YEARS REPRESENTED WHAT IS GLAMOUROUS AND EXCITING IN WAR. MORE IMPORTANT, THEY PROVIDED THE COMMANDER WITH HIS ARM OF DECISION. FOR CENTURIES THE ART OF GENERALSHIP CONSISTED IN THE MANEUVERING OF TROOPS ON THE BATTLEFIELD UNTIL THE OPPORTUNITY PRESENTED ITSELF TO LAUNCH THE CAVALRY IN SHOCK ACTION.

THIS PAPER, HOWEVER, IS NOT ABOUT THE CAVALRY BUT IS ABOUT THE ART OF WAR; PARTICULARLY AS THIS ART IS REFLECTED IN ONE PRINCIPLE OF WAR WHICH THE WRITER BELIEVES IS THE KEY TO ALL OTHERS... MOBILITY. THE CAVALRY PLAYED AN IMPORTANT PART IN THE HISTORY OF WAR AND THEY WILL BE REFERRED TO AGAIN.

THE SCOPE OF THIS PAPER IS THE CONSIDERATION OF THE PRINCIPLE OF MOBILITY; TO TRACE ITS DEVELOPMENT BY HISTORICAL EXAMPLE; AND TO SUGGEST SOME POSSIBLE APPLICATIONS OF THIS PRINCIPLE, BOTH STRATEGICALLY AND TACTICALLY, TO THE WARFARE OF THE FUTURE.

THE GREEK GENERAL XENOPHON ONCE OBSERVED THAT IN THE FINAL ANALYSIS, THE ART OF WAR BOILS DOWN TO MAINTAINING ONE'S FREEDOM OF ACTION; WHICH INCLUDES, AS A COROLLARY, THE CAPABILITY OF DENYING FREEDOM OF ACTION TO THE ENEMY. FREEDOM OF ACTION REQUIRES FIRST OF ALL, AN EFFORT OF WILL

ON THE PART OF THE COMMANDER. THEN IT REQUIRES AN ARM CAPABLE OF ACTING SO AS TO EFFECT THE COMMANDER'S WILL. IT IS AT THIS POINT THAT THE NEED FOR MOBILITY BECOMES APPARENT. MILITARY MOBILITY MAY BE DEFINED AS MANEUVERING FORCES AGAINST THE ENEMY IN SUCH A WAY AS TO STRIKE HIM A BLOW WITH SUPERIOR FIREPOWER AND SHOCK ACTION THAT WILL DESTROY HIM AND HIS WILL TO RESIST. AMERICAN MILITARY DOCTRINE, ON WHICH THIS PAPER IS BASED, RECOGNIZES NINE PRINCIPLES OF WAR OF WHICH MOBILITY IS ONE. IT MAY BE SAID THAT ALL NINE ARE EQUALLY IMPORTANT TO SUCCESS IN BATTLE; BUT THE PRINCIPLE OF MOBILITY MAY BE SAID TO RANK AS FIRST AMONG EQUALS.

MOST GREAT MILITARY LEADERS OF HISTORY ARE FAMED FOR THEIR APPLICATION OF THIS PRINCIPLE AND THEY HAVE ACHIEVED ASTOUNDING SUCCESSES OVER THEIR OFTEN MORE NUMEROUS BUT MORE SLUGGISH OPPONENTS. ALEXANDER DEFEATING THE PERSIANS, HANNIBAL OUT-MANEUVERING THE ROMANS AT CANNAE, JACKSON MARCHING AROUND HOOKER AT CHANCELLORSVILLE, PATTON OUTFLANKING THE GERMANS IN THE BREAKOUT FROM THE NORMANDY BEACHHEAD ARE CLASSIC EXAMPLES OF TACTICAL MOBILITY.

LET US TRACE THEN THE DEVELOPMENT OF THE ART OF WAR THROUGH THIS PRINCIPLE OF MOBILITY AS THE COMMANDER SEEKS TO MAINTAIN FREEDOM OF ACTION AND TO DENY IT TO THE ENEMY. LET US CONSIDER THE STALEMATES THAT HAVE RESULTED WHEN FREEDOM OF ACTION HAS BEEN LOST AND THE NEW WEAPONS AND TACTICS THAT THESE STALEMATES BROUGHT FORTH; AND FINALLY, LET US CONSIDER SOME POSSIBLE APPLICATIONS OF THIS PRINCIPLE IN THE FUTURE.

PREHISTORIC MAN LEFT NO MEMOIRS DESCRIBING HIS STRATEGY AND TACTICS OF BATTLE; BUT WE KNOW THAT HIS WARS WERE HIGHLY PERSONAL IN NATURE. THE HOSTILE ARMIES WOULD GATHER AND AT A SIGNAL FROM THEIR LEADERS WOULD FALL UPON EACH OTHER... EACH SOLDIER PICKING OUT AN OPPOSITE NUMBER AND ENGAGING HIM IN HAND TO HAND COMBAT. THE EXERCISE OF LEADERSHIP WAS LARGELY A MATTER OF PERSONAL COURAGE AND THE COMMANDER COULD DO LITTLE MORE TO

INFLUENCE THE COURSE OF THE BATTLE UNTIL INNOVATIONS WERE INTRODUCED TO MAKE THE EMPLOYMENT OF ARMIES IN THE FIELD MORE LOGICAL, DISCIPLINED AND ORGANIZED.

THE FIRST INNOVATION INTRODUCED INTO WARFARE WAS THE CHARIOT WHICH CAME INTO USE ABOUT 3500 B.C. CHARIOTS WERE OF TWO TYPES, LIGHT AND HEAVY. A LIGHT CHARIOT WAS PULLED BY ONE OR TWO HORSES AND CARRIED TWO MEN, A DRIVER AND A SPEAR-THROWER. THEY DEPENDED ENTIRELY UPON THEIR SPEED AND MOBILITY FOR PROTECTION. THEY WERE USED FOR RECONNAISSANCE, HARRASSMENT AND PURSUIT. A FAVORITE TACTIC OF THE LIGHT CHARIOTS WAS TO CHARGE SWIFTLY AT THE VAN OF THE ENEMY, SUDDENLY WHEEL AND PERMIT THE SPEAR-THROWERS TO DISCHARGE A SHOWER OF SPEARS, AND WITHDRAW RAPIDLY BEFORE THE ENEMY COULD RETALIATE.

