

CHAPTER X

THE LAW OF ECONOMY OF FORCE

All Nature is but art unknown to thee ;
All Chance Direction which thou canst not see ;
All Discord, Harmony not understood ;
All partial evil, universal Good ;
And, spite of pride, in erring Reason's spite,
One truth is clear, whatever is, is right.

—POPE.

I. THE UNIFORMITY OF FORCE

I HAVE now dealt with the forces of war, and have shown that changes in the external forces—namely, the conditions of war—produce changes in the internal forces of the instrument of war, and modify its structure, and influence its maintenance and control. The question now arises, can any general laws, principles, or rules be formulated whereby we may judge the change wrought by any set of conditions on the forces of the instrument, and, through them, on our intention? If war is a science, or is reduced to a science, as a consequence such laws, principles, and rules are axiomatic, for science lays bare the nature of relationships and discovers the reasons upon which they are based. There must be, therefore, certain laws or principles of war, just as there are laws of chemistry, of physics, and of psychology.

I have already stated in chapter ii. that war is not an exact science, and by this I do not mean that fundamentally exactness does not exist—for it must exist in all sciences—but that the human brain is too limited in its power to devise a complete science of war that exactness does not appear to be a possible attainment. Truth must be exact, for inexactness and truthfulness are contradictory terms. Science, which aims at discovering truth, must consequently aim at exactness, even if only an approximate exactness is attainable. We realize this very definitely when we study history. We cannot hope to succeed if we only apply the scientific method, because, as one writer says: "History is a philosophy of transcendental ideals beyond the scope of science, and depends, also, upon emotional literary inspiration to enforce its lessons." ¹ In medicine it is likewise,

¹ *The Lessons of History*, C. S. Leavenworth, p. 16.

only an approximate exactness can be attained, because each patient differs psychologically, yet, if we know the causes and natures of the various diseases, we shall be in a better position to cure than if we do not. Meteorology is a science, yet an inexact one, and so also is finance. This does not deter meteorologists and financiers from proceeding with their work ; in fact, it is an incentive for them to do so.

Inexactness, like chance and ignorance, is a quality of the human brain ; it does not exist in Nature. From general observation, our assumption is that Nature is exact, that not a leaf falls to the ground which, within the conditions in which it fell, could possibly have fallen in any other way than it did, or at any other moment. Outside the mind of man, all things are governed by the law of uniformity, and man himself is also governed by this law, but with this difference, that whilst a stone cannot disobey this law, man can, and is meted out punishment in proportion to his disobedience.

I have shown that the forces of war and those of life generally are synonymous. For the time being I will set aside, therefore, the nature of war as a psychological as well as a physical struggle, and look upon it purely as force, and, from this restricted aspect, attempt to establish a general principle which governs the changes in force. Then, when once this principle has been discovered, I intend to make it my base of action and to return to the problem of war, and from it deduce a series of subordinate principles which will assist us to control and expend military force economically—that is, according to the nature of the relationships between the instrument and the changing conditions which surround it.

As my datum point I intend to adopt the system outlined by Herbert Spencer in his *First Principles*. In chapter xii. of this book, a chapter of recapitulation, he says :

The play of forces is essentially the same in principle throughout the whole region explored by our intelligence ; and though, varying infinitely in their proportions and combinations, they work out results everywhere more or less different, and often seeming to have no kinship, yet they cannot but be among the results of a fundamental community.¹

Thus the forces of war must take their place in this grand group of forces, and, as Spencer is the philosopher with whom

¹ *First Principles*, H. Spencer (fifth edition), p. 276. In the study of war the military student will find that some knowledge of philosophy is of the greatest assistance. If the student has little time at his disposal for this study, I can recommend, besides Spencer's *First Principles*, the works of David Hume, four volumes, and, if these be found too long, then Thomas Huxley's essay on "Hume," which is a masterpiece of clear thinking. To read Huxley alone is a valuable training.

I am best acquainted—a philosopher who has attempted to work out a synthesis which embraces all sciences—I intend to make him my master and guide, and, in place of paraphrasing and condensing what he says, I will quote from him in full, leaving it to the student, should he wish to amplify these quotations, to turn to the book and earn reward by studying it.

2. THE LAW OF FORCE

In Nature “all is causal, nothing is casual.”¹ This is our starting-point, the bed-rock upon which the philosophy of science erects certain universal inferences which are called laws,² and which are the abstract descriptions of qualities of facts that are of a general nature, such as “The Uniformity of Nature”; “The Indestructibility of Matter”; “The Continuity of Motion”; “The Persistence of Force”; “The Persistence of Relations among Forces,” etc.

Force, according to Herbert Spencer, is the “ultimate of ultimates.” To him, space, time, matter, and motion are either built up of or abstracted from experiences of force. He writes: “Thus all . . . modes of consciousness are derivable from experiences of Force; but experiences of Force are not derivable from anything else. Indeed, it needs but to remember that consciousness consists of changes, to see that the ultimate datum of consciousness must be that of which change is the manifestation; and that thus the force by which we ourselves produce changes, and which serve to symbolize the cause of changes in general, is the final disclosure of analysis.”³

To us force manifests as matter moving in space, the duration of the movement being time. Consciousness of movement is only possible since it possesses two modes, one actual and the other potential. The first occupies space, and the second, which possesses power to effect changes, is generally called energy.

Changes in energy are governed by the law of causation, which

¹ *Logic*, Welton, vol. ii., p. 165.

² “A general law or truth is arrived at by detecting a constant or uniformity amongst variables. . . . Rules are based upon laws, and laws are based upon facts. . . . General laws do not rule, they are not causes, nor effects, nor actual things, but brief statements of relations of things” (*The Scientific Basis of Morality*, G. Gore, pp. 1, 15). “A law of Nature is not a uniformity which must be obeyed by all objects, but merely a uniformity which is, as a matter of fact, obeyed by those objects which have come under our observation” (*Principles of Science*, S. Jevons).

³ *First Principles*, H. Spencer, pp. 169-70.

is a law of motion.¹ Causes by their motion produce effects ; thus, if I pull the trigger of a loaded rifle the whole sequence of events which follows originates from muscular motion on the trigger, the primary cause of the sequence.² Whether the final cause of change is the workings of a single force, or the conflict of two forces, cannot be determined ; but the manifestation of change is the co-existence of pressure and tension, or, as Herbert Spencer says : " Matter cannot be conceived except as manifesting forces of attraction and repulsion,"³ and " probably this conception of antagonistic forces is originally derived from the antagonism of our flexor and extensor muscles." These two manifestations of force are " our symbols of reality," and from them there result certain laws of direction of all movement. " Where attractive forces alone are concerned, or rather are alone appreciable, movement takes place in the direction of their resultant ; which may, in a sense, be called the line of greatest traction. Where repulsive forces alone are concerned, or rather are alone appreciable, movement takes place along their resultant, which is usually known as the line of least resistance. And where both attractive and repulsive forces are concerned, or are appreciable, movement takes place along the resultant of all the tractions and resistances. Strictly speaking, this last is the sole law ; since, by the hypothesis, both forces are everywhere in action. . . . Motion then, we may say, always follows the line of greatest traction, or the line of least resistance, or the resultant of the two : bearing in mind that though the last is alone strictly true, the others are in many cases sufficiently near the truth for practical purposes."⁴

¹ " Causation is really the ideal reconstruction of a continuous process of a change in time " (*Appearance and Reality*, Bradley, p. 60). See also *Principles of Logic*, Bradley, pp. 485-8. " Causation acts in such an order that we must first satisfy our bodies by means of food, air, a dwelling, fire, and clothing ; then our animal desires, feelings, and emotions ; and lastly, our intellect and reason, consequently the last is extensively neglected. Even the determination of human actions by mere desire or feeling is evidence of natural causation ; and it is manifest that all education is dependent upon a practical belief in the law of universal causation, otherwise we could not expect any certain effect from personal training " (*The Scientific Basis of Morality*, G. Gore, p. 48).

² This sequence can, of course, be carried back further : thus, the finger is pressed because the eye sees an animal, which the mind intends to slay, because hunger demands food, because food is lacking, etc., etc. It would appear that any threat to create a vacuum at once sets the chain of cause and effect vibrating.

³ Hume states that we know nothing of the feeling we call power except as effort or resistance. Huxley, in his essay on " Hume " (*Collected Essays*, 1897, p. 149), writes : " If I throw a ball, I have a sense of effort which ends when the ball leaves my hand ; and if I catch a ball, I have a sense of resistance which comes to an end with the quiescence of the ball. In the former case there is a strong suggestion of something having gone from myself into the ball ; in the latter, of something having been received from the ball. Let anyone hold a piece of iron near a strong magnet, and the feeling that the magnet endeavours to pull the iron away in the same manner as he endeavours to pull it in an opposite direction is very strong."

⁴ *First Principles*, pp. 224-6.

On account of the interplay between attraction and repulsion, "It further follows from the conditions that the direction of movement can rarely if ever be perfectly straight. For matter in motion to pursue continuously the exact line in which it sets out, the forces of attraction and repulsion must be symmetrically disposed around its path; and the chances against this are infinitely great."¹ Then, a little later on, he writes: "As a step towards unification of knowledge we have now to trace these general laws throughout the various orders of changes which the Cosmos exhibits. We have to note how every motion takes place along the line of greatest traction, of least resistance, or of their resultant: how the setting up of motion along a certain line becomes a cause of its continuance along that line; how, nevertheless, change of relations to external forces always renders this line indirect; and how the degree of its indirectness increases with every addition to the number of influences at work."

Herbert Spencer next examines the operations of these laws in the celestial and terrestrial systems, then in relation to living things, and finally in relation to mind. To summarize his reasoning; he says:

Supposing the various forces throughout an organism to be previously in equilibrium, then any part which becomes the seat of a further force, added or liberated, must be one from which the force, being resisted by smaller forces around, will initiate motion towards some other part of the organism. If elsewhere in the organism there is a point at which force is being expended, and which so is becoming minus a force which it before had, instead of plus a force which it before had not, and thus is made a point at which the reaction against surrounding forces is diminished, then, manifestly, a motion taking place between the first and the last of these points is a motion along the line of least resistance.²

When this motion is frequently repeated, if the channel along which it flows is affected by the discharge, and "if the obstructive action of the tissues traversed involves any reaction upon them, deducting from their obstructive power, then a subsequent motion between these two points will meet with less resistance along this channel than the previous motion met with; and will consequently take this channel still more decidedly. If so, every repetition will still further diminish the resistance offered by this route; and hence will gradually be formed between the two a permanent line of communication, differing greatly from the surrounding tissue in respect of the ease with which force traverses it."⁴

¹ *Ibid.*, p. 227. ² *Ibid.*, p. 227. ³ *Ibid.*, p. 235. ⁴ *Ibid.*, p. 236.

From the relation between emotions and actions, Spencer finally turns to volition, and considers an act of will "an incipient discharge along a line which previous experiences have rendered a line of least resistance. And the passing of volition into action is simply a completion of this discharge."¹

One corollary from this must be noted . . . namely, that the particular set of muscular movements by which any object of desire is reached are movements implying the smallest total of forces to be overcome. As each feeling generates motion along the line of least resistance, it is tolerably clear that a group of feelings, constituting a more or less complex desire, will generate motion along a series of lines of least resistance. That is to say, the desired end will be achieved with the smallest expenditure of effort. Should it be objected that, through want of knowledge or want of skill, a man often pursues the more laborious of two courses, and so overcomes a larger total of opposing forces than was necessary, the reply is, that relatively to his mental state the course he takes is that which presents the fewest difficulties. Though there is another which in the abstract is easier, yet his ignorance of it, or inability to adopt it, is, physically considered, the existence of an insuperable obstacle to the discharge of his energies in that direction. Experience obtained by himself, or communicated by others, has not established in him such channels of nervous communication as are required to make this better course the course of least resistance to him. . . .²

Having seen that matter is indestructible, motion continuous, and force persistent—having seen that forces are everywhere undergoing transformation, and that motion, always following the line of least resistance, is invariably rhythmic—it remains to discover the similarly invariable formula expressing the combined consequences of the actions thus separately formulated.

What must be the general character of such a formula? It must be one that specifies the course of the changes undergone by both the matter and the motion. Every transformation implies rearrangement of component parts; and a definition of it, while saying what has happened to the sensible or insensible portions of substance concerned, must also say what has happened to the movements, sensible or insensible, which the rearrangement of parts implies. Further, unless the transformation always goes on in the same way and at the same rate, the formula must specify the conditions under which it commences, ceases, and is reversed.

The law we seek, therefore, must be the law of the *continuous redistribution of matter and motion*.³

Spencer then shows that every change undergone by every sensible existence is a change towards integration or disintegration. "But though it is true that every change furthers one or

¹ *Ibid.*, p. 238.

² *Ibid.*, pp. 238, 239.

