Elements of Naval Warfare

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ELEMENTS OF NAVAL WARFARE
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A TREATISE
PREPARED FOR USE AS A TEXT-BOOK
AT THE
U. S. NAVAL ACADEMY

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PREFACE.

This brief treatise is intended for the use of midshipmen of the United States Navy. Its purpose is to acquaint them at the outset of their careers as officers with the principles which underlie the waging of successful war, and to set their thoughts toward the attainment of a deep knowledge of warfare.

Such a knowledge cannot be acquired in a brief period: it must be a fault, then, for an officer to defer the process of its acquisition for ten or twenty years after his graduation into the service, and it is hoped that this little treatise will be helpful in remedying that fault. Perhaps it may give direction to the zeal, energy and ability that abound in our young officers, and thus lay in many of them the foundation of hopeful careers for themselves and splendid achievement for the country.

By the kind permission of Admiral Sir Cyprian Bridge, R. N., I have freely copied from his little volume, "The Art of Naval Warfare." His principles as therein laid down are so sound, and his ideas so clear and so well expressed in simple language, that his book is a veritable text-book for officers of every grade. His high professional attainments and his experience as a sea-officer must give it weight with every seaman whose profession is to wage war on the sea. My thanks are gratefully accorded him, not only for his kindness in permitting me to draw freely from his book, but for the authoritative quality that the use of his name will lend to much of the contents of this treatise.

CARLO B. BRITTAINE.
ELEMENTS OF NAVAL WARFARE.

CHAPTER I.

INTRODUCTORY.

War is the contention between two or more States through their armed forces for the purpose of overpowering each other and imposing such conditions of peace as the victor pleases.

Beasts, birds, insects, even fishes, have violent and hasty conflicts; only men can make war which is a sustained conflict based on plans devised in accordance with reasoned principles.

There can be no code of precise rules by the application of which in preparation for war or in battle victory may surely be won.

There are, however, certain general principles which if applied to the preparation for war and the conduct of the war itself will give the nation which best comprehends and applies them the most chances of defeating its adversary. The fullest comprehension of these principles should be the aim of a body of men whose business it is to carry on war on the sea.

Battles are Won by Men. A navy is maintained for no other purpose than to wage successful war, and though its material—its ships and guns—may be both numerous and formidable, the human is the chief element upon which the issue must depend.

We can count a possible enemy's ships and guns and calculate the number that he will be able to put into line, but we cannot forecast the ability of his commanders.
ELEMENTS OF NAVAL WARFARE

In naval warfare it has been proved over and over again that tactics count more than any moderate difference in the individual power of the ships engaged; that as an instrument of war the size and power of the ship of the line, within limits, is of less importance than is the way in which she is used; that the spirit of the navy and its knowledge of war are the deciding factors.

When the late Russo-Japanese war began Japan had six battleships. In an early stage two of these vessels were sunk by the explosion of submarine mines. Her strength in cruisers consisted of eight armored and a few protected vessels. Fifteen months this relatively slender force had taken or destroyed eighteen battleships, four armored and fifteen protected cruisers. The Russians lost 8000 killed and wounded and 6000 prisoners. The Japanese loss did not exceed 1000 men. Naval history does not afford a more striking example of the truth of the statement that "Battles are lost and won by men, and not by ships."

Discipline and Training. As there can be no war without men the human is not only the chief element, but is indispensable.

From age to age, from one stage of culture to another, men remain essentially the same. They can add to their acquired knowledge; but in boldness, fortitude, wariness, energy, persistence, the savage is essentially on an equality with the highly civilized.

It is doubtful if the qualities mentioned can be improved or, as is sometimes said, developed. It is certain that the modes of utilizing them can be improved by means of increased knowledge and practice. It is such improvement that confronts the personnel of a navy—its officers and men—as one
of the most serious problems of their profession. The real reasons for what we call discipline and training are embodied in this idea. Discipline in its broader sense comprises training, and is not merely ready obedience to orders, but is also the practical knowledge of the processes of war gained by submission to, and an intelligent comprehension of, suitable courses of training. A truly disciplined force is a force which obeys orders with alacrity and knows its work.

**Simplicity of Savage Warfare.** Savages as well as civilized races have their warfare; it is the more simple because the conditions of savage life are more simple; the weapons are rude and the number of warriors on any side comparatively small.

Nevertheless savages have their strategy and their tactics; they prepare war-material in time of peace, and plan their campaigns when they make war or have it forced upon them. In the lower stages of barbarism man’s belligerent methods are restricted to what may be termed operations on a small scale. Not till he has risen in the scale of culture does he make plans involving the fighting of pitched battles, nor discern the distinction between the unexpected in war and mere local and isolated efforts at surprise.

**Civilized Warfare a Mighty Game of Skill.** The operations of war between nations of our stage of civilization are complex and make the most serious demands that can be made upon the faculties of men.

On the success with which those demands are satisfied the national honor and welfare depend.

As the stakes played for in the mighty game are of transcendent value the players should understand every feature of the game; and above all should they understand its under-
lying principles and be able to apply them to its varied phases so that the effect of luck or chance will be reduced to a minimum. It is a game at which two can play; and the opponent may be a skilled player. The only way to avoid the risk is not to play; yet when the question is war one often is obliged to play despite himself. Reason, therefore, indicates, on the part of those upon whom the outcome must depend, the wisdom of learning to play the game well.

In no game of skill should anything be left to luck or the element of chance, which is as likely to favor one side as the other. War is a game of skill, and in every war the positive results of skilled action are the most conspicuous features.

The Material Element. Our age is distinguished by the rare occurrence of naval hostilities on a grand scale, and by an unprecedented display of ingenuity in devising the material appliances with which they are to be conducted. This renders the necessity of adopting right methods of imparting a knowledge of the principles of war by sea especially urgent.