THE HEAVY CHARIOTS WERE PONDEROUS MACHINES DRAWN BY SEVERAL HORSES AND CARRYING CREWS OF THREE OR MORE MEN....A DRIVER, ONE OR MORE SPEARMEN, AND ONE OR MORE SHIELD BEARERS TO PROTECT THE OTHERS. THE HORSES WERE OFTEN PROTECTED WITH BLANKETS AND OFTEN LONG SCYTHE-LIKE BLADES WERE ATTACHED TO THE WHEELS TO CUT DOWN THE ENEMY FOOT SOLDIERS. THESE CHARIOTS USED THE PRINCIPLE OF SHOCK ACTION; THAT IS, OF STRIKING A HEAVY BLOW WITH GREAT SPEED AND VIOLENCE. THEY WERE HELD IN RESERVE AND COMMITTED AT THE DECISIVE MOMENT TO INFLUENCE THE ACTION.

FOR HUNDREDS OF YEARS THE STRENGTH OF AN ARMY WAS JUDGED BY THE NUMBER OF ITS CHARIOTS. THE EGYPTIANS, HITTITES, BABYLONIANS, AND PERSIANS WERE WORLD POWERS BECAUSE OF THEIR CHARIOT MOUNTED ARMIES. THE HEBREWS WANDERED IN THE WILDERNESS FORTY YEARS BECAUSE THEY DISOBEYED THE DIVINE COMMAND; BUT IT IS POSSIBLE THAT THEY COULD HAVE WANDERED IN A MORE COMFORTABLE COUNTRY HAD THEY POSSESSED CHARIOTS. EVEN AFTER JOSHUA LED THEM ACROSS THE JORDAN THEY WERE ABLE TO CAPTURE ONLY THE HILL COUNTRY

OF PALESTINE. "AND THEY SMOTE THE CANAANITES...ALSO JUDAH TOOK GAZA WITH THE BORDER THEREOF, AND ASHKELON WITH THE BORDER THEREOF, AND EKRON WITH THE BORDER THEREOF....AND HE DROVE OUT THE INHABITANTS OF THE HILL COUNTRY; FOR HE COULD NOT DRIVE OUT THE INHABITANTS OF THE VALLEY, BECAUSE THEY HAD CHARIOTS OF IRON". THUS DID THE AUTHOR OF THE BOOK OF JUDGES DESCRIBE THEIR EXPERIENCES WITH THEIR CHARIOT ARMED OPPONENTS.

ON THE OTHER HAND, THE CHARIOT HAD DISADVANTAGES WHICH EVENTUALLY LED TO ITS REPLACEMENT BY THE SOLDIER MOUNTED ON THE HORSE, RATHER THAN RIDING IN THE CHARIOT. THE CHARIOT'S CHIEF DISADVANTAGE WAS ITS HEAVY WEIGHT WHICH RESTRICTED ITS USE TO FAVORABLE TERRAIN. IT COULD ALSO BE IMMOBILIZED BY KILLING ITS HORSES.

THE CARTHAGINIANS WERE THE MOST NOTABLE EXPONENTS OF CAVALRY IN THE ANCIENT MEDITERRANEAN WORLD. HANNIBAL, DURING THE FIRST THREE YEARS OF HIS CAREER, COMMANDED THE CARTHAGINIAN CAVALRY. HIS SKILFUL HANDLING OF HASDRUBAL'S CAVALRY PLAYED A LARGE PART IN HIS VICTORY OVER THE ROMANS AT CANNAE; CONVERSELY, IT WAS THE ILL-DISCIPLINED BEHAVIOUR OF THE CARTHAGINIAN CAVALRY AT ZAMA WHICH LED TO THE FINAL DEFEAT OF CARTHAGE.

THE CAVALRY FORMED A PART OF THE ROMAN ARMY THOUGH IT DID NOT PLAY A MAJOR ROLE. THE ROMANS PREFERRED TO DEPEND ON THE INFANTRYMAN IN DOGGED HAND TO HAND COMBAT TO WIN THEIR VICTORIES. DURING THEIR DAYS OF GLORY, THE ROMANS ACHIEVED STRATEGIC MOBILITY BY MEANS OF THEIR FAMOUS ROADS, OVER WHICH THEY MOVED THEIR PREDOMINANTLY INFANTRY ARMIES WITH A SPEED OF WHICH THEIR ENEMIES WERE NOT CAPABLE. THE ROMANS WERE NOT DASHING SOLDIERS. THEIR TACTICS CONSISTED OF MARCHING AGAINST THE ENEMY, FORCING HIM TO FIGHT ON THEIR TERMS, AND NEVER LETTING GO UNTIL HE WAS DESTROYED. THE SUPERB DISCIPLINE OF THE ROMANS...IT IS SAID THAT THEY FEARED THEIR OFFICERS MORE THAN THE ENEMY...MADE SUCH TACTICS VERY EFFECTIVE UNDER LEADERS LIKE POMPEY OR CAESAR. LESSER LEADERS, RELYING ON SUCH TACTICS

WERE LATER OUTGENERALED; AND THE FALL OF ROME WAS BROUGHT ABOUT MILITARILY BY MOUNTED ARMIES OF BARBARIANS WHOSE SPEED AND MOBILITY DEFEATED THE BETTER ARMED ROMANS.

FROM THE FALL OF ROME UNTIL THE INVENTION OF FIREARMS, WARS WERE FOUGHT MOSTLY BY MOUNTED MEN. THIS PERIOD "WHEN KNIGHTHOOD WAS IN FLOWER" WAS MARKED BY MANY BLOODY WARS BUT LITTLE OR NOTHING WAS ADDED TO THE ART OF WAR. AS IN THE EARLIEST TIMES, THE COMMANDER COULD DO LITTLE TO AFFECT THE OUTCOME OF BATTLE ONCE HIS TROOPS WERE COMMITTED.