³ *Ibid.*, pp. 276, 277.

other of these processes, it is not true that either process is ever wholly unqualified by the other."¹

Everywhere and to the last, therefore, the change at the moment going on forms a part of one or other of the two processes. While the general history of every aggregate is definable as a change from a diffused imperceptible state to a concentrated perceptible state; every detail of the history is definable as a part of either the one change or the other. This, then, must be that universal law of redistribution of matter and motion, which serves at once to unify the seemingly diverse groups of changes, as well as the entire course of each group.

The process thus everywhere in antagonism, and everywhere gaining now a temporary and now a more or less permanent triumph one over the other, we call Evolution and Dissolution. Evolution under its simplest and most general aspect is the integration of matter and concomitant dissipation of motion, while Dissolution is the absorption of motion and concomitant disintegration of matter.²

Here I will leave the philosophy of Herbert Spencer and return to the subject of war.

3. ECONOMY OF FORCE

The redistribution of force, such is the ceaseless labour of the universe, a collecting and a dispersing, a mobilization and a demobilization, and perpetual change in unceasing motion, in fact, a war without a victory. Such is the nature of the world as it moves on with cadenced step through endless time and space. Nothing is created, nothing is lost, yet all things are changing, for nothing is standing still, and every change is in accordance to law, until we come to life, and then we find that the supreme problem of all living things is to learn how to obey.

Obedience may be unconscious or conscious; the first leads to evolution through trial and error, the second to progress through rational thought. The first is the common process of the animal world, and to those men who are higher than animals it is the second. To animal existence chance is an omnipotent power, but to the thinking man it is an illusion, for it does not exist, for his reason tells him that omnipotence is law. "War," writes Clausewitz, "is the province of chance. In no sphere of human activity is such a margin to be left for this intruder, because none is so much in constant contact with him on all sides. He increases the uncertainty of every circumstance, and deranges the course of events."³

¹ *Ibid.*, p. 283. ² *Ibid.*, p. 285. ³ *On War*, Clausewitz, vol. i., p. 49.

Clausewitz is only relatively right, right in so far that chance rules when ignorance abounds, and, though we cannot hope to replace ignorance so completely by knowledge that ignorance will vanish, the more we realize that war is the province of law and not of chance the more we shall grow to understand its changes, and, as we understand them, learn how best to economize and expend our force. One author writes :

Untrained man wastes nearly everything with which he has to do, and especially that which is plentiful and cheap—such as water, coal, and food ; he wastes his time, life, health, and opportunities ; he wastes his life largely in idleness or excess of amusement ; his health in selfish excesses ; his opportunities through want of decision and promptitude, and by mistaken conduct ; his mental health by neglecting to acquire wisdom, by filling his mind with trifles, by dwelling upon grievances, or upon irrational “pious” desires. He wastes his physical health and food by eating and drinking to excess, and he wastes time in unnecessary exercise in order to counteract the evil effects of these.¹

Thus, when we turn to military history, we find that war has mainly been an instrument of waste, because of the ignorance of the soldier. Truly Clausewitz writes : “Every unnecessary expenditure of time, every unnecessary *détour*, is a waste of power, and therefore contrary to the principles of strategy.”² War is not governed by chance, but by law, and the punishment for disobedience is waste.³ The rational distribution of force, this is our problem in war.

To Herbert Spencer, force is “the ultimate of ultimates,” and to us soldiers so are the forces of war ; not because we want war, but because our *raison d'être* is to expend force in war. Force endures, whatever may be the use made of it ; that is to say, it persists in itself ; but for practical purposes it is limited, for we deal in changes of force, consequently the law of causation governs force in war, which manifests in the form of pressure and tension, and these we call offensive and protective action. As abstract conceptions, they are our “symbols of reality,” and, as concrete acts, they are our efforts. Our will moves our muscles, and our muscles enable us to hit and to guard, and by means of hitting and guarding we expend our mental, moral, and physical energy.

If, in its entirety, we could grasp the law of causation, we could then so economize our force that, whatever force might be at our

¹ *The Scientific Basis of Morality*, G. Gore, p. 89.

² *On War*, Clausewitz, vol. iii., p. 153.

³ “It is essential to the idea of *law* that it be attended with a sanction, or, in other words, a penalty or punishment for disobedience” (A. Hamilton, *The Federalist*, p. 210).

disposal, we should expend it at the highest profit. Consequently, if two opponents face each other, and each possesses an identical supply of force, the one who can make his force persist the longest must win, because, as Spencer says, "the desired end will be achieved with the smallest expenditure of force." Therefore, in place of talking of the law of causation, or of the law of persistence of force, as the fundamental law of war, I will call this law the law of economy of force, or the law of economic expenditure of force. The latter term expresses my idea more closely, but as the former appears to me to be more general and scientific, I shall normally make use of it.

4. ECONOMY OF MENTAL FORCE

Spencer, having probed and examined the foundations of knowledge, postulates the law of the continuous redistribution of matter and motion. From this postulate he develops his theory of evolution, and, after examining a great number of facts, he proves his theory to be correct, and to be applicable not only to the subjective world, but to the objective world as well. Thus this theory becomes a law—a living expression of the original postulate.

I have already touched upon this law in the second chapter of this book, in which I explained how evolution works by means of an unceasing process of trial and error. Truth exists only in one form, truth derives its power from economy of force, and trial and error, after endless experiment, arrive at truth by economizing force; perfect economy of force and truth are therefore synonymous.

Darwin, and others, have traced the law of evolution in the physical world. To him it may be summed up as a process of struggle for existence, in which the fittest survive, and fitness not only depends on bulk strength (concentration of force), but on facility of adaption to environment (distribution of force). This law governs us all; and in the vegetable and animal worlds effect follows cause in blind rotation. Man is not blind, for he possesses power to reason. This power I have already examined in chapter vi. and in chapter ii. by means of a quotation I explained, that "if one course of action proves successful and another fails, *there is a reason* for it." By grasping the laws which regulate causes, man can control causes. Reasons express the quality of things, and, if man can understand these qualities, he can learn to use them.

From the law of economy of force we know that there can only be one reason. A cause cannot have various reasons, and

if at first the reason appears compound, it is because we do not thoroughly understand it. "Errors," writes Paul Carus, "do not exist in the world of objective facts. Errors are children of the mind. There is neither good nor bad, neither right nor wrong, neither truth nor falsehood, except in mentality. And again: "Truth and error are the privilege of mind."¹

Do not let this mislead us, for I have just stated that the process of evolution is that of trial and error. Trial and error, as it appears to man, who can reason, and not as it is in Nature, which is swayed by omnipotent cosmic law.

For example, why has a hare got long legs? To escape from the fox and the wild dog! What made its legs long! Thousands of years of snapping and snarling of wild dogs immediately in rear of its tail. The legs grew through a process of trial and error. This is exactly how armies have grown and still grow.

Turn to the racehorse.

Why has the racehorse got long legs? To win the Derby and St. Leger. What made its legs long? A few years of scientific thought and careful selection. Its legs grew through the efforts of man's mind. This is exactly how armies should but do not grow.

In the purely material world there is rigid law; in the physical world there is trial and error, until out of consciousness creeps reason, which applies law to the events and circumstances which surround life.

The same operations which are active everywhere, separations and combinations [writes Dr. Carus], build up the human frame, and in the human frame also man's mind. Human reason is a structure built up by mind operations; and pure reason is a mental construction of them in abstract purity. The human mind being a part of the world, we find that the law of sameness holds good also for the products of purely mental operations: the same operations yield the same results.

And again:

Reason is not purely subjective. Reason is objective in nature. Our subjective reason, human reason, or the rationality of our minds grows out of that world-order which we may call the rationality of existence. Human reason is only the reflection of the world-reason; the former is rational only in so far as it agrees with the latter.²

The senses enable us to appreciate the effects of causes; reason enables us to discover not only the cause, but the purpose of it—

¹ *Primer of Philosophy*, Paul Carus, pp. 22, 48.

² *Ibid.*, pp. 112, 117.

its validity. Reason consists first of "the operations that take place among mental images, secondly it enables us to grasp certain qualities of Reality, and thirdly it is the instrument which enables us methodically and critically to deal with any kind of experience."¹

"The facts of experience are specie, and our abstract thoughts are bills which serve to economize the exchange of thought. If the values of our abstractions are not ultimately founded upon the reality of positive facts, they are like cheques or drafts for the payment of which there is no money in the bank."²

The reality of positive facts is the goal of the scientific method (the searching for truth methodically), and this method consists, as Mach has observed, in an "economy of thought." It is hence that all economy must proceed. If our thoughts are chaotic, so also will our actions be chaotic; consequently discipline of mind must precede discipline of body, and without the cohesion of these two economy of force cannot be effected.

Throughout the history of war we discover that, in spite of man's ignorance of the science of war, the law of economy of force has been in ceaseless operation. The side which could best economize its force, and which, in consequence, could expend its force more remuneratively, has been the side which has always won. Frequently bulk weight of numbers has won through, and often has it lost. Consequently on first thought, we might be led to suppose that the law I have propounded is no law at all, and that, as God has so often sided with "big battalions," numerical superiority is the surest panacea of victory. But, if we examine history, we shall find that some of the most decisive victories have been won by the numerically weaker side, because it was better led or equipped. From such battles we may deduce the fact that numerical superiority is only a special interpretation of the meaning of strength, and, if this is a correct deduction, then that a science of war is required which will enable us to discover the ingredients of military strength in all its forms. We see, therefore, that military force does not merely depend on numbers, or generalship, or political courage, but on all these requirements and on many others as I have already explained. It is a compound of all activities which can be utilized in war; and a weakness, or deficiency, in any one of these may spell disaster if circumstances favour the enemy.

In war we cannot hope to possess a maximum value of each item of military power, but what we can hope to do is to establish

¹ *Ibid.*, pp. 117-18.

² *Ibid.*, p. 1.

a science which will enable us to know what these items are, and the nature of the conditions in which they manifest their full values. Then, if certain items are deficient in our military structure, we shall be able to avoid those circumstances in which they will assume predominating values ; equally, if we understand conditions, we shall be able to extract the greatest advantages from those items we do possess. It is by knowing what items are present or deficient in our nation and army, and in the enemy's nation and army, and by understanding the conditions of war which stimulate and depress each item, that we shall be able to expend our power profitably, and thereby economize our national power for the pursuits of peace.

5. ECONOMY OF MORAL FORCE

As the general tendency of man's mind is towards thinking economically—that is, towards discovering the reasons why certain quantities and qualities assist and resist us, so also, in the moral sphere of force, “ The fundamental rule of righteousness, that we should do unto others as we would have them do unto us under like circumstances, is evidently based upon the principle of causation, viz., that the same cause always produces the same effect under the same circumstances, for if it could not be depended upon in all cases, the rule based upon it could not be fully trusted.”¹ Thus morality in its turn is based on economy of force in the moral sphere.

It may have taken many hundreds of generations to reveal to primitive man (and many are still primitive) that truthfulness, honour, honesty, generosity, gratitude, loyalty, tolerance, and unselfishness, etc., are economical moral qualities—that is to say that they assist human evolution, and that their opposites impede it. At first he may have seen how often a thief or a liar seemed to succeed, whilst an honourable or a truthful man failed ; but little by little, as his knowledge expanded, he saw that these apparent exceptions were not contradictions, they did not contradict morality, but were due to some uneconomical condition in the moral system of society, a system which can never be absolutely perfect. It is not because honesty is good and dishonesty is evil that we are honest, but because honesty is essential to salvation, not in the next world, but in the present one. So also with the soldier ; trial and error little by little impressed on his mind the economical values of courage, sense of duty, loyalty, obedience, comradeship, self-sacrifice,

¹ *The Scientific Basis of Morality*, G. Gore, p. 2.

patriotism, esprit de corps, etc., and that their opposites undermined moral strength. It was trial and error that showed the way to the mind of man, and revealed to him his power of reason. It supplied him with true facts whereon to build hypotheses, and then it left man to his reason to prove his assumptions. Thus, whether consciously or unconsciously, the law of economy of force has ruled the moral sphere just as it has ruled the mental.

To think rightly is to economize the powers of the brain, and to possess righteous sentiments is to economize the powers of the soul. In both spheres economy of force rules with an iron hand, and punishes every man who refuses to bow to this supreme and all-pervading law.

6. ECONOMY OF PHYSICAL FORCE

In the physical sphere we see this law in its most manifest form. The whole tendency of work and mechanical progress is towards economizing physical force. At the base of nearly every new invention we find economy written in capital letters. In war this is as visible as in peace. A stone axe economized fist-blows, an iron axe was an economy over the flint axe, the musket over the bow, the rifle over the musket, and so on from the opening of military history to the present day.