The naval material of to-day, embodying as it does the highest products of human skill, gives such promise of effective use in war that there arises a not easily resisted tendency to attribute to it as an element of warfare more importance than it has a right to. The practical result of yielding to this tendency is to treat material and the study of its composition as though it were more important than the human element in war. This adds to the difficulty, always great enough by itself, of training the personnel of a naval force in the right way, for there is introduced the problem of having to contest the inclination to exalt unduly the material element.

The latter is highly important, but it must be given its true place in the preparation for the successful conduct of war.
Men must remain its masters, and to preserve the mastery they must know its capabilities and its limitations, and how to use it intelligently; but it should never be forgotten that, after all, it is only an instrument, or a set of instruments, for use by human beings. In seeking the position to be assigned to the treatment of material in a system of naval training the principle of this effective use of it should govern.

A man may be an excellent architect without having gone through a course in bricklaying or stone-quarrying; yet he must know what can be done with bricks and blocks of stone. One may achieve distinction as a rider to hounds without having studied as a veterinary surgeon; but such distinction is only possible to him who knows what a horse can do and what it would be useless to expect of it. The most skilled surgeons do not make their own instruments and are not taught to do so, nor to state the percentage of carbon that the steel in those instruments contains. One may say similar things of the base-ball player and his bat, or the expert rifleman and his piece. What is found necessary in each case is familiarity with the use of the instruments of the occupation and intelligent appreciation of their employment.

In naval warfare the instruments of the occupation are ships, guns, torpedoes, submarines, and all the varied material that goes to comprise a fleet, and it may well include the supplies, dockyards, and other important facilities upon which the fleet must depend.

The end of war is to defeat the enemy, and to impose on him such conditions of peace as the victor chooses. To gain this end the intelligence of men must be directed in the utilization of the material put into their hands. The agent being
superior to the instrument, the first need is to see how that intelligence can best be directed.

**Experience and History as Guides.** Efficiency in war is the offspring of suitable preparation in time of peace, and since that preparation must be founded on sound principles it becomes the task of the naval administrator to discover them. There is in reality only one way of doing this, viz., by taking experience as a guide. To settle some point of belligerent preparation it may seem open to us to appeal, at will, either to experience or to reason, either to history or to argument. Reason and argument, however, will not bring about a right decision unless they are raised upon a foundation of experience and history.

A knowledge of naval history is indispensable both to the administrator who may have to devise a system of organization and discipline and to those who may be called upon to work the system in actual warfare.

History can show both what to follow and what to avoid, and in studying its teachings there should be the greatest care not to take the wrong line; and like that of everything else, the study of naval history, remote or recent, must, if any benefit is to be derived from it, be prosecuted intelligently. Those who would profit must understand the real significance of each event recorded, and how and to what extent it contributed to the success or failure of a belligerent operation: they must read into the occurrences their right meaning, and decide for themselves how far they affected the result of a battle, the course of a campaign, or the issue of a war.

Naval historians, even the best of them, can give but little instruction in tactics or strategy. That they record the facts accurately is all that can be reasonably expected of them.
INTRODUCTORY

It is for those whose business is to make war to apply the lessons conveyed by a mere statement of the facts, and to determine the merit or the fault of any particular strategic arrangement or tactical operation. To be able to do this one must equip himself with the knowledge of the principles of naval warfare.

Students of naval history, who are trained to draw inferences themselves, will derive far greater benefit from their studies than those for whom inferences have to be provided by their instructors. Officers habituated to wait until conclusions have been pointed out and explained to them by their instructors are not likely to have the promptitude which makes efficient commanders in war.

Those, on the other hand, who have been taught to trace for themselves cause and effect in the records of naval warfare, will not take part in hostilities altogether unfamiliar with the necessary mental processes.

There will be no one to tell those who are taking part in a sea-fight that this proceeding is wrong or that one right; that this movement is preferable to that; that the success or failure of the movement is due to adopting or declining to accept a particular formation. These lessons will be driven home by the hard logic of the enemy's fire.

In the study of history from the point of view of naval warfare it is impossible not to be struck by the fact that at every epoch, whatever the surroundings and instruments, the same faults have brought on the same disasters, as also identical precautions and foresight have always insured success.

Acquaintance with the history of land war, as well as of that waged at sea, will be found useful in the highest degree, for despite the differences, more apparent than real, between
armies and fleets, there is but one strategy and its great principles apply alike to naval warfare and land warfare.

The story of the Graeco-Persian wars is not too ancient; the story of the Russo-Japanese war is not too recent, if we can find therein the teaching that will fit officers and men to fulfil their appointed tasks.

**Some Wrong Deductions from Naval History.** Naval history down to the present day has many instances of wrong deductions from recorded or observed occurrences.

(a) The Crimean war, as far as the Western European participators in it were concerned, was practically the siege of a single fortress. All the battles in the Crimea were fought to prevent the besiegers from reaching Sebastopol, or to disconcert them in their siege operations, or to make them raise the siege and depart. Fortifications and attacks on fortifications therefore assumed paramount importance in the eyes of many of those who had taken part or were acquainted with the events of this war. In Great Britain some were so misled by the reading of its course that there was introduced into the British policy a radically false conception of the defensive system to be adopted by the British Empire.

They thought that the best mode of defending the greatest naval and colonial state in the world was to stud its coasts with passive fortifications. Most of these were not only useless, but the radically unsound scheme of defence introduced brought about a great relative decline in her naval strength; and to recover from the bad effects took some years of time and vast expenditure of money.

(b) In the Civil War both sides resorted to submerged mines and what were known as “spar torpedoes.” The former were similar to the better perfected mine of the present
day; the latter consisted of explosive charges usually carried on a pole or spar protruding from the bow of a boat, and which was meant to be brought in contact with the side of an enemy ship by charging or stealing up to it under cover of darkness.

Several ships having been sunk and others injured by both of these means, it was assumed that the methods were universally applicable, and all countries adopted them regardless of difference in conditions. The plan of defending a port with submerged mines was copied with such little discrimination that they were used at places where they could have no effect but that of keeping friendly ships out.