AFTER GUNPOWDER WAS INTRODUCED ARMIES BEGAN TO TAKE ON A MODERN LOOK. THE MUSKETEER WAS NOW THE INSTRUMENT WHICH PROVIDED THE COMMANDER WITH FREEDOM OF ACTION. THE NAME INFANTRY DATES FROM THIS TIME. IT COMES FROM THE CUSTOM OF THE FRENCH KINGS OF CALLING THEIR FOOT SOLDIERS "THEIR CHILDREN". THERE WAS GREAT JUSTIFICATION FOR SO CALLING THEM BECAUSE THE FRENCH ARMIES WERE THE MOST FEARED IN EUROPE.

AT THIS TIME THE SYSTEM OF DRILL AND CADENCE, OF WHICH ARMIES TODAY RETAIN A VESTIGE, WAS INTRODUCED. THE BEST DRILLED ARMY WAS THE MOST EFFECTIVE BECAUSE ITS SOLDIERS COULD FIRE THEIR CUMBERSOME PIECES WITH GREATER SKILL AND RAPIDITY.

SOON A STALEMATE EXISTED. THERE IS A LIMIT TO THE SPEED AT WHICH TROOPS CAN LOAD AND FIRE WEAPONS, OR AT WHICH THEY CAN MARCH AGAINST THE ENEMY. TO GIVE THE COMMANDER AN ARM OF MANEUVER THE CAVALRY WAS RETURNED TO USE EQUIPPED WITH FIREARMS AND SABERS. FROM THIS TIME UNTIL THE FIRST WORLD WAR THE CAVALRY REMAINED THE PRINCIPLE ARM OF MOBILITY, FIREPOWER AND SHOCK ACTION.

SHOCK ACTION IS GENERALLY UNDERSTOOD TO MEAN THE CHARGE OF MOUNTED MAN AGAINST MOUNTED MAN, OR MOUNTED MAN AGAINST MAN ON FOOT. IT IMPLIES THE CUT AND THRUST OF SABER AND LANCE AGAINST SWORD AND BAYONET. CAVALRY CHARGES DID NOT ALWAYS TAKE PLACE AT A GALLOP, HOWEVER, AT THE TIME OF GUSTAVUS ADOLPHUS AND OLIVER CROMWELL, THE CAVALRY ADVANCED AT THE WALK

OR AT THE MOST A SLOW TROT. THE HORSEMEN THEN HALTED TO DISCHARGE THEIR PISTOLS AND CARBINES; THEY DREW THEIR SWORDS ONLY WHEN THE ENEMY BROKE RANKS IN FLIGHT. ONE CAN IMAGINE THAT THE SLOW AND STATELY ADVANCE OF THE CAVALRY AND THE HALTING TO PRIME AND FIRE THEIR WEAPONS WAS A VERY DISTURBING SIGHT TO THE OPPOSING INFANTRY.

TO INCREASE SPEED AND VIOLENCE OF THE CAVALRY CHARGE THE LANCE WAS INTRODUCED IN EUROPE ABOUT 1800 ALTHOUGH IT WAS NEVER ACCEPTED IN THE AMERICAN ARMY.

NAPOLEON UNDERSTOOD WELL THE USE OF MANEUVER AND SHOCK ACTION AND HE ADDED THE REFINEMENT OF MASSED AND SHIFTING ARTILLERY FIRE. IT IS IRONIC THAT HIS DEFEAT AT WATERLOO CAN BE ATTRIBUTED IN PART TO THE FAILURE OF HIS CAVALRY TO CARRY OUT ITS MISSION WHEN THEY CHARGED INTO THE FAMOUS SUNKEN ROAD AND WERE THOROUGHLY DISORGANIZED. THE CHARGE OF THE ROYAL SCOTS GREYS REGIMENT OF CAVALRY HELPED HIS GREAT RIVAL, WELLINGTON, WIN THE FIELD.

THE AMERICAN CIVIL WAR DOOMED THE CAVALRY ALTHOUGH IT WAS NOT GENERALLY RECOGNIZED AT THE TIME. THE INVENTION OF THE BREECH LOADING RIFLE, FOR THE FIRST TIME PROVIDED THE INFANTRYMAN WITH A WEAPON WITH WHICH HE COULD WITHSTAND A CAVALRY CHARGE. THE USE OF COVER AND CONCEALMENT CAME TO BE RECOGNIZED AS SOUND TACTICS. THE USE OF WIRE ENTANGLEMENTS AND RIFLE PITS (WE WOULD CALL THEM FOXHOLES, TODAY) BECAME ACCEPTED PRACTICE IN DEFENSE. THE IMPORT OF THESE DEVELOPMENTS WAS NOT REALIZED AT THE TIME.

DURING THE WAR EXCELLENT USE OF THE CAVALRY WAS MADE ON BOTH SIDES. LEE HAD A SUPERB CAVALRY OFFICER IN "JEB" STUART AND AFTER HIS DEATH, A COMPETENT CAVALRY COMMANDER IN JUBAL A. EARLY. NATHAN B. FORREST IS SAID BY MANY TO BE THE FINEST CAVALRY COMMANDER WHO EVER LIVED. HE CERTAINLY SUCCINCTLY SUMMED UP HIS THEORY OF WAR IN HIS OFT QUOTED REMARK ABOUT GETTING THERE FIRST WITH THE MOST MEN, ALTHOUGH IT IS SERIOUSLY TO BE DOUBTED THAT HE WAS SO UNGRAMMATICAL AS IS POPULARLY THOUGHT.

THERE WERE GOOD CAVALRY LEADERS ON THE UNION SIDE AS WELL...MEN LIKE RANALD S. MACKENZIE, WESLEY MERRIT, AND PHILIP SHERIDAN. GRANT MADE EXCELLENT USE OF SHERIDAN'S CAVALRY IN THE CLOSING DAYS OF THE WAR AND IT WAS SHERIDAN CLOSING LEE'S ROUTE OF RETREAT THAT ACTUALLY COMPELLED HIS SURRENDER AT APPOMATOX.