To economize man's strength, to economize in life, to economize in numbers, by perfecting the means of war—that is, by rendering them more and more efficient, in spite of imitation, prejudice, ignorance, and stupidity—has been the law of mechanical progress in war, and nothing, outside the whole human race becoming demented, can stay its course. Because a few purblind and talkative humanitarians decided at Washington, a few years back, to abolish chemical warfare, if chemicals are an economical means of waging war, their abolition is about as certain as a dictum to abolish the moon. In the eleventh century Canute understood this full well, yet in the twentieth we find men, who are considered intelligent, misunderstanding it. This certainly shows that the truth-seekers must possess the patience of Job.

To understand what the physical progress of war means, we must apply economy of force to hitting power, to protective power, and to movement. We must not halt here; we must take man and render him skilful in the use of these means according to the various conditions which confront him and are likely to do so.

In training, our first lesson is economy of thought, our second economy of sentiment, and our third economy of physical energy.

Without these lessons, trial and error will continue to be our master ; with them, we can make trial and error our slave. Reason is supreme ; and any restrictions on freedom of thought during peace-time will sow a crop of tares which will be fully reaped in war. To progress is to economize ; to retrogress is to squander ; to stand still is to rot.

Thus we see economy of force ruling the three spheres, adapting action to circumstances, and modifying all mental, moral, and physical forces according to the influences of their surroundings. The power of a rifle on a rifle-range may be, x on the battlefield it may be $x-y$. What is y ? It is all the influences which the conditions of the battle bring to bear on the firer, such as restrictions of view, perturbation of mind, exhaustion of body, and the grip of fear. All these conditions, and many others, influence the firer mentally, morally, and physically. With an army it is the same, and in war, unless the general-in-chief be a supreme genius, a man whose fingers are on the pulse of the battle, a man who can read the innermost meaning of the pulsations of the strife, economy of force, though ever our master, is too abstract a conception to prove a useful guide. Consequently, from this all-controlling law of war, I will attempt to extract certain principles of war, which, having been tested again and again throughout the history of war, have proved themselves true governors of military thought, of sentiment, and of action.

CHAPTER XI

THE PRINCIPLES OF WAR

There are principles that make apparent
The images of unapparent things.

—LONGFELLOW.

We extend knowledge by the discovery and accumulation of facts, and we condense it by means of principles, general truths, and laws.—G. GORE.

I. THE SEARCH AFTER PRINCIPLES

THE value of principles in war has been a subject of much discussion. Some authorities have definitely stated that war has no principles; others, when propounding the art of war, have made free use of the word without even understanding its meaning; and still others, those who may be classed as educated soldiers, have made various attempts to establish principles on general inferences, and, as far as I am aware, without much scientific proof.

The necessity and utility of principles is hinted at by Clausewitz when he explains how difficult it is for men excited in battle "to preserve equilibrium of the mind."¹ Yet he does not directly state that the value of principles lies in their power to eliminate self when judgments have to be formed, and so assist us to maintain that mental equilibrium which is only possible when the mind is attuned to the law of economy of force. It is of some interest, I think, to trace this search after principles in modern times.

Lloyd, virtually, lays down three—namely, strength, agility, and universality—which I have already examined. Jackson lays down four. He writes: "The principal points which relate to the management of a military action appear to be comprehended under the following heads. (1) A precise knowledge of what is to be done. . . . (2) A rapid and skilful occupation of such points, or positions, as give the best chance of commanding the objects. . . . (3) The employment of mechanical powers . . . with just direction, united force, and persevering effect. (4) A

¹ *On War*, vol. i., p. 59.

retreat from the contest, when the end is unattainable, in a deliberate and correct manner." ¹ Broadly speaking, these may be called the principles of the object, of mobility, of concentration, of offensive power, and of security. Jomini lays down two. He says: ". . . employment of the forces should be regulated by two fundamental principles: the first being *to obtain by free and rapid movements the advantage of bringing the mass of the troops against fractions of the enemy*; the second, *to strike in the most decisive direction.*" Napoleon lays down no definite principles, yet he apparently worked by well-defined ones, for he once said in the hearing of Saint-Cyr: "If one day I can find the time, I will write a book in which I will describe the principles of war in so precise a manner that they will be at the disposal of all soldiers, so that war can be learnt as easily as science." ² Clausewitz lays down four: (1) "To employ *all* the forces which we can make available with the *utmost* energy. . . ." (2) To concentrate our forces as much as it is possible at the point where the decisive blows are to be struck. . . ." (3) To lose no time, and to surprise the enemy; and (4) "To follow up the success we gain with the utmost energy." ³ Finally, Foch lays down four: "The principles of economy of forces; the principle of freedom of action; the principle of free disposal of forces; the principle of security, etc." ⁴

I do not intend to examine these various principles. Some, as it will be seen later on, I consider to be correct, and others incorrect. To examine them would be to digress, since my object in this chapter is to attempt to show systematically how principles are, or may be, derived from the law of economy of force.

If man were so fashioned that he could know all things, he would be omniscient, and if to do all things, then, omnipotent; and, possessing these two powers, he would see that every change which takes place in Nature is righteous, that is to say that it could not in the circumstances take place in any other manner—better or worse.

Man is, however, ignorant, fearful, and weak; consequently, if his aim is to progress, he must seek knowledge, courage, and strength, and the nearer he attains to the fullness of these conditions the more readily will he be able to economize the forces they include. When he has learnt to economize his knowledge, or rather its expenditure, he has discovered wisdom; and when he has learnt how to economize the power of courage he

¹ *A Systematic View*, etc., pp. 23-4.

² *Memoires*, etc., Maréchal Gouvion Saint-Cyr, iv., 149-50.

³ *On War*, vol. iii., pp. 210, 211.

⁴ *The Principles of War*, p. 8. What "etc." represents is not mentioned.

has attained to self-command ; and when he has learnt how best to use his strength he has become skilful. The government of these three states is the province of the principles of war.

2. THE ELEMENTAL BASE

If the principles of war are to be derived from the law of economy of force, then, as this law controls the changes which take place in the forces of war as expressed by the elements of war when influenced by the conditions which surround them, these principles must be related to the elements themselves. I will, therefore, turn back to these elements and arrange them in what I believe to be the order in which they work.

It will be remembered that I have divided each of the spheres of force into three elements. Thus :

- (i.) The mental sphere consists of reason, imagination, and will.
- (ii.) The moral sphere of fear, *moral*, and courage.
- (iii.) And the physical sphere of offensive, protective, and mobile power.

In each case the third element is the resultant of co-operation between the first two, and also the point of contact with the sphere below it. Thus, force acting on the intelligence causes it to react according to the quality of reason and imagination, and the resultant is will, or the lack of will. Will acting on the sentiments causes them to react to fear and *moral*, and the resultant is courage, or the lack of courage. Courage acting on physical energy causes it to react to pressure (offensive power) and resistance (protective power), and the resultant is movement, or the lack of movement, which takes place in the material sphere outside man. Taking one man as an instrument expressing all these forces, they can be plotted out as shown in diagram 15.

Reason and imagination, in close co-operation, decide on the object and the force to be expended in its attainment. This decision is expressed by the will. The will now enters the moral sphere, and, if *moral* repels fear, the will impinges on courage, and from a purely mental force becomes a moral one. Courage, vitalized by will, impinges on physical energy, which, if the offensive and protective powers are in close co-operation, results in movement.

Man's object is correct action, or action which may be designated as true and not false, therefore truth may be accepted as the governing condition. The nearer action coincides with the true state of things the more correct it will be.

So far the relationship of the elements within man ; now as regards their relationship between a general and his troops.

The general is pre-eminently the brain of his army ; his main duty is mental, and not physical. With his men it is the reverse, for, though they must use their brains as individuals, as a mass of individuals they, in the main, must make use of their physical

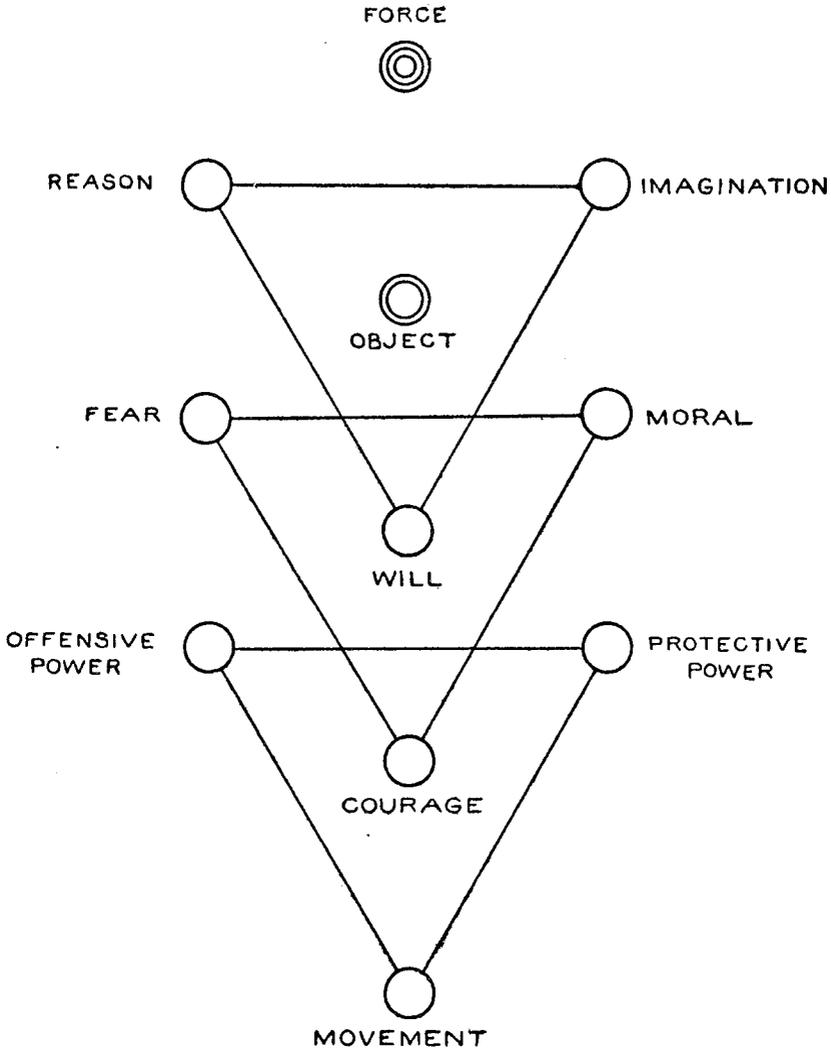


DIAGRAM 15.—THE GENERAL RELATIONSHIP OF THE ELEMENTS OF WAR

powers as directed by the will of the general. As regards moral force, it influences both the general and his men alike, but whilst with the first courage must be active, with the second, in order to accept the will of the general, it must be passive. We can now plot out another diagram (No. 16) which is worth examining.

The general is represented by the upper triangle, and his men by the lower, and these triangles are connected by a line, or bar, which represents the moral sphere of force. We then see that the general must be possessed of a courageous will, a will which expresses self-assertion, the assertion of his plan, which his reason and his imagination have enabled him to formulate ; and that his men must be imbued with a self-sacrificing will to move in accordance with this plan, which is rendered possible through their protective and offensive powers. Between the two triangles stands fear, which is the common enemy and ally of both. For, if the will of the general is to control the movement of his men, the moral line, or bar, must, so to say, remain straight and rigid. If thrown out of adjustment by hostile pressure directed against either end, the opposite end will be swung out of the perpendicular. If fear be regarded as a pivot, then if such hostile force is directed against protective or offensive power, so as to push the moral line out of the perpendicular, unless the courage of the general is sufficiently strong to rectify this diversion, moral contact between the two triangles may be broken, and the result is demoralization.

There are many further considerations which these two diagrams suggest, but these I must leave to the student to discover, as my intention here is not to examine all the relationships between the elements of war, but to establish a scaffolding for its principles.

3. THE PRINCIPLES OF THE MENTAL SPHERE

For the time being I will set this scaffolding aside, and turn back to the law of economy of force.

From the seemingly opposite, though in truth complimentary, forces of attraction and repulsion, or of pressure and tension, or of opposition and resistance, Herbert Spencer deduces three laws of direction of all movements, namely the law of greatest traction, the law of least resistance, and their resultant. According to this philosopher, "the last is alone strictly true." We may, I think, call these three laws the laws of the direction of force.