In the Franco-German war many of the German merchant vessels that were made prizes were captured outside of one of their own harbors, which they were afraid to enter because of mines, real or sham, and into which no hostile man-of-war, mines or no mines, would have tried to penetrate. Other countries needlessly expended large sums of money on them through failure to see that they were a method effective only in special circumstances.

They are now, of course, a recognized weapon of warfare, but should be used discriminately.

(c) All countries persisted in the use of the spar-torpedo for a period of nearly or quite twenty-five years after the close of the Civil War, notwithstanding that boats were to carry them within a few feet of a hostile ship armed with guns that could be used with effect against the boats while the latter were some hundreds of yards distant.

The method was even extended, and ships expressly designed to carry and effectively use guns at ranges measured by hundreds or thousands of yards were equipped with spar-
torpedoes on the broadside where they could be used only by bringing the ship to within less than fifty feet of her enemy, whose guns were not supposed to have been silenced, for if they were, torpedoing her would have been unnecessary. Indeed, had the guns been silenced, small-arm fire would doubtless have been sufficient to keep off the torpedoer. It took some time before it was perceived that the spar-torpedo plan ignored the essential purpose of a gun-armed ship.

(d) The Civil War offered another wrong deduction from observed occurrences.

The Federal fleet had no hostile fleet to contend with. Its ships soon numbered into hundreds, while the number of Confederate men-of-war was insignificant. There were, however, many Confederate shore batteries open to naval attack, and as a means of making such attacks the low free-board monitor had certain merits.

Using her effectively against ships would be possible only in special and rare circumstances. The limitations on her effective employment were not understood, and the low free-board turret-ship was believed to be such an admirable type of fighting vessel that she was introduced into navies generally, including the British.

The naval part of the Civil War had been exclusively confined to coast and river warfare: most of the rare encounters between ship and ship took place in inland or partially enclosed waters; and notwithstanding all the experience of the British Navy that country assumed that it should have craft specially intended for service of that kind, and provided itself with a collection of vessels for coast defence. Even after fuller experience, the United States, following the war with Spain, built four more of the low free-board type, though
during that war the low free-board and kindred type of somewhat higher free-board had proved themselves unsuited to sea warfare.

(e) At the battle of Lissa, in the short campaign between the Austrians and the Italians, the Re D'Italia was rammed in broadside and sank in two minutes. This single episode was so misunderstood that the ram was given a place above the gun and was proclaimed the predominant naval weapon. On calm consideration this was found to be a higher place than it deserved, but it was still retained as at least a weapon of great value, and for more than thirty years the designs of ships of the more important classes were governed by the supposed necessity of fitting them with rams as weapons.

It is only in the last three years that they have been discredited as weapons though curiously enough, it seems they may be retained, in form at least, for other reasons.

Every one of the above-mentioned false deductions from the events of naval wars was made by people whose position enabled them to obtain authentic and full information concerning the operations to the course of which they looked for guidance. Their mistakes could not have been due to want of knowledge of the facts, because with that they were well supplied. Also, it could not have been due to want of intellectual capacity, because those in whose hands the power of deciding on matters of naval policy lies are usually the most capable men to be found in the sea service of their country and can always be justly credited with, at the least, the average ability of their profession. They drew wrong conclusions, not because they did not know what had taken place, but probably because they had not made themselves familiar with naval history and had not practiced themselves
in the process of weighing the relative importance of the
different occurrences in a battle or a campaign.

In these episodes of warfare they were unable to distinguish
between the incidental and the fundamental. Doubtless their
minds were obsessed by a belief in the paramount importance
of material, and, owing to their failure to interpret aright the
lessons of history, they had not equipped themselves with the
means of resisting the obsession.

Two Schools of Naval Thought. During the forty years
since our Civil War the naval mind in the United States and
Great Britain has been divided into what may be termed two
schools—the historical and the material.

The adherents of the one appeal for guidance to the
methods of the great masters of the art of war by sea and
land; they appeal to experience. The disciples of the other
do not consider the lessons of the past as applicable to the
present; they have been indifferent to the study of strategy
and tactics, and have devoted their energies to the develop-
ment of the material—ships, guns, armor, etc.

This latter school has been and perhaps still is dominant,
but the other has been slowly advancing. This advance, as
far as can be proved by ascertainable facts, is justified; and
though, as has been said, material deserves to be and is a
most important factor in naval warfare, it is not the most
important. During the half century ending with Trafalgar
naval officers of the great maritime powers had opportunities
of seeing strategy and tactics in practical operation and of
learning of them from others who were actual participants in
war on a large scale. In the age in which they lived there was
nothing like the marvelous development of naval material
which has been such a marked feature of our times. They
therefore not only could learn the lessons of warfare at first
hand, but did not have also to fight against the tendency to
attach undue importance to mere material appliances. Though
they, in the British Navy at least, did not undervalue the
importance of good material, there is abundant proof that
they put a right estimate on the human characteristics of
courage and intelligence. There is no indication in British
naval history from the time of Drake to the time of Nelson
of any trace of a conviction in that navy that bad strategy
and bad tactics could be made into good by the possession of
superior material; nor is there any such indication in the
early history of the United States Navy when, with inferior
material, it won some of its most brilliant victories.

It cannot be a mere coincidence that we find similar if not
identical principles underlying the methods of all the great
captains from Alexander to Napoleon and Nelson. We have
a right to believe that their successes have been due to their
agreement in the application of these principles, and without
in the least detracting from the importance of the material
element, it would seem obligatory upon officers whose profes-
sion is to make war to equip themselves with a profound
knowledge of the principles by which, for twenty-two centu-
ries, successful war has been waged, and by this method en-
abled themselves to put the material with which war must be
waged to its most effective use. Experience is the sole test of
truth: it is upon this maxim that the method of conducting
war should be established.

When war begins the first enemy to fight against is not the
one that is going to attack or resist with material means, but
the more insidious foe in one's own nature which will assail
him stoutly with the ideas and habits produced and nourished by the practices of peace.