THE GREAT LESSON OF THE CIVIL WAR, SEEN IN RETROSPECT, WAS THE ALMOST UNBEATABLE COMBINATION OF FIREPOWER AND MOBILITY AND THE INABILITY OF THE HORSE-MOUNTED TROOPER TO COMBAT THE NEW WEAPONS THAT HAD BEEN OR WERE BEING DEVELOPED.

DURING THE INTERVAL BETWEEN THE CIVIL WAR AND THE FIRST WORLD WAR THE MACHINE GUN WAS INVENTED. THE GERMAN WEAPON WAS THE MAXIM GUN, THE BRITISH, THE LEWIS GUN, AND THE AMERICAN WEAPON WAS THE BROWNING, TWO MODELS OF WHICH ARE STANDARD INFANTRY WEAPONS TODAY. THE FIELD MANUAL DESCRIBES THE MACHINE GUN AS A BELT-FED, GAS-OPERATED, CREW-SERVED WEAPON. IT IS CAPABLE OF FIRING FASTER THAN THREE HUNDRED ROUNDS PER MINUTE OF FLAT TRAJECTORY, GRAZING FIRE AGAINST POINT OR AREA TARGETS.

MILITARY LEADERS OF BOTH SIDES IN THE FIRST WORLD WAR WERE AWARE OF THE MACHINEGUN'S CHARACTERISTICS; BUT NONE FULLY REALIZED ITS EFFECTIVENESS AGAINST THE CUSTOMARY INFANTRY FORMATIONS AND AGAINST THE CAVALRY CHARGE. ACCORDINGLY, BOTH SIDES ENTERED THE WAR WITH CONSIDERABLE NUMBERS OF CAVALRY TO PROVIDE MOBILITY AND SHOCK ACTION AND DEPENDING UPON THE HORSE FOR TRANSPORT.

THE FIRST BATTLES OF THE WAR QUICKLY SHOWED LEADERS ON BOTH SIDES THAT THE MACHINEGUN HAD MADE OBSOLETE THE OLD WAYS OF FIGHTING. INFANTRY COULD NOT MARCH NOR A CAVALRY CHARGE BE LAUNCHED IN THE FACE OF WITHERING MACHINEGUN FIRE. WITH THE CAVALRY THUS INEFFECTIVE, THERE WAS NO MOBILE FORCE AVAILABLE TO THE COMMANDER WITH WHICH HE COULD INFLUENCE THE ACTION.

THE REACTION TO THIS REALIZATION WAS THE TRENCH WARFARE WITH WHICH WE ARE FAMILIAR. THE WAR BECAME A MATTER OF MANPOWER. THE ONLY WAY THE

ENEMY COULD BE DEFEATED WAS BY CAPTURING HIS POSITIONS. DUE TO THE EXTENSIVE SYSTEM OF TRENCHES THEY COULD NOT BE OUTFLANKED BUT HAD TO BE TAKEN BY FRONTAL ASSAULT. THESE ASSAULTS THROUGH BARBED WIRE ENTANGLEMENTS IN THE FACE OF GRAZING MACHINEGUN FIRE UNDER HEAVY ARTILLERY BOMBARDMENT WERE EXTREMELY WASTEFUL OF HUMAN LIFE. IT WAS NECESSARY TO ACCEPT TREMENDOUS CASUALTIES IN THE HOPE OF HAVING ENOUGH MEN LEFT TO DEFEAT THE ENEMY AFTER THEY REACHED HIS LINES.

THE SOLUTION TO THIS PROBLEM WAS FOUND BY THAT MAN OF MANY QUALITIES, SIR WINSTON CHURCHILL, THEN LORD OF THE BRITISH ADMIRALTY. THE GERMANS HAD BEEN EXPERIMENTING WITH AN ARMORED VEHICLE AND SOME OF THEM HAD BEEN CAPTURED BY THE BRITISH ARMY AND SHOWN TO CHURCHILL WHEN HE WAS VISITING THE FRONT. THE IDEA OF ARMORED VEHICLES TO DEFEAT MACHINEGUNS APPEALED TO HIM AND HE SUGGESTED TO SOME ARMY MEN THAT IT BE DEVELOPED. CHURCHILL'S SUGGESTION WAS RECEIVED RATHER COOLLY BY THE ARMY HIGH COMMAND...PERHAPS BECAUSE IT WAS ORIGINATED BY A NAVAL PERSON. NEVERTHELESS, CHURCHILL DECIDED TO EXPLORE THE POSSIBILITY OF A FEASIBLE ARMORED VEHICLE. HE HAD ONE OF THE CAPTURED GERMAN MACHINES SENT TO ENGLAND AND TURNED OVER TO SOME NAVAL ENGINEERS. ABOUT A YEAR LATER THE RESULT OF THEIR EFFORTS APPEARED ON THE BATTLEFIELD. IT HAD THE ENGINE AND TRACK-LAYING SUSPENSION OF THE RECENTLY INVENTED CATERPILLER TRACTOR TO PERMIT CROSS COUNTRY MOBILITY. THEY GAVE IT ENOUGH ARMOR PLATE TO TURN MACHINEGUN BULLETS AND ENOUGH WEIGHT TO CRUSH WIRE ENTANGLEMENTS AND GUN POSITIONS.

THESE FIRST ARMORED VEHICLES WERE SHIPPED DISASSEMBLED TO FRANCE IN CRATES MARKED "TANKS" FOR SECURITY. THE NAME STUCK AND BECAME THE OFFICIAL NOMENCLATURE OF ARMORED, FULL-TRACKED VEHICLES. THE NAVAL ENGINEERS WHO BUILT THE FIRST TANKS ARE REMEMBERED EACH TIME THE ARMOR SOLDIER SPEAKS OF THE HULL, BOW, TURRET, DECK, AND HATCHES OF HIS TANK.

TANKS WERE PLACED IN SERVICE IN 1917 IN TIME FOR USEFUL SERVICE IN THE FINAL ARDENNES CAMPAIGN. THE GERMANS WHO HAD ABANDONED THE EFFORT TO



BUILD A TANK, RUSHED DEVELOPMENT OF THEIR VEHICLES AFTER THE BRITISH MACHINES APPEARED; BUT COULD NOT GET THEM INTO PRODUCTION BEFORE THE END OF THE WAR.