Nothing can move without a direction, and, given force, the whole problem of its economical expenditure centres on the

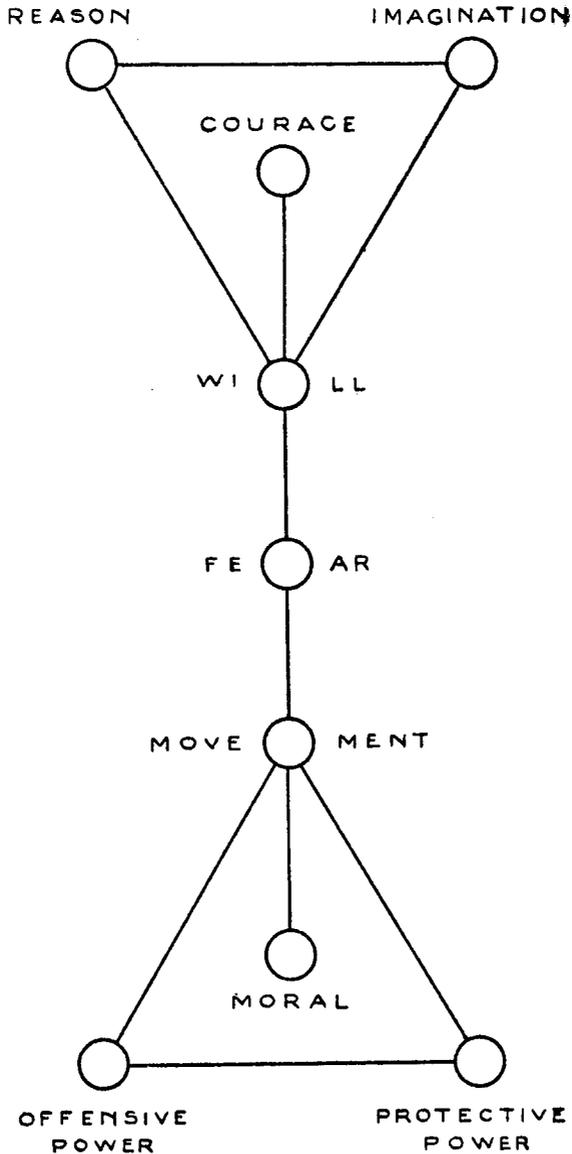


DIAGRAM 16.—THE DUAL RELATIONSHIP OF THE ELEMENTS OF WAR

direction given to it. In Nature this direction is determined by cosmic laws. In war we have nothing so omnipotent or disinterested to guide expenditure of force; nevertheless, we must apply this law in part, if not in full; we must master it, so far as our intelligence can master it, or else it will master us. As our intelligence has to direct force, and as our intelligence is limited, I will not call the abstract conception of direction which should guide us a law, but a principle, and, in my opinion, the first principle of war is the principle of direction of force, and it is this principle which links all our actions to the law of economy of force.

In affairs between men, such as war, economy of force demands that force should be directed with a purpose, since rationally it cannot be directed by necessity—there must be a reason for its expenditure. If between cause and effect (beginning and end) no apparent opposition is met with, movement will take place along the line of greatest traction (greatest assistance) or of least resistance. In war opposition is always met with; therefore movement takes place along the resultant of all tractions and resistances, and its direction is seldom straight—that is, direct. The straighter it is the more economically shall we reach our goal, consequently our problem in war is to direct our force along a straight line in place of a curved one, or a spiral, and in the shortest possible time.

As motion occurs in the direction of the greatest traction, the more we can concentrate force along this line, either by increasing it or by selecting a line along which opposition is weak (the line of least resistance), the less curved will be the direction of movement. Therefore I will call the abstract conception which should guide us in all endeavours to straighten out the curve of our direction the principle of concentration of force.

The more we can concentrate force the straighter will be its direction, and, as this presupposes lack of resistance, the longer will our force last, and the sooner will our object be gained, and the nearer shall we approach to the full application of the law of economy of force. This is what, philosophically, I think, Herbert Spencer means when, considering volition, he says: "The desired end will be achieved with the smallest expenditure of force."

As in war resistance to pressure is always met with, and as transformations of force are always taking place, our tactical force is never constant; consequently, if we do not understand its changes, we shall not be able to rearrange our forces so that concentration is maintained. We may, as it is our intelligence and not cosmic law which is in control, side-track it, or thrust it along a line of resistance, or let it dissipate itself. Therefore, as

each transformation takes place, we must so thoroughly understand the cause of it and the value of effects that we can economically redistribute our force ; consequently I will call the abstract conception of adapting concentration to circumstances the principle of distribution of force. This principle governs the development of force in war, the integration and disintegration of force ; it is, in fact, the military counterpart of the law of evolution, and its complement the law of dissolution.

If right through a war we know how to distribute our force, unless we are very inferior in force, we shall be able to concentrate superiority of force ; and if we concentrate superiority of force we shall be able to direct our force along the resultant of the lines of greatest traction and of least resistance, and, if we can so direct our force, then will our expenditure of force be economical and the law of economy of force will be maintained.

These three principles—the direction, concentration, and distribution of force—are not only co-equals but inseparable instruments of the mental sphere, and through the mental sphere of the moral and physical spheres. They can be infringed individually or collectively, but they cannot be annulled, for they govern the machinery of the engine of war, the output of which is economy in varying degrees. Though these modes of the law of economy of force—for such they in fact are—must be set in motion by the will of man, the hand which holds the throttle of this engine is cosmic law, which operates without let or hindrance, irrespective of man's wisdom or folly.

To turn back to the elements. Whilst the interplay between the ideas is imagination, and whilst imagination is ceaselessly shuffling ideas to and fro and weaving them into all manner of designs, according to the object which is at the moment in control of the mind, reason is simultaneously selecting such of these designs which, when fitted together, like the pieces of a puzzle, will make a complete picture of our intention. Once this picture is completed the will is released. The picture now may be compared to a map, the will to a man, and the action resulting to finding his way from place to place across country by means of this map. The shortest way from place to place is in a straight line (a curve on a globe). Does the map correspond with geography (reality) ? Has the imagination grasped what the surface to be traversed is like ? Has the reason worked out the shortest, that is, in the sense I make use of this word, the most economical road ; and is the will strong enough to travel by it ? These are the questions we must answer if our aim is the correct application of these three principles, and the last of these answers brings us to the moral sphere of war.

4. THE PRINCIPLES OF THE MORAL SPHERE

The mental endeavours of the general and of each of his men, when engaged in individual action, are concentrated on the discovery of the most economical line of direction. The initial impulse is the object, and the magnet which attracts the will is the objective, and the vibrations between these two poles must, if they are to be economized, travel by the most direct line ; this presupposes action.

This action, which must eventually be developed in the physical sphere, will be resisted by the enemy's physical force, and must consequently be opposed—that is, pressed back—by a similar force, which depends for its endurance on the strength of the moral sphere separating the mental and physical spheres. The direction taken by the will must, therefore, traverse the moral sphere before it can set in motion the physical.

If men are controlled by fear, they will not move, or, if they do, their movements are likely to be chaotic. The more courageous they are the more directly will the will of the general be able to control their actions. This condition of courage depends, as I have shown, on how far the resistance of *moral* can keep at arm's length the pressure of fear ; therefore the conditions in which direction is asserting its influence must permit of the development and maintenance of the maximum active courage from the initial or potential courage of the army. The degree of this courage, consequently, determines the quality of the action resulting, therefore I will call the abstract conception of the potentizing of the will of the general by means of his courage and that of his men the principle of determination of force.

The strength of the moral sphere of force is, as we see, largely dependent on the correctness of the line of direction decided on by the will of the general, or man acting individually, consequently on the principle of direction of force depends the moral pressure of the instrument. Its tension, or resistance, depends on its initial moral value, the training it has undergone previous to action. Hostile resistance attempts to frustrate its pressure, and hostile pressure aims at overthrowing its resistance.

In the mental sphere I have shown that direction of force is dependent on concentration and distribution of force ; consequently, if harmony is to be maintained throughout the entire forces of the instrument, concentration and distribution of force must equally be applied in the moral sphere.

Moral pressure depends for concentration on the line of direction taken ; therefore the question which must be answered is,

“What should be the aim of this direction?” The answer is that the aim should be the breaking down of the determination of the enemy’s command or instrument, by so demoralizing it that its *moral* is unbalanced by its fear, and the union of the elements of will and courage is broken.

In an expected attack the resistance to be met with will obviously be greater than in an unexpected one, and the less the resistance the greater comparatively will become any given amount of pressure directed against it. Consequently in the moral sphere concentration of force is represented by surprise, therefore I will call the abstract conception of moral concentration of force the principle of surprise, or the principle of the demoralization of force.¹

Distribution of force in the mental sphere must also have its counterpart in the moral sphere. The moral resistance of the instrument must frustrate or withstand the moral pressure exerted against it and resulting from the enemy’s physical action. What will be the direction of this pressure—that is to say, what will be its line of approach towards overthrowing its adversary’s determination? We cannot say. But if it is to our advantage to surprise the enemy, it is equally to his advantage to surprise us. We cannot distribute our *moral*, for *moral* is not a commodity, but we can so distribute our men that an unexpected attack will be unlikely, or most difficult; further, we can distribute them in such an order that no single party is isolated, and, consequently, lacks, if not immediately the physical, then the moral support of the whole or of other parts. Again, we can, by training and education, distribute a high moral throughout our force, and so endow it with power of enduring the pressure of both expected and unexpected hostile action. Consequently I will call this abstract conception of the distribution of moral force the principle of endurance of force.² On the ability to apply this principle, and simultaneously bring into operation the principle of surprise, will depend the economy of our determination. Hence, as direction of force depends on concentration and distribution of force, so does determination of force depend on demoralization (surprise) and endurance of *moral*.

Again, these three principles are not only co-equals, but

¹ As surprise so frequently is accomplished by an unexpected move, originality of thought and novelty of action are potent modes of this principle.

² As originality and novelty play an important part in the application of the principle of surprise, so do simplicity and common doctrine play an equally important part in the application of the principle of endurance. An original plan should aim at simplicity, and novel action should not demand movements the troops do not understand. If these four requirements—originality, novelty, simplicity, and common doctrine—can be closely combined, then determination will be strong, but, if not, it is liable to prove fragile.

inseparable instruments of the moral sphere, linking as they do the mental to the physical sphere, and they constitute the moral modes of the law of economy of force.

In these principles (just as in the mental ones) we see the interplay of the elements of the moral sphere. Direction having laid down our road, the progress along it depends on our encouraged will ; fear springs up everywhere, for it is, in fact, the atmosphere of the battlefield, a poisonous gas which, if we breathe it, will asphyxiate our courage. To take a simile, our gas-mask is our *moral*, and as long as it remains in an efficient condition, so long will our courage endure ; but should it prove defective, or should the enemy's action injure or destroy it, then courage will slacken or die, and the contact between the will of the commander and the actions of his men will be broken.

5. THE PRINCIPLES OF THE PHYSICAL SPHERE

I now come to the physical sphere, the sphere of true action. The encouraged will, expressed by the principle of determination of force, must set the military instrument in movement, whether this instrument be one man controlled by his own will or an army controlled by the will of its general. Movement depends on physical energy, and how far this energy is concentrated or dispersed. If the direction towards the objective is simple, then through physical energy can force be concentrated against it ; if complex, then force must be distributed, and the various movements resulting must be correlated. The degree of movement, consequently, directly depends on the pressure exerted and the hostile resistance opposed to it, and also on the determination shown, which depends on the moral endurance of both sides, and the freedom of this endurance from surprise. Finally, movement must coincide with the direction decided on, for movements away from this direction are eccentric to the plan, and are, consequently, destructive to the will of the general. Movement must, therefore, express the will of the general through the will of his men, their determination acting on their physical energy ; the abstract conception of such movement I will call the principle of the motion of force, or of mobile action, or simply of mobility.

As movement in war is met by resistance, it must be expended in the form of pressure. This resistance depends on the determination of the enemy ; but this determination is itself dependent on the physical organization in which it is encased. This organization possesses structure, maintenance, and control,

all of which are organically essential ingredients. Pressure can be exerted against any one of these, or, more generally, all three simultaneously. Normally the process whereby pressure is exerted is to concentrate a superiority of physical force against the structure of the enemy's army, and attempt to destroy or disorganize it. The abstract idea of such action I will call the principle of the disorganization of force, or of destructive action, or of the offensive.

If pressure is exerted against the body of the enemy's army, destruction of force becomes direct, and this has been the normal method throughout the history of war; if against his system of maintenance, it becomes indirect; and so also if it is directed against his moral endurance, or the will of his general. In the first case pressure manifests in fighting, the object being physical destruction; in the second it takes the form of physical disorganization through economic pressure; in the third, of demoralization through surprise or terror; and in the fourth, to a similar end through similar means, but directed against the will of the general rather than against the will of his men.

As all these forms of pressure can be exerted, it stands to reason that to concentrate physical force alone is not sufficient. However carefully a plan may have been worked out, however thorough has been the reason, however illuminating the imagination and decisive the will, no general is omniscient and no soldier omnipotent, consequently the possibility of error in direction always exists. Therefore, besides concentrating our physical force, we must also distribute it in such an order that structure, maintenance, and control may be maintained. The major tactical distribution must be such that, through a combination of formations, the economy of the plan is maintained, and the minor tactical distribution must aim at protecting pressure whilst it is being exerted. I will call, therefore, this abstract idea of physical endurance of force the principle of security of force, or of protective action, or simply of security.