To beat down this formidable foe it is necessary to learn what war is; and in time of peace it can be learned only by intelligent study of the history of warfare and by the proper application of the lessons which it supplies.

If we wish to fit ourselves for the conduct of war, we must understand what has already been done in war, and how it has been done.
CHAPTER II.

STRATEGY AND TACTICS.

Meaning of the Terms Strategy and Tactics. To understand the conduct of war it is necessary to understand what is meant by the terms strategy and tactics. They represent fundamental divisions of the art of warfare. There are many definitions of these terms by able military writers, but no brief definition can convey their full meanings. The province of the one occasionally merges into that of the other, and there is no general agreement as to the line of demarcation between them. Vague indications of their meanings are that strategy is the use of battles in war, and tactics the use of forces in battle; that strategy includes all that goes on in the theatre of war, while tactics is the art of fighting on a field of battle; that strategy shows the best methods leading to the battle and tells where and when one ought to fight, and tactics teaches the best use of the different arms in fighting, or tells how one ought to fight; that strategy is the art of compelling your enemy to fight when he is at a disadvantage, and tactics the art of so disposing or employing your force when in contact with the enemy that you oppose him more effectively than he can oppose you.

The vagueness of all these definitions is obvious, and what the terms really mean will be best understood by examining the processes, operations, and principles which may be classed under each.
No superficial knowledge of them will suffice; both are subjects to be pondered over and studied during the whole professional career of an officer.

The Principal Objective and the Plan. It is essential to the proper conduct of war that there should be an objective and a plan. Both terms are comprehensive. There may be a main, and perhaps more than one subsidiary objective; and a plan may embrace more than one contemplated operation. Everything, however, should be subservient to the prospect of attaining the main objective; and minor plans should not be inconsistent with the execution of the general plan of which they must be but parts.

When hostilities are on the point of beginning, the defence of territory at home and in more or less remote parts of the world will have to be provided for, and also of commerce on the sea. The surest way to secure both of these will be to destroy the enemy’s navy or to reduce it to inactivity.

This demonstrates the advantage of assuming the offensive, and of making the enemy’s naval forces the principal objective.

If he were to assemble every single ingredient of his force at a known spot, from which he could not get away before his opponents reached it, they might proceed there in suitable strength and engage him. A crushing defeat inflicted upon him would virtually end the naval part of the war. But the enemy can not be expected to be so accommodating. He may be trusted to have an objective and a plan of his own, and it may be taken for granted that neither of these will be conceived with any other intention but that of frustrating the plans of the opponent. A belligerent has sometimes played into his opponent’s hands, which is only another way of say-
ing that the strategy adopted by one side in a contest is sometimes bad.

Success in war usually, if not invariably, goes to the side whose strategic arrangements are better than those of the other. Good tacticians have occasionally, if rarely, redeemed bad strategy; but it is unsafe to count upon this. It is well to be right in the matter of strategy as well as in the matter of tactics.

**Important to Discern Enemy's Intentions.** To be right in strategy, the plan of operations will have to include proper allowance for the enemy's intentions and proceedings. In taking into account what the enemy is likely to do as well as what one proposes to do himself, there is brought to light the great complexities of a strategic plan. An enemy who knows his business—a quality that it is well to credit him with, at any rate at first—will be likely to do his best to deceive as to his real proceedings, and will, in fact, try to throw his opponents off the trail.

In deciding upon the objective, and in devising the plan for its attainment, it is well to try to view matters from the enemy's side. To do this thoroughly, as regards every detail, is of course not possible, but the more nearly his point of view as regards the prospect of hostilities is attained, the greater the chance of success against him.

One of Nelson's chief characteristics was the power of gauging the value of an opponent and of forecasting the kind of thing that he would be likely to do.

In forming the plan the impolicy of rigid adherence to the formulæ of text-books and lecture-rooms in circumstances not allowed for therein is evident.
Study of Land-Strategy Useful. As the underlying principles of waging successful war on land and on the sea are similar if not identical the study of land-strategy is useful to the sea-officer.

Generally it is more restricted in its area of operations than sea-strategy is. Sea-strategy may and sometimes does have the whole ocean for the theatre of its action; and, generally, naval campaigns, since the gun-armed ship has become the chief instrument, have involved the carrying out of operations over a great extent of sea.

On both elements the primary objective is the enemy's armed force. On land what is to be done is to destroy the enemy's army by successful attack and unrelenting pursuit; at sea it is his navy that is to be so treated.

This primary objective—the main force of the enemy—should never be lost sight of. Raids and isolated surprises may be successful in themselves, but they can have no decisive influence, and generally do not shorten the war by a single day.

The total strength of a country is made up of all the forces which that country disposes of; military forces first in importance, then industrial, commercial, financial, etc. The objective of war is to paralyze the adverse forces; hence it is logical and legitimate to attack all of those forces, omitting not a single one of them, but only on the condition of understanding that their totality is the real power to be destroyed. The destruction of the armed force of a nation, and on the sea this means its organized fleet, is the quickest and surest way of paralyzing its totality of forces, since it then no longer has means of holding the victor in check. This destruction of the main force of the enemy is the principle by which all the
great sea fighters of whom there is record have been actuated. “To seek the enemy, to come up with him and to beat him with superior forces” is a condensed formula which embodies their conceptions, and indeed, the true conception of war.

Not only must the great battle be won, but detachments, and especially important ones, must not be unnecessarily exposed to defeat.

**The Political Objective.** The general arrangements required depend upon the character of the war, which is influenced by a great number of conflicting considerations. Among these may be mentioned the political objective as one of the principal. For instance, in the Russo-Japanese war if Japan had aimed only at defeating Russia at sea, and had not been under the political necessity of driving her out of Manchuria, the general plan would have been altogether different.

Whatever may be the influence of political and other considerations on the arrangements, the result of the fight is ultimately the ruling factor. The strategic dispositions of the armed force must therefore be such that the general results of the fighting, if there be any, are favorable. At the decisive point superiority of fighting power must be assured.