IT SHOULD HAVE BEEN APPARENT TO MILITARY LEADERS THAT HERE WAS THE WEAPON THAT HAD REPLACED THE CAVALRY IN PROVIDING MOBILITY, FIREPOWER, AND SHOCK ACTION ON THE BATTLEFIELD. HOWEVER, THE TANK'S POTENTIAL WAS RECOGNIZED BY ONLY A FEW. THE GERMAN GENERAL STAFF SAW IT AND BEGAN TO DO SOME SERIOUS THINKING ABOUT TANK TACTICS AND THE DEVELOPMENT OF BETTER ARMORED VEHICLES. THE FRENCH HIGH COMMAND FAILED TO SEE IT AND DEVOTED THEIR ENERGIES TO THE BUILDING OF THE MAGINOT LINE. A DARING AND OUTSPOKEN YOUNG COLONEL NAMED CHARLES DE GAULLE PROTESTED THIS DECISION AND WROTE A BOOK OUTLINING HIS THEORIES ON THE EMPLOYMENT OF ARMOR IN THE FUTURE. HIS BOOK WAS AVIDLY READ IN GERMANY AND ITS THEORIES PROVED WITH GREAT SUCCESS BY THE GERMAN PANZERS IN THE INVASION OF FRANCE IN 1940.

AN AMERICAN OFFICER, MAJOR GENERAL ADNA CHAFFEE, SAW THE POTENTIAL OF ARMOR AND ARGUED STRONGLY FOR THE ESTABLISHMENT OF AN AMERICAN TANK CORPS. HIS EFFORTS WERE REWARDED BY THE CONVERSION OF SEVERAL CAVALRY UNITS TO ARMOR AND THE OPENING OF AN EXPERIMENTAL ARMOR CENTER AT FORT KNOX, KENTUCKY.

THESE EFFORTS DEVOTED TO ARMOR WERE VINDICATED IN WORLD WAR II, FIRST BY THE GERMANS AS THEY ADDED A NEW WORD, BLITZKREIG, TO OUR VOCABULARIES. THE GERMAN PANZERS ROLLED THROUGH CZECHOSLOVAKIA, POLAND, HOLLAND, BELGIUM, AND FRANCE BYPASSING, OVERRUNNING, AND OUTFLANKING THE SUPPOSEDLY IMPREGNABLE DEFENSES OPPOSING THEM.

THE WAR IN AFRICA BETWEEN ROMMEL AND MONTGOMERY WAS ESSENTIALLY AN ARMORED WAR AND A WAR OF MOVEMENT. AFTER THE INVASION OF FRANCE AND THE BREAKOUT FROM THE NORMANDY BEACHHEAD, THE LIBERATION OF FRANCE AND INVASION OF GERMANY WAS MATERIALLY ASSISTED BY LONG ARMOR THRUSTS OF GENERAL GEORGE S.

PATTON'S THIRD ARMY. THE RUSSIANS ALSO PROVED TO BE VERY GOOD ARMOR SOLDIERS AND ACTUALLY POSSESSED THE FINEST AND MOST ADVANCED TANKS OF ANY OF THE BELLIGERENTS AT THE END OF THE WAR.

AT THIS POINT A SUMMARY AND RESTATEMENT OF OBJECTIVES IS IN ORDER. IT HAS BEEN SHOWN THAT ALL THROUGH HISTORY, THE AIM OF THE MILITARY LEADER HAS BEEN TO MAINTAIN HIS FREEDOM OF ACTION.. THAT FREEDOM OF ACTION DEPENDS ACTUALLY, ON ABILITY TO MOVE TROOPS ON THE BATTLEFIELD AND COMMIT RESERVES AT THE DECISIVE MOMENT. IT HAS BEEN SHOWN HOW THE COMMANDER HAS ALWAYS SOUGHT TO HAVE A MOBILE ARM,...BE IT CHARIOT, CAVALRY, OR TANK... TO PROVIDE THE ARM OF DECISION. IT HAS BEEN SHOWN HOW THE END OF WORLD WAR II LEFT THE TANK IN CHARGE OF THE BATTLEFIELD AND PROVIDING THE FORCE OF MOBILITY, FIREPOWER, AND SHOCK ACTION. IT IS NOW TIME TO GO ON TO THE FINAL OBJECTIVE...TO SUGGEST SOME POSSIBLE APPLICATIONS OF MOBILITY IN THE WARFARE OF THE FUTURE.

NOTHING HAS BEEN SAID UP TO THIS POINT ABOUT THE ATOMIC BOMB AND OTHER NUCLEAR WEAPONS. THIS HAS NOT BEEN OUT OF ANY LACK OF RESPECT FOR THEM. THE ATOMIC WEAPON PROVIDES THE MOST POWERFUL ARGUMENT OF ALL FOR BATTLEFIELD MOBILITY BUT BECAUSE WE HAVE YET TO FIGHT A WAR WITH TACTICAL ATOMIC WEAPONS, CONSIDERATION OF THEM MUST BE RELAGATED TO THE REALM OF POSSIBILITIES.

IN MILITARY THINKING, A BOMB OF 20 KILOTONS, THAT IS, A BOMB WITH THE FORCE OF 20,000 TONS OF TNT, IS CONSIDERED NORMAL FOR OPERATIONAL PLANNING. SUCH A BOMB WOULD CAUSE DESTRUCTION AND DAMAGE TO ORDINARY BUILDINGS WITHIN A RADIUS OF SEVEN MILES FROM GROUND ZERO. AN INFANTRYMAN IN A DEEP FOXHOLE WITH OVERHEAD COVER IS SAFE FROM THE BLAST AT A DISTANCE OF 2,100 YARDS OR MORE FROM GROUND ZERO. A TANK, HOWEVER, PROVIDES ITS CREW WITH PROTECTION AGAINST BLAST, HEAT, AND MOST RADIATION AS CLOSE AS 800 YARDS FROM GROUND ZERO. A TANK'S WEIGHT AND METAL THUS PROVIDE CONSIDERABLE IMMUNITY FROM THE EFFECTS OF AN ATOMIC BLAST. OF MORE IMPORTANCE

IS ITS OFFENSIVE CAPABILITIES DUE TO THE ARMOR PROTECTION, FIREPOWER AND MOBILITY.