The more pressure is secured by resistance the greater will be the mobility, or potential motion, of the instrument; thus mobility is dependent on the co-operation of these two, and it is the effect produced by this co-operation which is its cause. Economy of movement—that is, doing something in the shortest time, with the least loss of energy, mental, moral, and physical—is the ultimate expression in battle of expenditure of force. If movement were absolutely perfect, it would coincide with the law of economy of force. Thus the final principle of war—mobility, which is the resultant of the co-operation of the previous eight, working as parts of an engine—is the link which unites the final

effect with the originating cause, and the closer the coincidence between these two the more perfectly has the law of economy of force been applied. Diagrammatically this may be shown as in diagram 17.

We start with an object, which presupposes an objective. Our directing law is economy of force, our means are our instrument, which is governed by the nine principles of war, which are, so to speak, emanations of the one law as applied by our intelligence.

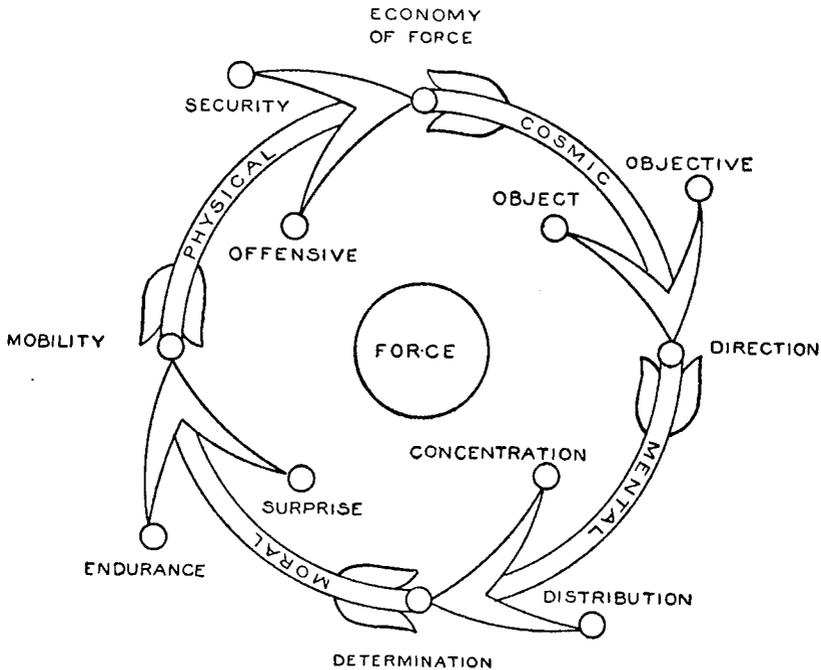


DIAGRAM 17.—THE UNITY OF THE PRINCIPLES OF WAR

We see in the principles of the physical sphere the interplay of the elements of this sphere. As *moral* was our gas-mask, weapons are our offensive tools which overcome resistance, and, as they clear the road, we move along it, and protection is the glove which covers our hand.

6. THE PRINCIPLES OF WAR

In the preface of this book I outlined the history of the principles of war as reasoned out by me, and there I examined the differences between my earlier and present conceptions. I

do not here want to repeat these differences, but, as I have in the present chapter given more than one name to several of the principles, I think that it will be as well if I now decide on one name for each.

As they are emanations of the law of economy of force, in my opinion the following are the terms which more scientifically express the energies they control :

- (i.) The principle of direction of force.
- (ii.) The principle of concentration of force.
- (iii.) The principle of distribution of force.
- (iv.) The principle of determination of force.
- (v.) The principle of demoralization of force.
- (vi.) The principle of endurance of force.
- (vii.) The principle of mobility of force.
- (viii.) The principle of disorganization of force.
- (ix.) The principle of security of force.

These terms have, however, certain disadvantages, the main one being that in our army other names are being used for several of them ; I think, therefore, that the most practical, if not the most expressive, terms are :

- (i.) The principle of direction.
- (ii.) The principle of concentration.
- (iii.) The principle of distribution.
- (iv.) The principle of determination.
- (v.) The principle of surprise.
- (vi.) The principle of endurance.
- (vii.) The principle of mobility.
- (viii.) The principle of offensive action.
- (ix.) The principle of security.

And as such I will usually refer to them.

I will now arrange these principles in two diagrams, in the manner I adopted for the elements of war. In the first diagram (No. 18) I will show the principles working within man, and in the second (No. 19), between the general and his army.

In the case of one man the problem, in brief, is to discover the relationship between the object in his mind and the objective which confronts him. For example, a man wishes to pick an apple ; the obtaining of the apple is his object, and the apple itself the objective. In war the political object is a better peace, but the military object is to establish a condition which will permit of this better peace being attained ; the objective is the

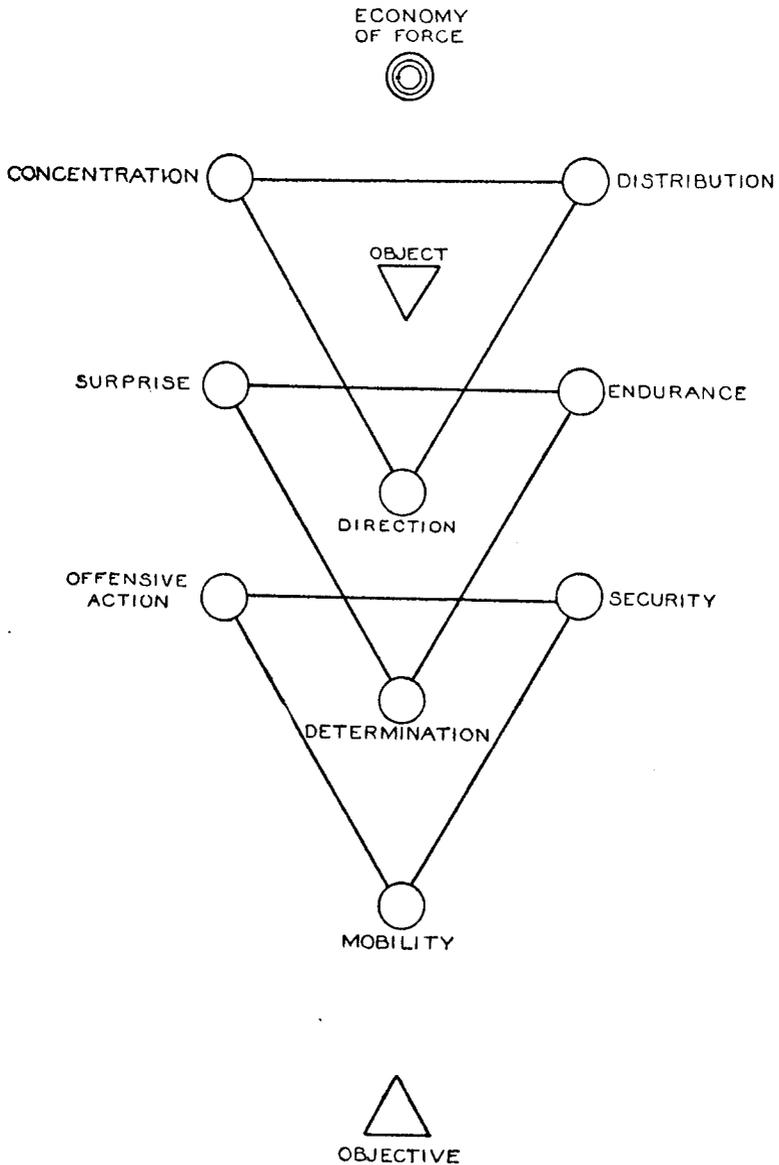


DIAGRAM 18.—THE GENERAL RELATIONSHIP OF THE PRINCIPLES OF WAR

disarmament of the enemy, which demands the occupation of his country.

To return to the man and the apple. The apple, I will suppose, is on a branch out of reach. There must be one way out of all ways in which the least amount of physical energy need be expended in obtaining possession of it. Which way is this? By distributing mental force—that is, by using our imagination—we shall see that there are several ways of climbing the tree, and, guided by the idea that we should economize our force, we select as our working hypothesis one way. We hand this over to the reason, which analyses it, and, after having concentrated thought on the idea, accepts it, rejects it, or amends it. Finally, between imagination and reason is built up a synthesis, or a plan of action, the completion of which releases the will, which gives it a definite operational direction.

The man now approaches the tree ; to climb it will not demand more thought, but determination, in the present instance a will to climb, which means that his pluck must cancel out his fears.

He starts to climb the tree, which means that he must secure himself, perhaps with both hands to begin with, by grasping the branches ; but eventually his security must be such as to leave him one hand free to seize the apple—and I will suppose his left hand. His movement depends, in fact, on his security.

He stretches out his hand to pluck the apple, but he has not noticed that a wasp has settled on it. This insect stings him. Surprised, fear is awakened, which in an instant has cancelled his pluck (moral endurance). His determination vanishes, and, with his determination, his will to seize the apple, and, with loss of direction, his reason and imagination are momentarily blotted out. He jerks his left arm backwards, which causes him to wrench at the branch he is holding on to with his right hand. The branch snaps, and he falls to the ground.

Now as to the second diagram (No. 19), which depicts the principles working between a general and his army.

A farmer wants to obtain an apple which, again, is on one of the top branches. After looking at the tree, he calls to him a boy and tells him how to climb up it. Though this order relieves the boy of making any extensive use of his brains, he has to use them to a certain extent. The boy begins to climb the tree, but soon gets into difficulties, and shouts down that he cannot climb any higher—in fact, his pluck is giving out. The farmer is, however, determined that the apple is going to be his, so he shouts back : “ If you do not get that apple I will thrash you.” This stimulates the boy to climb higher—an offer of twopence might have done likewise, or even an encouraging word. As the boy

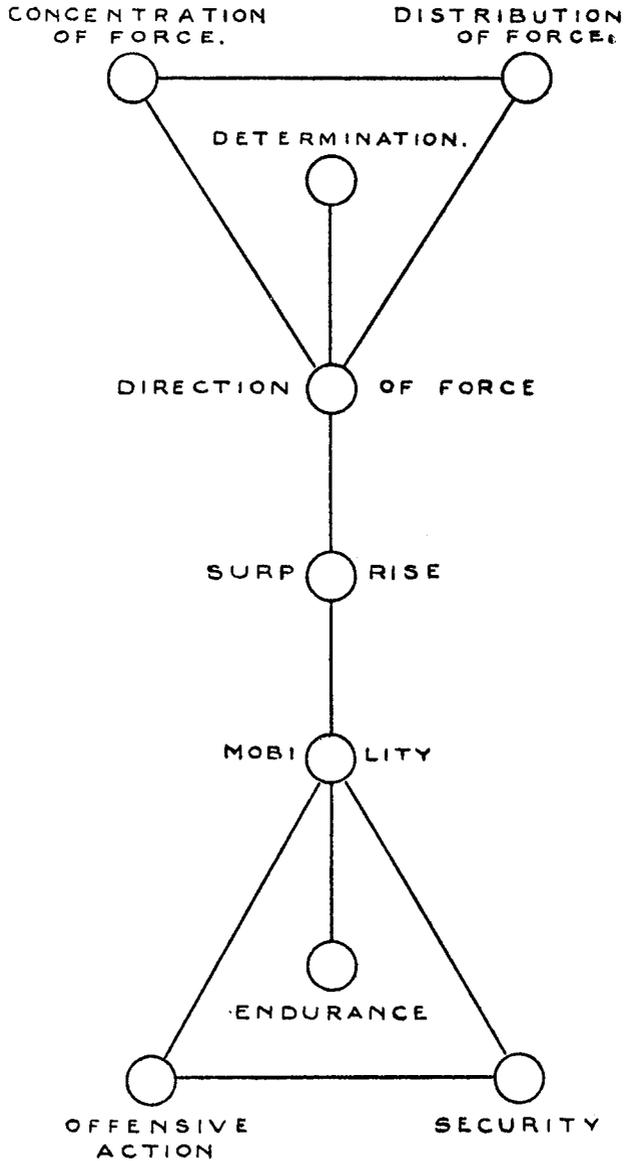


DIAGRAM 19.—THE DUAL RELATIONSHIP OF THE PRINCIPLES OF WAR

nears the apple the farmer, who has been watching him, cries out : " Take care, there is a wasp there. Here is a stick. Knock the apple off." The apple falls to the ground.

I have taken these two very simple examples because they have nothing directly to do with war, yet indirectly they have *everything* to do with it ; for, whether we are attempting to gather apples or kill men, *the principles which govern our actions are the same*. I need not, therefore, elaborate these examples into military operations.

The first thing to remember is that, whether we are working on our own or with others, these nine principles, if correctly applied, assist us in attaining economy of force. The second is that, in spite of this, when we are working directly under another to a large extent we are relieved of mental work ; the plan is given us, and, though we must use our intelligence in carrying it out, our direction in doing so is strictly limited. To the general the principles of direction, concentration, distribution, and determination are all-important, and to his men so are the principles of mobility, offensive action, security, and endurance. Surprise is common to both.