**Strategic movements may, and often ought to, begin before the actual outbreak of hostilities.** Mobilization, which must necessarily be accompanied with a more or less comprehensive assembling of ships, is essentially a strategic movement. As soon as war seems certain, or, indeed, very likely, it will be good government policy to mobilize its naval force, and to see as well that its ships take up the most suitable stations.

These are not belligerent proceedings, nor are they necessarily provocative; they may precipitate hostilities or they may ward them off altogether. The boldest would rather
attack an unprepared than a prepared enemy, and a thing calculated to make an intending assailant pause is the conviction that efficient preparation has been made to meet his attack.

**Mental as well as material readiness** will be indispensable. The alertness needed for making effective use of the material elements of naval power will be best supported or ensured by the formation of a comprehensive conception of the whole field of hostilities, which in naval warfare is likely to be extensive. It will be necessary to draw a mental picture that will take in the whole area, will omit no important feature, and yet will be unencumbered with elaboration of detail. The picture must convey a correct impression of all the main conditions, minutiae being left to be dealt with by subordinates directed to conduct particular operations.

**The strategist at the seat of government**, where the centre of strategic authority will lie, should neither tolerate vagueness in the delineation of predominant features nor allow himself to be immersed in a flood of minor details.

It is at this centre of strategic authority that the general plan must be formed, and it is thence the general directions for the employment of the naval force must proceed; otherwise co-ordination of effort cannot be expected. Independent commanders must be allowed a free hand, but within certain limits; and what one is about to do should as far as possible be made known to all the others.

That it cannot be an easy thing to draw up a good strategic plan is evidenced by the experience of war which has proved that one side nearly always forms a bad one, and sometimes both sides do it; nor is previous brilliant belligerent efficiency
a guarantee that good strategic plans will be adopted in subsequent contests.

The history of warfare must be studied, and as much attention paid to the errors and failures as to the successes recorded.

**Singleness of Aim an Important Feature.** In addition to the intrinsic difficulty of forming a plan which will tend to frustrate all the antagonist's principal intentions—and this should be the object of a strategic scheme—there is also the difficulty of maintaining singleness of aim. A multitude of conflicting demands, some of them stupid and many of them selfish, will be made and will receive active support from at least some section of the newspaper press of the country, and from the politician.

Intelligence received from time to time may seem to—and sometimes really does—necessitate a considerable change of plan. Shall the enemy be confronted at this point or at that? Ought a portion of the fleet to be directed from the purpose in hand to protect some particular locality? There are harassing questions which are sure to arise in the future as they have in the past.

One object will have to be kept in view consistently, and that is bringing the enemy's ships to action, and as far as possible on terms that will be most unfavorable to him. The result will then be in the hands of the tactician.

To do this not only will the enemy's station have to be known, but also what point he is going to reach before he can be met. The help that scouting can give must be largely depended upon, and this will be in the province of the commander of a fleet acting with proper freedom, but under the general direction of the authorities at the seat of government.
Aimless wandering about is not apt to be the occupation of even the most inept of opponents. If the enemy's fleet goes anywhere, it must be assumed to have gone for what he, at any rate, considered a sufficient reason. It may be seen that he is making a mistake, and his absence from an important point may present an alluring opportunity to strike at some much desired object, but generally mistakes on his part can best be turned to your advantage by striking at his main force, by catching him wherever he can be found and bringing him to battle.

If he is beaten we shall be able to accomplish many important things connected with the prosecution of the war. If we are beaten it will show us that to have accomplished certain side issues would not have helped us much in a war in which it had now been proved that the enemy was stronger than we were.

Battle Decides War. When nations engage in war the result is decided ultimately by the meeting of their armed forces in battle. To attain the object of the war it is usually found necessary to control one or more water-areas. If one side is determined to fight and the other is not willing, the latter must withdraw either into port or to some other area. Both cannot remain in these waters without fighting. The larger the forces and the smaller the area the greater will be the difficulty to avoid battle. So often has this been found to be the case that it amounts to a truism.

In obtaining the desired control of the particular water-area which must be done either by meeting and defeating the opposing force or by driving it from the area, we have to consider, first, the principles which govern the transfer of force from area to area; and second, those which control its
use within the given area. In the first case the aim is to possess superior fighting power in a particular area. This can be realized either directly by sending a force there, or indirectly by threatening some other point with a view to prevent the enemy from despatching re-enforcements to his forces in the area, or to tempt him to break up the force he already has there.

**Superior Speed as a Strategic Factor.** Both methods have been used in many wars, and whichever is used the opposite side must take steps to counteract it. Where to go, when to start, when to arrive—i.e., at what speed can the passage be made, at once become important questions. Of these the destination and the decision to start are by far the most important, and are the governing factors. They are dependent upon the general plan, upon accurate intelligence relative to the enemy's movements, and upon a correct judgment of his aims and intentions, and to a much less degree upon the actual speed of the ships themselves.

This view receives the support of history, a well known case being Nelson's pursuit of Villeneuve to the West Indies. The two fleets sailed approximately the same distance, and the British possessed some superiority of speed, mainly through their skill in seamanship, but this was, and many more times its amount would have been, rendered void by the delay of twenty-one days suffered by Nelson awaiting intelligence: false intelligence received in the West Indies and uncertainty as to the destination of Villeneuve on his return to Europe again showed how little Nelson could have expected from the possession of somewhat superior speed.

It is a rare thing in war to receive information concerning an enemy's movement which is both early and accurate. A
few hours' delay in receipt of intelligence on which you can
depend sufficiently to justify you in moving would neutralize
a speed superiority far greater than any that is attainable.

**Maximum Speed and Speed of Passage.** Again, in these
days of steam the maximum speed is no measure of that at
which a passage can be made. A much lower one is imposed
by the necessity of economizing fuel for the purpose not only
of providing for the voyage, but also of ensuring a sufficient
reserve when about to come in contact with the enemy.