THE BATTLEFIELD OF THE FUTURE WILL REQUIRE THE USE OF GREATER DISTANCES AND MOBILITY THAN EVER BEFORE, IN WORLD WAR II, A BATTALION COMMANDER CALLED UPON TO ATTACK OR DEFEND ON A FRONTAGE OF 2,000 YARDS THOUGHT HIMSELF DANGEROUSLY EXTENDED. THIS COMMANDER WAS ALSO VERY CAREFUL TO WATCH HIS FLANKS AND KEEP THEM SECURE. PRESENT THINKING NOW CALLS FOR A MINIMUM DISTANCE OF 6,000 YARDS BETWEEN CENTERS OF BATTALION AND LARGER UNITS AND 4,000 YARDS BETWEEN PERIMETERS. IN THIS WAY AN ATOMIC BLAST IS UNLIKELY TO DESTROY MORE THAN ONE BATTALION SIZED UNIT. INSTEAD OF CONSIDERING HIS FLANKS ONLY, A COMMANDER MUST ORGANIZE FOR ALL ROUND PROTECTION.

A MAJOR REORGANIZATION OF OUR GROUND FORCES IS UNDER WAY AS A RESULT OF THESE NECESSITIES, KNOWN AS THE PENTOMIC CONCEPT. PENTOMIC IS A COINED WORD DESCRIBING THE ORGANIZATION OF THE DIVISION INTO FIVE BATTLE GROUPS INSTEAD OF THREE REGIMENTS. THE PURPOSE IS TO OBTAIN FLEXIBILITY UNDER ATOMIC CONDITIONS. THE 101st AIRBORNE DIVISION AT FORT CAMPBELL, KENTUCKY WAS THE FIRST DIVISION TO BE SO ORGANIZED.

IT MIGHT BE WELL, HERE, TO VISUALIZE A TACTICAL SITUATION ON THE ATOMIC BATTLEFIELD. LET US SAY THAT OUR COMMANDER IS ORDERED TO SIEZE A TRANSPORTATION CENTER SOME TEN MILES TO HIS FRONT WHICH IS PROTECTED BY STRONG FORCES DUG IN ON COMMANDING GROUND BETWEEN HIM AND HIS OBJECTIVE. THE COMMANDER DECIDES THAT AN ATOMIC STRIKE IS NECESSARY WITH DESIRED GROUND ZERO ON THE DEFENDED POSITIONS. HIS REQUEST IS APPROVED BY HIGHER HEADQUARTERS AND THE ATOMIC STRIKE IS ORDERED TO BE DELIVERED BY THE TACTICAL AIR FORCES AT 0600 THE FOLLOWING MORNING.

THE COMMANDER THEN GIVES HIS ATTACK ORDER CAREFULLY EXPLAINING WHEN AND WHERE HE WANTS HIS WIDELY DISPERSED FORCES ASSEMBLED TO EXPLOIT THE ATOMIC BLAST. IN VIEW OF THE DISPERSED

IS VITAL TO SUCCESS. THEY MUST BE AT JUST THE RIGHT DISTANCE FROM THE BLAST TO BE SAFE YET IN A POSITION TO EXPLOIT THE OPPORTUNITY WITHOUT DELAY.

A HALF-HOUR HIS ARMORED FORCES ARE IN POSITION CLOSEST TO THE DESIRED GROUND ZERO. THE BOMB IS DELIVERED. IT IS AN AIR BURST AT AN ALTITUDE OF 2,000 FEET OVER THE DESIRED GROUND ZERO. THE TANKS ARE ABLE TO MOVE FORWARD IMMEDIATELY THROUGH THE AREA OF THE BLAST. THEY HAVE BEEN PROTECTED FROM THE HEAT AND BLAST EFFECT BY THEIR ARMOR. THE LARGEST PART OF THE RADIATION WILL HAVE BEEN CARRIED AWAY WITH THE FIREBALL AND THE RESIDUAL RADIATION FROM AN AIR BURST IS NOT DANGEROUS ENOUGH TO TANKS TO PREVENT THEM FROM MOVING RAPIDLY THROUGH THE BLAST AREA. THE THICKNESS OF ARMOR PROVIDES CONSIDERABLE SHIELDING. THE INFANTRY FOLLOW THE TANKS IN ARMORED PERSONNEL CARRIERS IF AVAILABLE, OTHERWISE ON FOOT AFTER FURTHER DELAY TO ALLOW MORE RADIATION TO DISPERSE; OR THEY MAY BE AIR-TRANSPORTED IN HELICOPTERS OR AIRPLANES. ONCE THROUGH THE BLAST AREA, ALL FORCES DISPERSE AND INCREASE SPEED IN ORDER TO PROVIDE AN UNREWARDING TARGET FOR AN ENEMY ATOMIC ATTACK. THE ATTACK IS PRESSED HOME ON THE OBJECTIVE WITH GREAT SPEED AND VIOLENCE. AFTER IT IS TAKEN THE ATTACKING FORCES DISPERSE AGAIN AND OCCUPY WIDELY SCATTERED COVERED AND CONCEALED POSITIONS AND PREPARE TO ENGAGE IN MOBILE DEFENCE TO HOLD THE CAPTURED GROUND. FROM THIS SIMPLE EXAMPLE IT MAY BE SEEN THAT MOBILITY HOLDS THE KEY TO THE TACTICAL SITUATION BOTH OFFENSIVELY AND DEFENSIVELY, ON ANY FUTURE BATTLEFIELD.

MOBILITY MAY ALSO BE THE KEY TO THE STRATEGY WHICH WILL MAKE THE NEXT WORLD WAR UNNECESSARY. WHILE TACTICS ARE APPLICABLE TO ANY BATTLEFIELD, STRATEGY MUST BE DIRECTED AGAINST A SPECIFIC OPPONENT AND OUR ENEMY, OF COURSE, IS BELLICOSE INTERNATIONAL COMMUNISM REPRESENTED BY SOVIET RUSSIA AND RED CHINA.