There are many ways in which these principles can be arranged, and they depend on the individuality of the student. Ultimately they are all of equal value, since all nine are essential to economy of force. The simplest method of employing them is, I think, one which ranges them in three groups, under control, pressure, and resistance. Thus economy of force controls direction through the pressure and resistance expressed by concentration and distribution ; in its turn, direction controls determination through the pressure and resistance of surprise and endurance ; and determination controls mobility through the pressure and resistance of offensive action and security. The three groups are therefore :

(i.) *Principles of Control* : Direction, determination, and mobility.

(ii.) *Principles of Pressure* : Concentration, surprise, and offensive action.

(iii.) *Principles of Resistance* : Distribution, endurance, and security.

We thus obtain a threefold order of control springing from a dual order of pressure and resistance, each of these dual forces being in itself a threefold one. Ultimately these three groups form one group—economy of force.

In the following three chapters I shall examine these three groups.

Pw

7. THE CONSTRUCTIVE VALUE OF PRINCIPLES

A little while back I stated that the principle of mobility was the resultant of the co-operation of the remaining eight ; co-operation, therefore, in the full meaning of the word, is the tangible expression of economy of force. If co-operation could be perfect, it would mean that we should be able to obtain the fullest possible economy ; it cannot, however, be perfect ; nevertheless the nearer it approaches perfection the more correct will our actions be. By examining a battle, a plan, or an organization we can discover how far actions, ideas, or parts were, or are, suitable to co-operate, and by this process of analysis we can discover facts of importance—the reasons for the errors made and for the successes gained.

Co-operation always exists, but in what degree? This is the problem. Is it as effective and economical as it can be? How can we discover its value? The answer is by examining its ingredients, namely the elements of war. Are the principles animating them in harmony, or is any one discordant? Why is it discordant, and how can its faults be remedied? By such questions we arrive at scientific answers.

In order that the student may fully understand the inner working of co-operation, I will take a simple concrete example—a clock. If we open up its works and look at them, we shall see a small spring vibrating, and a larger one apparently motionless, but, in fact, slowly unwinding itself ; certain wheels move rapidly, and others slowly. There are three main parts—a main-spring which releases concentrated power, a hairspring which controls the output of this power, and a system of gears which distributes this power. We obtain, in fact, a close similarity to concentration, direction, and distribution of force. The whole mechanism is working in unison in order to move the hands of the clock over the dial, so that an observer may read the time of day. A good chronometer will not lose or gain more than a few seconds a year ; its economy of force is almost perfect ; yet it has been made by man to assist man. So with an army, though we cannot construct a military instrument as economically as we can a watch, we can at least attempt to set its parts together in such an order that a fair degree of unity of action will result.

Such is co-operation, or working together for a common object, in the case of the watch for the registration of time ; yet it is only co-operation in a sense, a general sense, for, suppose that the dial had no figures marked on it, the most perfect co-operation would prove useless. And suppose again that, though the figures are there, the clock gains ten minutes in every hour, the reading

of time will be misleading, and the objective of the reader will not be gained.

I will translate this into military terms.

The correct registration of time is the object, its correct reading the objective, and the dial is the plan. The works are the elements of war whereby the object is gained, and as these works are governed by mechanical principles based on pressure and resistance and their resultant, so are these elements controlled by the principles of war which possess a similar foundation.

8. THE DEVELOPMENT OF A PLAN

I will now turn to planning, and examine how an economical plan is worked out.

Means must be scientifically fitted to ends according to conditions ; the foundation of every plan is, therefore, common-sense action. Thus in land warfare our means are our army, national resources, national *moral*, etc. ; our end is the enforcement of our policy by defeating the enemy at the least cost to ourselves, not only in men, but in resources and honour ; and the conditions are the innumerable factors which are met with in war, many of which are continually changing.

How are we going to control these conditions? Here, then, is our main difficulty when we attempt to devise a co-operative plan—that is, a correct placing of the figures on the dial so that the energy generated by the mechanism of our military clock is economically expended. By plan I do not only mean large arrangements such as those suitable for an army, but equally smaller ones down to those suitable for a platoon, a section, or even one man.

To control conditions—and on their control depends the structure and maintenance of the instrument—we must work as follows :

First, we collect all the conditions we possibly can, and arrange them according to their elemental categories—this is information. Secondly, we apply to these conditions the principles of war—this is analysis, which will enable us to discover which conditions will assist us and resist us. This leads to transformation, and through transformation to hypothesis. Thirdly, having ascertained the military values of the conditions, bearing the hypothesis in mind, we equate these values with the elements of war and discover how these elements will be affected. Then, bearing in mind our object, guided by the principles of war, we arrange these elements and set them together in a plan—this is synthesis.

Every individual worker, according to the particular " mould " of his brain, will work somewhat differently, for working is an art, but the foundation of art is science. Hypothesis, analysis, and synthesis may be compared to a triangular frame which holds the " substance " of our thoughts, and the ego itself is the worker.

I will now take as an example the simple platoon operation I examined in chapter viii. A platoon is ordered to capture a machine-gun post. This is a very simple operation, yet it may be a very dangerous one ; in any case, the platoon commander is directly influenced by immediate danger, and, unless he can maintain complete self-command, he is apt to base his advance on an unsound plan, or no plan at all. He has three main things to think about—the ground, his men, and their weapons from his point of view, and from that of the enemy.

He first wants to discover the most economical direction of advance, so he rapidly examines the ground. How will it influence his men and their weapons? He must start from a secure base ; but the heavier the blow he can deliver the more rapidly will the objective be won, so he thinks in terms of concentration of force—the knock-out blow. But he must not put all his eggs into one basket, for he must never forget that not only must he distribute part of his platoon to protect his decisive attack, but that, however carefully he may have analysed conditions, new ones will always be cropping up, to meet which he must hold a reserve in hand ; consequently he must apply the principle of distribution of force, which not only means holding men in reserve, but also forcing the enemy to disperse his men by threatening him from more than one direction. By now he should have a fair idea of his direction.

Having settled this point provisionally, he secondly considers his men and the probable condition of the enemy's. Are they tired or fresh, are their tails well up or down? For ultimately it is the men who have to take the position. Is their any chance of delivering a surprise blow, perhaps by pushing a couple of riflemen round a flank? The ground will help to answer this question, but still more so will the determination of his men ; what is their endurance? He is now thinking in the terms of the moral principles of war, and they will enable him to check his provisional direction, and perhaps improve it.

He has now determined on a course of action, so he turns to the physical principles. He knows the condition of his men and the state of the ground ; how now can he move over it? The principle of security applied to its protective characteristics in relation to the protective power of his weapons will tell him where he can best resist the enemy, and the principle of offensive action

applied to the offensive characteristics and powers of ground and weapons, where he can best exert physical pressure against him. These two combined will, when equated, enable him to decide how to move. His direction is now fixed, and the action begins.

I do not pretend that any platoon commander will normally have time to consider the principles of war so methodically. I have made one principle follow another in a logically stereotyped order. But, if he has trained his mind to think in principles, in place of thinking by order of conditions, directly he thinks of one principle he will think of the influences of the remaining eight. As conditions change, he applies them, and the quicker he can do so the higher will be his initiative, and by initiative I do not mean doing something, but doing the right thing—the common-sense thing. Thus is economy of force observed, and each small economy effected adds to the ultimate victory, or minimizes the ultimate defeat.

CHAPTER XII

THE PRINCIPLES OF CONTROL

Life is not a bully who swaggers out into the open universe, upsetting the laws of energy in all directions, but rather a consummate strategist, who, sitting in his secret chamber over the wires, directs the movements of a great army.—BALFOUR STEWART.

I. THE PRINCIPLE OF DIRECTION

GRANTED that the general is a free agent, and is not cramped in his action by political pressure, and granted that he is a man of normal intelligence, how should he proceed if his aim is to establish a condition which will result in the gaining of the political object of the war?

One writer says: "The ordinary Englishman places too much confidence in imperfectly directed energy, vulgarly called 'British pluck,' and too little upon the fundamental knowledge which should direct it." This fundamental knowledge demands an understanding of the forces commanded and of the conditions in which they will be expended. This writer further says: "Hence, when men wish to effect objects, they must first adapt themselves to the energies and conditions which govern them in the particular case";¹ and this they cannot do without knowledge, knowledge gathered from history and study before the outbreak of the war, and by the intelligence and reconnaissance services during it. Further, they cannot do this unless they know how to adapt themselves to the various changes of a campaign or battle. The first requirement is, therefore, knowledge; the second, the understanding of the items of knowledge and their relationships, and the third is wisdom in the application of this understanding, and here it is that the principles of war come to our assistance. To know, to understand, and to apply wisely are the three closely related means of arriving at a plan of action, and they are none other than our old friends observation, reflection, and decision, in more general forms.

"What have I got to do?" The answer to this question is the starting-point of every plan. "How am I going to do it?"

¹ *The Scientific Basis of Morality*, G. Gore, pp. 123, 118.

And the answer to this one leads to the line of direction of every plan. If a platoon commander is ordered to capture a hostile machine-gun he knows what he has got to do, and he can arrive at the answer to the second question by estimating his and the enemy's forces, and by relating them to the advantages and disadvantages of ground, positions, and time at his disposal, etc. The larger the forces to be employed the more difficult grows this problem, until, when we arrive at the general-in-chief, the problem becomes one of immense complexity, normally rendered worse confounded by the fact that the politician does not tell him the nature of the political object of the war. Is it to annihilate the enemy ; is it to break his will and spare his industries ; or is it to result in a condition which will engender no vindictiveness after war is concluded? What is it? What does the politician want? And, again, what is the maximum price the nation is willing to pay for the gaining of this object? Will the nation " pawn its last shirt " in order to win the war, or how far will it go? If the war is to be fought to a finish, regardless of cost, is the Government immediately prepared to mobilize the entire resources of the nation, and, if not, then how much, and when?

If a general is informed on all these points and many others he will know how to base his plan on policy ; he will know, not only what he has immediately got to do, but what he eventually will have to do, and he will be able to direct his forces, not only according to enemy pressure, but in relationship to their future development.

Given this information, a general can base his plan on policy ; but, if not given it, he must act on his own, and hope, against belief, that he will not be interfered with politically.

2. THE LINE OF DIRECTION

In his plan he should aim at establishing such a condition that policy can take effect. Normally this condition demands the annihilation of the enemy's resistance and the occupation of his country. These conditions can only be secured by strategical, tactical, and administrative action. The strategical object is to gain freedom of movement ; the tactical, freedom of action ; and the administrative, freedom of supply. The first is gained by correct distribution ; the second by superior concentration, physical and moral ; and the third by secure communications. These three combined will give him his direction, and they can never be separated.

Whatever the circumstances may be, our action depends on the enemy's action, which, in its turn, depends on our action. Military thought can, therefore, seldom, if ever, be directed in what may be called a straight line—that is, without interference from starting-point to goal. In 1870 von Moltke based his plan on "general direction, Paris; objective, enemy wherever met." This, I think, in the circumstances, was sound strategy, for not only was Paris the political centre of France, but by directing his forces on to Paris he compelled his enemy to interpose, and so forced the French to battle, and he wanted battle. Had, however, the French been able to concentrate north and south of the line of his direction, namely Metz—Paris, he would have had to change his direction, and, unless his plan admitted of this change, it might have broken down. In 1914 von Moltke the younger, following, at least in part, the plan of von Schlieffen, directed his main forces from Liège on Paris, because he hoped on this flank to avoid a frontal battle with the main French forces, his object being to attack them in rear from the direction of Paris. His objective was first the French line of communications from Paris eastwards; and only secondly the French armies in Alsace and Lorraine. In 1494 Charles VIII, because of his preponderating strength in artillery, took a map, and chalked on it the exact places he wished to go to, and he went to them irrespective of the enemy's action; because, if the enemy appeared on his line of advance, he simply blew him off it.¹

The operations of Charles VIII are the exception to the rule that direction in war is never straight, but in place curved, yet they show that the straighter our direction becomes the simpler is the problem, and this straightness depends almost entirely on pressure.

What a general would like to do would be to exert pressure in one definite direction; but normally the enemy prevents this, not only by resisting pressure, but also by pressing in some other direction; consequently his final direction is the resultant of the general pressure and resistance of his own forces and the enemy's. I will now turn to some of the more important conditions of war which influence direction.

3. THE POINT OF DIRECTION

What is the point of main pressure, or the decisive point against which pressure can attain the most economical results? It is not necessarily the line of least military resistance, since the

¹ Machiavelli said: "He conquers Italy with a piece of chalk."

military forces are only part of the enemy's instrument of war. His political control is centred in his capital and his power to maintain his fighting forces in his industrial areas. A Government can change its seat, as the French Government did in 1914, though this is apt to demoralize the nation ; but industries cannot change their localities. For example, it is obviously impossible for the Germans to move the Ruhr coal-fields into Silesia, or for ourselves to move the port of London to Bristol. Consequently, as fighting forces are becoming more and more dependent on industry, industrial areas are becoming great magnetic centres of pressure. Pressure is steadily being attracted towards them, and in the future great battles will undoubtedly be waged to win or to hold them. This will lead to war in thickly populated areas.