The Russian Baltic Squadron, afterwards destroyed at the
battle of Tsushima, made the passage from Tangier to the
Cape of Good Hope, a distance of 5100 miles, in 44 days, an
average speed of 116 miles a day, which is little above the rate
at which sailing ships of former times made their passages.

In these transfers of force it is of as much, if not more,
importance to arrive with the fighting power intact as it is
to make a quick passage, which means that no ship must be
left behind, and that the speed must be that of the slowest
ship.

**Speed and Other Conditions.** It may be that you receive
intelligence that the enemy is attempting to do a particular
piece of work which you desire to prevent, say, covering the
landing of troops, convoying them across the water, or making
an attack on a particular locality: you will do your best to
arrive at the proper point in time to prevent the hostile work
being undertaken or at least completed. It may be a case in
which you and the enemy both consciously try to reach the
strategic point first. If you are to go there at all, it must be
that you will have the power when you get there to frustrate
the enemy's intentions by force—that you are the stronger.

It is likely that the enemy may try to reach the point, wher-
ever it may be, in time to permit him to finish his job and be off before you arrive, or to have finished it and be prepared to fight you unhampered. Ability to do so will depend upon several conditions of which relative speed will be only one. The respective distances which you and he will have to travel may differ so greatly that no conceivable difference in speed will be of consequence.

You may be engaged in an operation directly belligerent or other, but necessary, which you cannot abandon or complete soon enough to give you any chance of getting to your destination in time, no matter what your speed may be. The enemy will omit no effort to conceal his movements and throw you off the scent. He would undoubtedly choose, for work of the kind alluded to, the particular moment at which you would be furthest removed from the scene of his intended operations, or yourself so much occupied that an early movement on your part to interrupt him would be impracticable.

**Fighting Power the Important Factor.** In the second case, having arrived in the given area with a fighting force, the object is to destroy, contain, or drive away the enemy’s fighting force in that area, and thus to command it—to leave it free to the ships of the one side and to deny it to those of the other.

If both sides are determined, each will be compelled to concentrate his capital ships, and will be drawn to the central strategic point, and the important factor will not be speed, but fighting power.

There is little use in sending a fleet anywhere to frustrate, by force, the enemy’s intentions, unless it has, when it gets there, the force which will be required.

Admiral Graves, sent to attack the French Fleet at the en-
trance to Chesapeake Bay and, by driving it off, to save Cornwallis, arrived in time but with too little fighting power. Seeing that Cornwallis did not surrender for some six weeks after Graves' arrival, it mattered little, within wide limits, when Graves arrived, had he brought sufficient force.

In our own day we have seen Togo and Rozdesvinski draw together with massed forces in the Sea of Japan and fight for that command which was essential to the land operations, and the determining factor in the war. The position of the Russian Admiral was much like that of Graves. The time of his arrival was less important than the fighting power of his fleet and his own tactical skill.

**Battle Cannot Be Indefinitely Avoided.** While steam and wireless telegraphy have enlarged the sphere of action on both sides, no designed superiority of speed in the ships of the weaker can do more than delay the meeting; experience shows that sooner or later either failure of speed or some unforeseen circumstance brings it about. The larger the squadron the greater the chance that speed may fail; its precarious nature when ships are pressed and the wide margin on service between ships nominally the same are well known.

A good position is more important than superior speed, and can be used to offset the strategical advantages belonging to the latter.

As a recent example, it has been clearly shown by Admiral Mahan that Togo's position at Masampho would have enabled him to intercept Rozdesvinski irrespective of the route taken to Vladivostok, even if the Russian fleet had been faster than the Japanese.

Superior speed is thus only one of the several factors which contribute to success in war, and the consensus of expert
opinion is that it is not of such value that enduring mobility
and fighting power should be sacrificed to obtain it.

**Superior Speed When Its Possessor Seeks Battle.** If a
commander has confidence in the fighting efficiency of his
force, the speed at which it can move will not take the first
place in his estimation.

If he has superior speed and is seeking battle he must either
come upon the enemy before he can run away, or catch him
in his flight. Even had he double the speed of the intending
fugitive it would be of little assistance unless the fugitive
fails to receive sufficiently early intelligence of his opponent’s
movements. If the fugitive’s scouting plan and his other
means of obtaining information are so poor that he can be
taken unawares, these defects will be the deciding factor.

If he can only start running away just before his opponent
gets within range of him, the latter’s superiority of speed
should permit the fighting of an action, in which it will be
superiority of power and not of speed that will be the most
important. It could not have been the opponent’s speed supe-
riority that made the fugitive flee; because flight in the cir-
cumstances would be the very thing that would give him the
least chance of escape. The flight would be due to a con-
sciousness of inferior fighting power, and to a hope on his part
that although he was not strong enough to try the fortune of
battle he might save at least some of his force by running
away. Moreover, his flight would leave the opponent in com-
mand of the area to dominate which he had been willing to
incur the supreme risk of battle.

**Superior Speed and Correction of Errors.** The assumption
is frequently made that superior speed will permit the cor-
rection of errors in strategy or in tactics. This would make it
the refuge of the bad strategist and the bad tactician, and a
belief in it is like an occult and insidious disease, of the ex-
istence and progress of which the patient is unaware until he
attempts to carry out some important work, when the ruinous
extent to which the malady has weakened him becomes ap-
parent in disaster.

Efficiency in strategy and tactics belongs to the moral or
intellectual world: the speed of ships to the material. To
confound one with the other is to confuse efforts to attain
efficiency in the conduct of naval warfare.

General Speed Superiority Not Possible. Nothing since
steam propulsion was adopted by navies is more certain than
that to preserve general superiority of speed is impossible.
Rivals will soon equal or outdo each other. Also, it is not
possible to retain it long enough to have even a temporary
advantage over competitors, because the older ships will not
have it, and it will be the slower and not the faster which
will regulate the pace in the operations of fleets in war.
Efforts of strategists to attain and preserve equality of speed
would be much more likely to succeed.