AT THE OUTSET OF ANY EXAMINATION OF AMERICAN STRATEGY, WE MUST REMIND

OURSELVES THAT DESPITE OUR INFATUATION WITH THE WAR OF MOVEMENT AND THE OFFENSIVE, OUR STRATEGY IS ESSENTIALLY DEFENSIVE. THAT IS SO BECAUSE IT IS NOT OUR PURPOSE TO ADVANCE OUR POLITICAL AIMS BY MILITARY DECISIONS. IT IS RATHER OUR PURPOSE TO PREVENT AN ENEMY FROM ATTEMPTING TO GAIN OR EVEN SERIOUSLY CONSIDERING A MILITARY DECISION. UNDERLYING THIS PURPOSE IS THE CONVICTION THAT IF COMMUNISM IS DENIED THE GLAMOUR AND PRESTIGE OF GREAT INTERNATIONAL SUCCESSES, ITS PRESENT OBJECT OF GLOBAL CONQUEST WILL GRADUALLY BE ERODED BY INTERNAL PRESSURES AND WILL BE REPLACED WITH LEGITIMATE NATIONAL OBJECTIVES WITH WHICH WE CAN LIVE IN GREATER SECURITY. CONSIDERED IN THIS LIGHT, OUR EXHIBIT AT THE MOSCOW TRADE FAIR IS A PART OF OUR MILITARY STRATEGY. WHATEVER IT DOES TO STIMULATE THE RUSSIAN MASSES AND THEIR LEADERS TO DEVOTE MORE OF THEIR PRODUCTIVE CAPACITY TO CONSUMER GOODS RATHER THAN TO ARTICLES OF WAR WILL JUSTIFY THE EFFORTS SPENT ON THE EXHIBIT.

THERE IS A DANGER, HOWEVER, IN CONSTANTLY REITERATING OUR PEACEFUL INTENTIONS IN THE COLD WAR... OF ALWAYS SAYING THAT IF THE SHOOTING STARTS THE OTHER FELLOW MUST SHOOT FIRST. WE ARE CONDITIONING OURSELVES TO BELIEVE THAT ANY USE OF FORCE MAY TRIGGER A NUCLEAR WAR. NOW IT IS CERTAINLY THE CONDITION TODAY, AND WE MUST SEE TO IT THAT IT CONTINUES TO BE A CONDITION, THAT A SURPRISE ATTACK BY THE SOVIET UNION ON THE UNITED STATES OR UPON ANY OF OUR ALLIES WOULD RESULT IN THE NUCLEAR DESTRUCTION OF THE SOVIET UNION AS A GOING CONCERN. THE MANNED AIRCRAFT OF THE STRATEGIC AIR COMMAND AND OF THE NAVY'S CARRIER TASK FORCES ARE AMPLY ABLE TO DO THIS NOW. BUT THIS IS NOT THE WHOLE TASK THAT WE MUST BE PREPARED TO PERFORM IF WE ARE TO SUCCEED IN DENYING EXTERNAL SUCCESSES TO THE COMMUNISTS. WE MUST BE PREPARED TO COUNTER THEIR ATTEMPTS AT PIECEMEAL GLOBAL CONQUEST AS EXEMPLIFIED IN KOREA, INDOCHINA, AND THE MIDDLE EAST, IN THESE PROCEDURES THE USE OR THREAT OF FORCE WILL PLAY A PART ON THEIR SIDE AND MUST BE COUNTERED BY ADEQUATE OPPOSITION ON OUR SIDE. WHILE THE INITIATIVE REMAINS

WITH THEM, SUCH OPERATIONS CAN BE COUNTERED ONLY BY THE APPLICATION OF THE PRINCIPLE OF MOBILITY.

WE DO NOT HAVE TO BE ABLE TO PRODUCE ENOUGH FIREPOWER TO OPPOSE THE ENTIRE FIREPOWER OF THE RUSSIAN AND CHINESE GROUND FORCES. WE MUST BE ABLE TO BRING ENOUGH FIREPOWER TO BEAR AGAINST THE PARTICULAR DETACHMENT OF CHINESE OR RUSSIANS IN SOME PARTICULAR PLACE TO MAKE THESE LIMITED OBJECTIVES OF THE COMMUNISTS TOO EXPENSIVE TO BE SERIOUSLY PURSUED. GLOBAL MOBILITY IS THE KEY TO SUCCESS. FIREPOWER IS NO GOOD IF YOU CAN'T GET IT THERE IN TIME, SHOCK ACTION WILL SERVE LITTLE PURPOSE IF IT CANNOT BE APPLIED AT THE DECISIVE MOMENT.

THE SOVIETS ARE NOT FORCING US INTO THE POLICY OF MOBILITY BY THEIR AGGRESSIVE ATTITUDES, WE ARE GOING INTO IT BECAUSE IT APPEARS TO BE THE BEST WAY TO DEFEAT ANY ENEMY SO SITUATED AS THE RUSSIANS ARE. IT IS THEIR INHERITANCE FROM GEOGRAPHY AND HISTORY. THE RUSSIANS AND CHINESE ARE DENIED TRUE STRATEGIC MOBILITY BY THEIR LANDLOCKED POSITION ON THE FACE OF THE GLOBE AND BY THE LANDLOCKED THINKING OF SUCCESSIVE RUSSIAN MILITARY GENERATIONS WHICH HAS RESULTED FROM IT. ALL THIS AFFECTS THEIR CHOICE OF MEANS AND WEAPONS. THEY CAN MOVE ALONG THEIR BORDERS AND ACROSS THEM FOR LIMITED DISTANCES, BUT IF THEY WANT TO ATTACK DISTANT TARGETS ALL THEY SEEM TO WANT TO DO IS SIT STILL AND THROW THINGS.