Turning now from industrial and political conditions to military ones ; where is the decisive point to be sought ? This again is by no means a simple question, and the simplest method of arriving at an answer is, I think, to examine this problem from the point of view of the three forces of war.

One general wishes to defeat another general, and, until comparatively recent times, as I have already stated, the death, or capture, or serious wounding, of either general normally decided the day ; for the general *was* the plan. He could personally direct his troops, and, according to circumstances, he adapted his thoughts and applied his actions. To-day the general devises, or should most certainly devise, the plan. He is no longer in physical control, and, once his plan is issued, the mental structure of command is enlarged to include a number of subordinates, who, if they are capable men, can, in an emergency, replace him. The mental decisive point is, therefore, the enemy's plan, which holds his decision, and, if this decision can be revoked, mentally the enemy is reduced to a state of reflection—that is, of reasoning in place of willing. He has to reason out new moves before his men can execute them, and, consequently, loses time. Conversely, his antagonist gains time, and, gaining time, can make more use of space and all that space includes, namely the conditions of war. The decisive mental attack is, therefore, directed against the enemy's decision as expressed in his plan. If the enemy's plan is known his decision can be discovered ; it is, however, seldom known, but it is frequently discoverable, if the character of the commander has been previously analysed, and if the national characteristics and tactics of the enemy have been examined, and the geographical conditions of the theatre of war are understood. Alexander grasped quite clearly what Darius was worth, and he defeated him in every battle ; the

Romans could never grasp what Hannibal was worth, and they sustained defeat after defeat. The pivot of the enemy's will is his plan, and, if this plan is smashed, the chances are that the enemy is smashed. Therefore in war the mental line of direction is towards the vital point in the enemy's plan.

Morally, the vital point is the rear of the enemy's army, because the enemy is least prepared to sustain pressure in this direction, and, if pressure is exerted, he will almost certainly be compelled to abandon his plan until he has successfully secured himself against this pressure or destroyed it. Force directed against the plan compels the enemy to reflect ; but force directed against the rear of his army compels him to change his determination, and the rear of an army is the morally vital point, because the army is the instrument of his plan.

There are several ways of carrying out this attack :

- (i.) By enveloping a flank.
- (ii.) By penetrating a front.
- (iii.) By manœuvring an enemy into a position which opens his rear to direct attack.

To-day aircraft, if in sufficient strength, can always attack the rear of an enemy's army ; and fast-moving tanks and armoured cars will equally well, and even more directly, be able to do so, if the enemy relies on infantry as his main arm. Aircraft can attack, not only the rear of the enemy's army, but the national will this army is protecting, as well as industrial and political centres ; consequently, the front of an army no longer protects its rear—or nothing like so fully as it did a few years ago.

Physically, the decisive point is the arm or position which is essential to the execution of the enemy's plan. Thus, if a general determines to occupy a position by means of infantry, led by tanks, the decisive point his opponent should aim at is the position of the tanks. If he intends to occupy a position by means of cavalry in order to sever his enemy's communications, the decisive point is where the cavalry is, at a distance from or on the position itself. In his battle front such positions, the loss of which will compel him to change his plan, are also decisive points, and all these decisive points and actions are dependent on the conditions of war.

A correlation of all these various lines of direction gives the general tactical direction of the plan, and any action which aims at changing this direction is one of a decisive nature. As the will of a general finds expression in the mobility of his men, so does direction ultimately find expression through the principle

of mobility. To force an enemy to change his plan, the most general means adopted is to restrict his power of movement, strategical, tactical, or administrative.

4. THE ORGANIZATION OF DIRECTION

I have in chapter viii. stated that strategical movements are mainly protective in nature, and tactical movements offensive, and in battle I have called these two expressions of movement the approach and the attack. The resultant of these two moods of force is to establish a condition of movement free from all hostile pressure. This condition is administrative movement, and the nearer it approximates to the movements which take place during peace-time the more directly can an army be supplied and controlled, and, consequently, its structure maintained and rejuvenated.

The aim of strategical action is, therefore, not only to direct an army so that the greatest tactical effect is obtainable, but also to direct it in such a manner that its administrative movement, and all this movement includes, is in no way jeopardized, and, if possible, is rendered still more secure. Strategical movement is, therefore, dependent on two important and extensive series of conditions, conditions which affect tactics—fighting—and those which affect maintenance—supplying. In the past, judiciously directed tactical power has normally protected administrative movement, but the introduction of aircraft has seriously modified this protection, since to-day air action can be directed against the rear of an army without serious interference from the ground. As the rear services of an army are as important to it as are the internal organs to the human body, and as in the body these organs are centrally placed between the limbs which are more closely dependent on the ground—the legs—and those which are independent of the ground and above it—the arms—it is more than probable that the future will see aircraft being extensively employed as arms, and not only in advance of an army, but in its rear, the direction of air force units so employed being relegated to the quartermaster-general or his representatives.

I have introduced this seeming digression with a definite purpose, namely to show the complexities which exist and have to be smoothed out before a mean direction can be ascertained which will permit of strategical, tactical, and administrative movements co-operating economically.

The conditions which, in the past, have mainly influenced the strategical application of the principle of direction have been those of communications—roads, railways, rivers, and canals.

Though these conditions are likely to endure, others are rapidly rivalling them in importance.

The object of superior mobility is not only to move more rapidly in a given time, or over a given space, than the enemy, but to obtain a maximum, and, if possible, superior offensive power when the enemy is met with, which as a corollary equally demands that, when the battle takes place, the minimum force of troops is required for protective duties. On the nature of these troops depends their offensive and protective powers. Thus, for example, in the days when cavalry was the superior arm, ground suitable for cavalry action was sought after; when artillery was superior, fortresses assumed a predominating influence; when infantry was superior, battlefields were chosen from the point of view of the musket or rifle. If offensive action was desired, open ground was sought for; if defensive, then enclosed. We thus see that the superior weapon of the day determined the tactical value of conditions, especially physical ones, and that, as strategy has as its object the economical distribution of troops for battle, these conditions largely influenced strategical direction.

In brief, we may say that strategical direction is the resultant of tactical pressure and administrative resistance, and of all the conditions which influence tactics and administration. Equally is tactical direction the resultant of administrative pressure and strategical resistance, and administrative direction of strategical pressure and tactical resistance. Thus, if I want to move an army from A to B in order to engage an enemy in battle at B, then :

(i.) My strategical direction depends on the degree of offensive power I can exert at B; and the degree of protection I will have to allot to my administrative services in getting to B.

(ii.) My tactical direction will depend on the facility of my administration, and the fewness of the men and means I have to allot in order to protect it, and on the security of my force from hostile action during strategical movement.

(iii.) My administrative direction will depend on the power of my strategy to compel the enemy to change his plan, and on the resistance my army can develop when the enemy is met with.

What does this mean? It means that, when we examine conditions, it is not sufficient to extract from them their influence on strategy, or on tactics, or on administration separately, but on all three combined, and that unless this is done we cannot

begin to contemplate deciding on our direction. All three should move along one line, but all three want to move along separate lines. What, then, is the mean line, or what I will call the line of harmony? It is the line decided upon by the general which will enable him to develop against his objective superior protected offensive power in the shortest time—not necessarily the maximum power, but sufficient to attain his object; if only because a sportsman who wishes to shoot snipe does not fire half-inch bullets, nor does he rely on No. 8 shot when he is hunting elephants. He does not expend the maximum of force, but a sufficiency of force.

If we examine history we shall find that this line of harmony has seldom been worked out scientifically. I will take as an example the third battle of Ypres. The strategical direction decided on was to advance from the neighbourhood of Ypres towards Bruges and Ghent, the object being to capture or cut off the German submarine bases. The conditions were adverse to tactical pressure, for not only was the ground cut up by hedges, dykes, canals, etc., and covered with farmsteads, but the German right flank rested on the sea and the left on Lille, a large centre of communications. As if this were not sufficiently disadvantageous, the natural resistance the country offered to administrative movement was multiplied a hundred times by destroying the surface of the ground and the drainage system which intersected it by artillery fire. In its turn, tactical direction was limited by a want of administrative pressure, for the supply of the army became, not only difficult, but impossible, and, though we were so placed as to be almost immune from strategical interference, except by air, the impossibility of developing strategical pressure cancelled out this advantage. For similar reasons our administrative direction was nil, since, though our tactical resistance was strong, our strategical pressure was negligible.

5. DIRECTION AND THE HUMAN ELEMENT

I have now dealt in some detail with the organization of direction, and for a moment will turn from the mental and physical spheres to the moral. I do not intend to enter deeply into the moral side of direction, as I shall revert to this sphere of force when I examine the moral principles of war. It is of importance to remember, however, that moral force decides the degree of expression of physical force, and that, as the aim of direction is to expend force economically, the condition of moral force at the time of expenditure directly influences economy.

Many battles have been strategically and administratively

well founded, yet tactical results have been negligible, not because superiority of physical force was lacking, but because it lacked animation. Ultimately all depends upon what the man is willing to do, and the strength of a man's will depends very considerably on the absence of fear and fatigue. If administrative direction is wanting, discomfort results, and the will becomes personal in place of collective. When this happens a general's control weakens. If strategical direction is wanting, by degrees the men lose faith in their commander, and, through him, in their leaders; the stimulant of originality is wanting, no novelty of action magnifies his powers, the general appears to his men as one of themselves—a very ordinary person—and, as such, is subjected to criticism. If tactical direction is wanting, unnecessary losses result. It is not casualties in themselves which unnerve the men, for soldiers are not much stirred by the aspect of the dead, but what does unnerve them is *unremunerative* losses, lives foolishly thrown away; for then every time they see a dead man they say: "Another 'stiff 'un,' and what have we gained?" And this contemplation leads to another: "Perhaps we shall fill a similar billet to-morrow, and what for?" It is not death which demoralizes, but unnecessary death. The soldier will submit to any danger if led by a hero, but to few if led by a butcher. Once the soldier is only willing to fight because he fears military law more than he fears the enemy he ceases to be a reliable instrument.

6. THE PRINCIPLE OF DETERMINATION

The plan is arrived at through an intellectual process of foreseeing, reasoning, and deciding, and before it can be transformed into the activity of war it must be given life. It is the general who verifies his plan by animating his instrument. This animation is governed by the principle of determination, and according to its application are the limits of the plan defined.

Throughout the history of war, courage, pluck, boldness, audacity, and determination have been terms employed to denote a quality which is of the utmost value both to the individual fighter, whether soldier or general, or to the army as a whole; yet historians have been content to accept it as a natural gift, and soldiers generally, especially in modern times, have followed suit. They have looked upon it as an element pure and simple, and have seldom attempted to analyse the influences of the conditions of war upon it, or to discover the nature of the relationships arising out of these influences.

Principles of war are not talismans, but abstract conceptions

of general ideas. In themselves they possess no magical powers. It is useless to say: "I am determined to defeat the enemy"; for it is not the assertion which accomplishes defeat, but action. Direction is the resultant of three factors—concentration and distribution governed by economy of force; so is determination the resultant of three factors—originality—that is, action which will surprise and demoralize the enemy—and endurance governed by direction of force. What now are the moral conditions I am called upon to operate in? If I do this or that and the enemy does that or this, what moral conditions will arise, and how will these conditions influence my force, and through my force my plan, and through my plan my will? If my plan is destroyed, for the time being my will is paralysed, yet not one man may have been lost. The battle of Jena was not alone won on the heights of the Landgrafen Berg, but in the manœuvre which preceded their occupation; it was these manœuvres which demoralized Brunswick. It is in the conception quite as much as in the execution of an operation that success lies, and the link between conception and execution is animation—the moral tone of the instrument.

Like direction, determination is founded on knowledge, but, in particular, knowledge of a moral order. Through direction a general arranges his force, distributing and concentrating it, and forming it into an economic weapon; but through determination he controls its sentiments. If to direct the forces of war one man alone is required, so also is it solely within the province of one man to animate the instrument in its highest degree, and this one man is he who directs it.

I have already stated that committees and councils cannot govern armies, and though this fact is common knowledge, repeated in every text-book on war, in the last great war direction by committees and conferences was reduced to a fine art, an art in which the general in command became a constitutional monarch and the power which by right was his was relegated to his staff and delegated to his subordinates; it was a command by soviets.

The soldier, being utterly surprised by the magnitude of the war, and because the war was morally unlike anything he had expected, lost his mental equilibrium, and in herds of conferences sought to evade the responsibilities incumbent in determination by merging his powers of direction in the clatter of round-table talk. Had he realized what command meant, that command is a compound of autocracy and animation—that is, of deciding and of stimulating—he could not have acted as he did. It was because he was mentally fearful that he trusted in command by conference.