Conclusions. We may safely conclude that speed superi-
ority is not of commanding importance in strategy. Attribut-
ing to it the utmost value that can be legitimately claimed for
it, superior speed is, after all, only one in a variety of bellig-
erent factors, some of which will surpass it in importance,
except in special and restricted circumstances. The speed
that would enable you to arrive promptly on the scene of
battle would be of little advantage to you if your fighting
strength was largely inferior to that of your enemy.

It is urgently necessary to give careful consideration to the
extent to which we should attach value to speed of ships as regards both strategy and tactics. The influence of imposing material upon the minds of those who undervalue the study of naval history tends to credit speed with a predominant importance to which it has no well-grounded right.

*It cannot be denied that it would be desirable to possess it if it could be had except at the expense of some other element of belligerent efficiency.*

**Priority of Operations an Important Consideration.** The variety of operations which a great war on the sea may be expected to occasion will be considerable. Though a definition of them may be narrowed down to a statement that sea communications have to be kept open, it must be remembered that this would include great diversity of procedure.

The main objective must be the enemy's force, and that in itself is but a means to the end. That end is a successful termination of the war, and in reaching it not a few interests will demand defence. The true mode of defending them is beating the enemy; that, of course, is understood.

As the business will divide itself into sections more or less numerous, all of which cannot be taken in hand at once, the question of priority will call for a prompt and resolute answer. The priority to be settled will be that of importance as well as of time.

It will soon be discovered how different the conditions will be, when hostilities have actually begun, from those that existed during the playing of a war game in a study or a lecture room. In the latter the utmost penalty to be feared for a false move is a little self-dissatisfaction or a little polite ridicule; in war it would be the loss of valuable property and still more valuable lives, if not the ruin of the false move-
maker's country. This fact should be comprehended by every student of naval warfare and never lost sight of.

No possible astuteness will enable any one to settle in advance what particular detail, when war has come, he will attend to first. The choice of particulars must depend upon circumstances over which the enemy may have as much control as he himself has.

The general plan can and ought to be framed beforehand; but it must admit of suitable flexibility as regards its component parts. This statement cannot be repeated more often than is useful.

**Tactical Superiority.** It is the aim of the strategist to assure that you shall arrive on the field of battle superior in essentials, and most often numerically, to your enemy; it is the endeavor of the tactician, when the fight comes on, to be superior to his antagonist, at the crucial point.

The principle that this embodies is eternal. It applied with equal certainty to the fleets of the ancients, to those of the Middle Ages, to those of the eighteenth century, and to those engaged in the latest war; and it will continue to apply as long as naval warfare continues to be waged.

The tendency to virtual identity of material and to similarity of preparation adopted by all probable belligerents has generally had the result of making tactical superiority and superiority in numbers convertible terms. The principle does not enunciate that the superiority in numbers must be found in the whole force of one side, but that it must be found at the crucial point.

Of a certainty it is good strategy to arrive on the field numerically stronger than the enemy. Naval history, however, and the history of land warfare as well, teaches that
over and over again the tactician that had this initial advantage did not know how to make use of it, but allowed himself to be beaten by an opponent numerically his inferior.

The Crucial Point. Also history teaches that skilful tacticians have been able to win victories by converting general inferiority in numbers into local superiority, that is at the crucial point.

Therefore the problem before the commander of a force about to engage is to discover the crucial point—the point in the hostile force which is the weakest and likely to remain weak for a sufficient time—and then to bring a superior and, if possible, overwhelming force against it. The hostile commander must be credited with the desire to do the same thing.

The weakest point is not necessarily that near which the least powerful ships are stationed. The formation may be such that ships of great individual power cannot fully exert it. A point is weak if the force near it cannot be reinforced in time to escape being overwhelmed by a stronger force of the assailants.

In the days of sailing fleets this principle was recognized and applied by Ruyter, Monk, Torrington, Tourville, Suffren, Rodney, and Nelson. The tactical principle of Nelson at the Nile and at Trafalgar was essentially the same, though the method of carrying it into effect differed in the two battles.

In each his aim was to bring a superior force to assail a part of the enemy’s which could not be reinforced before the attack had succeeded.

As far as can be ascertained every decisive victory at sea that has ever been won has been due to the observance of the above principle, and the rule appears to hold good irrespective of modes of ship-propulsion, of armament, and of protection.
Nelson's proposed plan of attack previous to Trafalgar, as explained in his famous Memorandum, provided for an attack from the leeward or from the windward.

Each was, however, identical in principle, and was to be directed against the enemy's rear, while his van would be prevented from succoring it. As a matter of fact the actual attack was not made exactly as arranged for in the Memorandum, but the principle was adhered to. The importance of thinking out the best method by which principles may be applied is here exemplified, for the plan, being correct in principle, was still applicable though the execution in detail differed from the forecast.

Column Formation. When fleets were moved by sails column was adopted as the battle formation because it gave a clear field of fire to the principal weapon—the guns mounted on the broadside—and was best adapted to keeping station and to give mutual support, as each ship moved up automatically.

The columns were kept close to the wind because on those lines the fleets were more nearly on an equality than on any other, and because each tried usually to get into a position to windward, which was held to confer some advantages. Thus the direction of the column in a sailing fleet, being dependent upon the wind, was fixed; and as the two fleets usually ranged in parallel columns, it came about that each was drawn up nearly at right angles to the bearing of the other.

The arguments in favor of single column formation are equally applicable to modern fleets, as their broadside is superior to their end-on fire; the direction of the column in a steam fleet, not being dependent on the wind, is determined by the necessity of ensuring that all the broadside guns will
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bear when the ships are turned up to engage, which means that the column must be maintained nearly at right angles to the bearing of the enemy.

The conclusion is the same whether the fleet be moved by sail or by steam. A column so formed also offers the best capabilities for defence.