WE ON THE OTHER HAND, CAN GO JUST ABOUT WHEREVER WE WANT TO ON THE SEA OR OVER THE SEA AND THEY CAN INTERFERE WITH US ONLY BY MEANS OF LAND BASED AIRCRAFT OR BY SUBMARINES, WHICH ARE INHERENTLY WEAPONS OF EVASION. IT IS NOT BY ACCIDENT THAT WE ARE NOW WORKING ON MOBILE DETERRENT SYSTEMS SUCH AS THE ROCKET CARRYING SUBMARINES WHICH ARE VASTLY PREFERABLE TO STUDDING OUR LAND WITH MISSILE BASES WHOSE LOCATIONS MUST EVENTUALLY BECOME KNOWN TO AN ENEMY WHO IS PREPARING MISSILES OF HIS OWN, DESIGNED TO ATTACK JUST SUCH FIXED TARGETS, BUT QUITE USELESS AGAINST MOVING TARGETS. OUR MILITARY INTELLIGENCE IS OF COURSE WORKING HARD TO LOCATE THE ENEMY'S

FIXED MISSILE BASES. THERE SEEMS TO BE LITTLE REASON FOR US TO DELIBERATELY ADOPT THE ENEMY'S INHERENT DISADVANTAGES OF IMMOBILITY AND MAKE THEM OUR OWN.

BUT TO THE EXTENT THAT WE SHIFT OUR COURSE IN THE DIRECTION OF MOBILITY AND FREEDOM OF ACTION, OUR SECURITY WILL BE INCREASED. COMMITTED AS WE ARE TO AWAIT THE FIRST BLOW, THE CHIEF QUALITY OF MOBILE DETERRENT FORCES OPPOSED TO FORCES MADE IMMOBILE BY GEOGRAPHY, LIES IN ITS RELATIVE INVULNERABILITY TO COMPLETE TACTICAL SURPRISE. SUCH A MOBILE FORCE DOES NOT HAVE TO DEPEND UPON A MARGIN OF SURVIVAL TO RESIST THE ENEMY. ITS WHOLE POWER, OR MOST OF IT, CAN BE EXERCISED WHENEVER THE FORCE IS COMMITTED. ALSO, IT DOES NOT HAVE TO BE MAINTAINED AT THE LEVEL OF THE ENEMY'S FORCES. THE RUSSIANS HAVE MANY TIMES MORE MEN UNDER ARMS THAN WE DO BUT OUR MOBILITY OFFSETS THEIR NUMBERS. ONCE THE LEVEL OF MOBILE FIREPOWER IS ATTAINED WHICH IS SUFFICIENT TO INFLICT UNACCEPTABLE PUNISHMENT ON THE ENEMY, WE DO NOT HAVE TO GO ON BUILDING MORE IN ORDER TO HAVE ENOUGH LEFT TO HIT BACK AFTER THE ENEMY HAS HIT US. INDEED, IT MAY WELL BE QUESTIONED THAT THE SOVIETS WILL THINK IT WORTHWHILE TO CONTINUE WITH THEIR BALLISTIC MISSILE PROGRAM ON A MASSIVE SCALE ONCE THEY PERCEIVE THAT IT HAS LITTLE VALUE AGAINST MOBILE FORCES.

IT WAS SAID AT THE BEGINNING THAT THE COMMANDER SEEKS TO OBTAIN FREEDOM OF ACTION AND TO DENY IT TO THE ENEMY. WE GAIN FREEDOM OF ACTION BY MOBILITY. MOBILE DETERRENTS MAKE NONSENSE OF BALLISTIC MISSILES BECAUSE THEY DO NOT PROVIDE A POINT TARGET FOR THESE MISSILES TO HIT.

MOBILE FORCES, PROTECTED BY THEIR ATOMIC CAPABILITY, CAN ALSO DEAL WITH THE LIMITED THREAT IF WE HAVE THE COURAGE TO COMMIT THEM.

THUS THE FIREPOWER OF SOVIET BALLISTIC MISSILES IS USELESS AS AN INSTRUMENT OF SOVIET POLICY IF THEY DARE NOT USE IT LESS THE SOVIET STATE BE DESTROYED BY MOBILE FIREPOWER WHICH THEY HAVE NO ASSURED MEANS OF ENGAGING. UNDER SUCH CIRCUMSTANCES, TO THE EXTENT THE SOVIETS HAVE INVESTED THEIR MILITARY RESOURCES IN MISSILES. THEY HAVE WASTED THEIR FREEDOM OF

ACTION. TO THE EXTENT THAT WE INVEST OUR MILITARY RESOURCES IN MOBILITY WE EXPAND OUR FREEDOM OF ACTION TO EMPLOY FIREPOWER AND SHOCK ACTION FOR SUCH PURPOSES, LIMITED OR OTHERWISE, AS THE FUTURE MAY DEMAND.

ALL THAT HAS BEEN OUTLINED, HOWEVER, DEPENDS UPON THE INITIATIVE AND WILL TO EXERCISE IT. WE MUST DEVELOP IN THE MINDS OF THE CITIZENS, WHERE ULTIMATE CONTROL OF OUR MILITARY FORCES RESTS, AN UNDERSTANDING OF WHAT FREEDOM OF ACTION MEANS TO US. WE MUST NO LONGER CONSIDER THE LANDING OF MARINES IN THE MIDDLE EAST AS THE PRELUDE TO WORLD WAR III. RATHER WE MUST SEE IT AS A NECESSARY INCIDENT TO PRESERVING THE FREEDOM OF ACTION TO DENY EXTERNAL SUCCESSES TO THE COMMUNISTS. OUR PEOPLE MUST BECOME FULLY AWARE OF THE CONDITIONS UPON WHICH THEIR SECURITY IS BASED.... FREEDOM OF ACTION TO APPLY MOBILITY, FIREPOWER AND SHOCK ACTION IN TIMELY FASHION, ACCORDING TO OUR NEEDS AND RESPONSIBILITIES.

WE MAY HOPE THAT WE WILL THEN LIVE IN A WORLD WHICH WILL DEVOTE ITS EFFORTS AND VISION TO THE ARTS THAT ENNOBLE MANKIND AND THAT THE ART OF WAR WHICH HAS BEGUILLED MEN FOR AGES WILL BE STUDIED NO MORE.

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