The principles underlying the tactics of sailing fleets were quite simple, and they appear to have been but little influenced by the substitution of steam as a motive power. They may be summarized as follows:

1. A fleet should be so disposed on going into action that no part can be attacked without being supported by the remainder within a reasonable time.

2. A fleet should be taken into action in such a way as to bring a great superiority to bear on a part of the enemy before that part can be supported by the remainder.

It will be noted that in the application of the principle much depends upon the time given to bring supports to the ship or ships attacked. This interval is measured by the time required to silence or beat a ship in close action, which, judging from what is known of the most recent war, is as short now as it was in the past, and regardless of whether or not the ship is protected by armor.

At Tsushima the Osliabya was beaten in nine minutes under an effective concentration. The Varyag was beaten off Chemulpo in fourteen minutes. The Chesapeake was beaten by the Shannon in eleven minutes. At Trafalgar the Victory, passing under the stern of the Bucentaur, raked that ship with her whole broadside of fifty guns; twenty guns were dismounted in the French ship, and her loss was estimated at 400
men. These concentrated attacks have always produced decisive results in a short time interval.

A century ago ranges varied from perhaps 200 to 2000 yards, according as they were close or long, and the speed under battle conditions was probably not more than three knots. To-day ranges may be supposed to vary from 4000 to 8000 yards, and the battle speed may be moderately estimated at perhaps fourteen knots. With the greatly increased speed there have come greatly increased fighting ranges, so that ships can help and sustain each other by their gun-fire from longer distances, especially if the guns are given large arcs of fire, and it may be that the higher speeds of fleets of to-day are offset tactically by the greater distances that have to be traversed.

However, concentration on a part of the enemy is still the main object, and column is still the best formation for bringing the guns into action and for mutual support, and the genius of the skilled tactician is perhaps more greatly demanded than it ever was.

**Skilled Tacticians Necessary.** Although much stress is laid on the principle it is not to be supposed that success can be won by merely adopting a formula.

To win it is necessary to be in the right strength at the right place; and this though the enemy is doing his best to prevent it.

This compels first, that the right formation should be assumed, and next, the execution of the right tactical maneuvers. It is just here that the tactician will be able to show what skill he possesses.

There have been but few really great tacticians, so few that their skill may have been genius. Nevertheless, in the domain
of tactics the average tactician who has studied naval warfare and had plenty of practice in tactical exercises at sea, will be almost sure to surpass rivals his equal in natural endowment, but his inferiors in knowledge of war and in familiarity with the execution of tactical movements.

The study of the battle of Tsushima supplies strong evidence that the Japanese victory was due to superior skill in tactics and not to superior speed, though the enormous superiority of the Japanese in speed was of great importance in the later stages of the battle. The formation of the Russian fleet was faulty in the extreme. Admiral Togo took full advantage of this, and by his skilful approach brought a great superiority to bear on a part of the enemy—the leading ships—and defeated them before they could be supported by the remainder.

At the same time he so disposed his own ships that they mutually supported each other, and none was exposed unaided to a superior concentrated attack.

No doubt something was due to the better shooting of the veteran Japanese seamen; but this, too, was largely a consequence arising from superior tactics, in that during the critical period of the battle the Japanese steered a straight course, and kept their guns bearing steadily on the enemy; whereas the Russians at that time did not do so. Again, the Russian fire was kept under by superior concentration, a much more powerful method of defence than covering ships with impenetrable armor.

Concentration. Tactics are in part but the preliminaries of battle. Maneuvering for local superiority will begin outside the range of guns, the object being to permit—when at
fighting distance—concentration of effect on the portion of
the enemy's force attacked.

It is most important that the different meanings attached
to the term "concentration" should be clearly perceived.

The fire of two ships firing at one ship is not twice as effec-
tive as that of one ship against one ship. The fire control of
each of the two firing ships would be seriously impeded, and
each would undoubtedly score a much fewer number of hits in
a given time than would be the case if each had its own target.
If three or four ships were simultaneously firing at a single
ship the efficiency of fire or the number of hits in a given
time for each ship would be still further reduced.

Concentration of the fire of two or more ships on one
would therefore appear to be an error as long as there are
other ships affording as good, or nearly as good, a target at
which each may fire independently.

Considering two hostile squadrons, evenly matched in num-
bers, position and formation, the squadron which concentrated
the fire of two or more of its ships on a single ship of the
other squadron would relatively weaken itself. All of its
ships being under fire their fire-efficiency would for that
reason be diminished: for those of them that were concen-
trating there would be a further diminution. The damage
inflicted upon the ships concentrated upon would not be pro-
portionate to the fire directed at them, while the unsathed
ships in that squadron would be firing at their full efficiency.
Also it is quite probable that the concentrating ships might
waste a large volume of fire after their target had become, for
battle purposes, disabled. And once she were seen to be dis-
able, each of them must select a new target, ascertain its
range and change of range, and this while under an established fire themselves.

In selecting targets at the beginning of a battle, range, rate of change of range, probable length of time that target will remain favorable, position of sun, and perhaps the direction of wind and sea may all be factors of importance, but they are all details that do not modify the principles. They should not, however, be disregarded by the tactician.

It would be, then, particular circumstances that would justify the concentration of fire of two or more ships upon one when there are equal numbers on both sides in position to fire and receive fire.

But the concentration of the fire of a greater number of ships upon a smaller number when the latter can not be aided by their consorts is in obedience to the tactical principle of superior forces, and is not only justifiable, but is the thing sought for. In this case, as in all others, if each ship fires at the best target the fire will be logically distributed. Of two ships whose range and bearing permitted a full volume of fire the best target would rarely be the one at which one or more ships were already firing.

Change of target, a turn of even one or two points by either the target ship or the firing ship, are all circumstances that have a diminishing effect on fire-efficiency, and they too should be considered.

With two squadrons or fleets evenly matched, it will be improbable that either can secure a superior tactical position over the other: the best effect in this case may well be conceived to be to steer a steady course and keep all guns bearing, concentrating the fire of each ship on its best target.