7. JOMINI'S OPINION ON COUNCILS OF WAR

This lack in the individuality of command, which undoubtedly prolonged the war for months, is still a shibboleth in all armies. I make no apology, therefore, for the following long quotation from Jomini's *Art of War*; for whilst during peace-time soldiers are always talking about command, and the qualifications of the commander, the first thing they do when war is declared is to abrogate it. Jomini writes:

It has been thought, in succession, in almost all armies, that frequent councils of war, by aiding the commander with their advice, give more weight and effect to the direction of military operations. Doubtless if the commander were a Soubise, a Clermont, or a Mack, he might well find in a council of war opinions more valuable than his own; the majority of the opinions given might be preferable to his; but what success could be expected from operations conducted by others than those who have originated and arranged them? What must be the result of an operation which is but partially understood by the commander, since it is not his conception?

I have undergone a pitiable experience as prompter at headquarters, and no one has a better appreciation of the value of such services than myself, and it is particularly in a council of war that such a part is absurd. The greater the number and the higher the rank of the military officers who compose the council, the more difficult will it be to accomplish the triumph of truth and reason, however small be the amount of dissent.

What would have been the action of a council of war to which Napoleon proposed the movement of Arcola, the crossing of the Saint-Bernard, the manœuvre at Ulm, or that at Gera and Jena? The timid would have regarded them as rash, even to madness; others would have seen a thousand difficulties of execution, and all would have concurred in rejecting them; and if, on the contrary, they had been adopted, and had been executed by anyone but Napoleon, would they not certainly have proved failures?

In my opinion, councils of war are a deplorable resource, and can be useful only when concurring in opinion with the commander, in which case they may give him more confidence in his own judgment, and, in addition, assure him that his lieutenants, being of his opinion, will use every means to ensure the success of the movement. This is the only advantage of a council of war, which, moreover, should be simply consultative and have no further authority; but if, instead of this harmony, there should be difference of opinion, it can only produce unfortunate results.¹

Before preparing his plan a general should tap all sources of information, including the local knowledge of his subordinates;

¹ *The Art of War*, p. 58.

then he prepares his plan, and finally issues it as an order, written or verbal. It is not for his subordinates to question it, but to carry it out. There should never be any great difficulty in this, if the intelligence services are efficient, but, as Clausewitz says : " The great difficulty is to *adhere steadfastly in execution to the principles which we have adopted*. . . . Therefore the free will, the mind of the general, finds itself impeded in its action at every instant, and it requires a peculiar strength of mind and understanding to overcome this resistance."¹ The will of the general, governed by his reason and imagination, is the directing and driving force of the plan. Smash this will, and the plan is smashed ; weaken it, and the plan is weakened. The normal process of doing this is to attack the will of his subordinates, especially those in close contact with the troops ; for these men do not see the state of the enemy, but their own state ; " therefore the latter makes a much greater impression than the former, because in ordinary mortals *sensuous impressions* are more powerful than the *language of the understanding*."² Thus by disorganizing the combatants we demoralize their leaders, and by demoralizing the leaders we paralyse the will of their commander, which is the directing force of the battle, and which enables all parts of the instrument to co-operate.

8. THE ANIMATION OF THE INSTRUMENT

The conflict of reason and instinct is one of the outstanding problems of war. During peace-time all our efforts are directed to form an instrument which will react to its commander's will. In battle the organs of sensation are excited, and through the presence of danger fear is aroused, and the impulse resulting tends to a reaction from the will of the commander. He knows what is right, or at least is acting on an idea, and unless the will of his men responds to this idea their actions will be out of harmony with it. Thus the conflict is one between the self-assertion of the general and the self-preservation of his men, and unless, as I have shown in chapter vii., fear is balanced by *moral*, determination or the " encouraged will " cannot assert its power.

It is necessary for a moment to examine what is generally called freedom of will. Scientifically, will is only free when our volition is in agreement with cosmic laws and circumstances. In Nature all things move in certain ways. Water runs downhill, and is compelled to do so by the force of gravitation ; there is no freedom of will about water. Man can, however, imagine water running uphill, and, if he does not understand the nature of

¹ *On War*, vol. iii., p. 222.

² *Ibid.*, vol. iii., p. 226.

aqueous movements, he may try to make it run uphill. His failure is, however, preordained, and eventually, through trial and error, he learns that water will only flow downhill. When reason replaces trial and error, he discovers the reason why water will not flow uphill, and he calls his discovery the law of gravitation; and thus it is that, through this law and other laws, he discovers that freedom of will varies directly with his knowledge of the forces which govern the universe. *Complete obedience to the laws which control these forces is freedom of will*, and the closer this state is approached the freer is our will; and, conversely, the more distant we are from it the less free. Consequently our knowledge is the measure of our freedom, and if the idea a general wishes his men to carry out is a right idea, then it follows that, the more intelligent his men are, the more likely are they to carry it out economically, since intelligent men normally assimilate knowledge rapidly. If, however, the idea in question is a stupid one, then their intelligence will revolt against carrying it out. Men are not usually fatalists, for fatalism is freedom of will independent of conditions; in place, to intelligent men freedom of will is dependent upon conditions, and if they see that conditions are such that the idea cannot be carried out, then they may refuse to carry it out unless they have been informed of the reason why this infringement of the law of economy of force is required, or unless they have such implicit trust in the wisdom of their general that they realize that he is faced by a choice of two evils, and that, through their self-sacrifice, greater economy will finally result than through their self-preservation. Here we are confronted by several factors which control determination, the most important of which are related to the general. His knowledge and his prestige for doing right must be unimpeachable, and reliance in him must be so complete that the will of his men is merged into his own.

Though the physical loss resulting from disaster or defeat is obvious to all, and though moral loss, in so far as the endurance of the men is lowered, is frequently, though by no means always, recognized, what is seldom realized is that the main loss is in the will-power of the commander over his men. To him as an individual defeat means loss of prestige, which cannot be made good by reinforcements, or by rest and training, but only by success in the field. For a general to depend on disaster to teach him to be cunning means that his men must meanwhile endure the moral strain of war; in place, one who gains success at the lowest cost not only relieves this strain, but tempers the endurance of his troops. Very rightly did Roger Ascham say: "It is a costly wisdom that is bought by experience"; and equally wise

was Benjamin Franklin when he wrote : " Experience is a dear school, but fools will learn in no other."

Information enables a general to know what to do ; animation enables his men to carry out his orders with enthusiasm. Jackson accentuates this again and again in his book. Thus he says : " The human character is the subject of the military officer's study ; for it is upon man that his trials are made. He must, therefore, know, in the most precise manner, what man can do, and what he cannot do ; he must also know the means by which his exertions are to be animated to the utmost extent of exertion. The general's duty is consequently an arduous duty ; the capacity of learning it is the gift of Nature ; the school is in the camp and the cottage rather than in the city and the palace ; for a man cannot know things in their foundations till he sees them without disguise ; as he cannot judge of the hardships of service till he has felt them in experience. He may then judge of them correctly, and apply his rules without chance of incurring error."¹

Throughout the whole course of history fear and love have been employed to animate armies, but, as Jackson truly says : " Fear and love are coverings ; behind them must lurk the spirit of genius which cannot be fathomed ; for, whether a commander be kind or severe, he cannot be great and prominent in the eye of the army unless he be admired for something unknown. It is thus that troops can only be properly animated by the superior and impenetrable genius of a commander, whose character stands before the army as a mirror, fixing the regards while it is bright and impenetrable, losing its virtue when its surface is soiled or softened so as to receive an impression. That a commander be a mirror, capable of animating an army, he must be impenetrable ; but he cannot be impenetrable without possessing original genius. An original genius does not know his own powers. It thus commands attention, and it gives a covering of protection, in reality or idea, which proves a security against the impressions of fear."²

I have already pointed out that if a man does not possess original genius we cannot endow him with this quality, but genius is, after all, only exalted and spontaneous conformity to the law of economy of force, and, consequently, with the nine principles which emanate from this law ; consequently the more we train ourselves to apply these principles correctly the nearer shall we approach equality with genius. A genius is possessed of a sublime freedom of will. This, as Jackson says, is a natural gift and a mystery to normal men ; yet normal man himself can at least approach genius, if he cultivate a scientific freedom of

¹ *A Systematic View*, etc., p. 220.

² *Ibid.*, p. 229.

will through obedience to the law of economy of force. To obey this law he must understand it, and for his will, which is law to his men, to be obeyed, they must understand him. All this is included in the principle of determination of force.

9. THE DELEGATION OF RESPONSIBILITY

I now come to another and very important question which influences the application of the principle of determination, namely the delegation of the will to act. The general directs his army through his plan, and he animates it through the prestige he has created, and according to this direction and this animation is the force of his men expended. In ancient times the contact between direction, animation, and expenditure was immediate. Thus, for example, in the case of Alexander, he directed by his will, animated by his personal example, and expended the force of his army by word of command, because in his day the instrument was compact, closely articulated, and comparatively small. In short, the conditions of time and space were such as to permit of the personal appliance of the principle of determination. Yet even in his day he was compelled to delegate the command of his left wing to Parmenio, his second in command, reserving that of the right wing to himself. In fact, though he commanded his whole army, he only led the more important part; nevertheless, his command was close and his leadership of the right wing was intimate. If he had attempted to command both wings his leadership would have failed, since, being unable to judge conditions influencing the left wing at their true worth, he could not have determined their effects, and, consequently, could not have economically applied the principle of distribution.

This intimate control of the expenditure of force lasted until quite recent times; even as late as the battle of Waterloo we find Napoleon intimately commanding one side and Wellington the other. These generals have ceased to be leaders, but they are still in every sense commanders; in spite of the fact that Napoleon's commandership lacks the snap of youth, he is no longer what he was at Arcole and Jena.

To-day command has not only become divorced from leadership, but has become separated from the Napoleonic conception of commandership, which is that the general-in-chief commands his army in the same way as a craftsman commands his tools. He says: "In military operations I consult no one but myself."¹ Why? Because he himself only knew *exactly* what he wanted. And again: "In war, the first principle of the general-in-chief

¹ *Correspondance*, i., No. 339.

is to hide what he is doing, to see if he has the means to overcome all obstacles, and to do everything in his power to overcome them when he has made up his mind."¹

To-day, if we are to accept the Great War of 1914-18 as our criterion, this conception of command has been replaced by one of delegation. This change-over first became generally apparent in 1866, and still more so in 1870. In the Russo-Japanese War of 1904-5 we find this same system in full play—a system which may be called the Prussian System, and which definitely introduces the modern epoch of war, though in truth it is not modern but very ancient, since Xerxes and Darius used it over two thousand years ago. It is not an evolution in the art of war, but a retrogression, placing, as it does, the determination of events in the structural order of battle rather than in the control of the instrument by one will. A plan was made and forces were deployed accordingly, command was delegated to the leaders of fractions, and, once the machine was set in motion, control over its direction became inanimate, for the machine moved forward compelled by brute strength and not guided by intelligence.

This system of command, based on the theory of brute force, led to the theory of superiority of numbers. An army a million strong would, like an avalanche, crush out of existence an army of but half its size. Initial direction was all-important; changes in this direction were anathema, since force of numbers would flatten out all obstacles, hence reserves were unimportant, for the cutting edge alone mattered, and if this edge consisted of six or seven men per yard of the enemy's entire frontier it could live on its own fat until the enemy was driven over the opposite frontier. This blind and monstrous theory of war reached its apex in 1914, and it failed ignominiously.

It is not here that I intend to examine its failure, but rather its results. In 1914 all nations saw it fail, but they could not see that one of the principal causes of its failure was the abrogation of the will of the general-in-chief as the determining factor in war. Right through the amorphous strugglings, surgings, flow and ebb of this blindest and most brutal of all wars—not brutal because of losses, but because of the lack of directing genius—we see no single general-in-chief fighting his own battle. In place, each formulates a plan and then delegates *his* responsibilities to *others*. The general-in-chief assumes the position of a chief of the staff, and his subordinates become commanders, and each battle is fought by a congeries of soviets—committees of generals who frequently rejoice over each other's defeats as full-heartedly as over their own successes. This system proved itself

¹ *Correspondance*, xx., No. 16372.

absurdly uneconomical, yet it is the system still accepted to-day !

In my opinion—and I have no two thoughts on this subject—a general-in-chief should *always* fight the main or decisive action himself, and should only delegate the direction of subordinate actions to subordinate commanders. Those under him have no corns that may not be trodden on, for the general-in-chief, in order to command, must be an absolute autocrat. How much of his plan he imparts to his subordinates depends on their personalities, on their will and their courage, and on how far their moral endurance permits of his ideas moulding their will. In them fear, or the absence of fear, is his guide. Sometimes a general-in-chief must keep his plan so secret that even during its execution he alone knows its full scope. For instance, if he plans a decisive attack which for success depends on a holding attack, and if this holding attack depends for success on the enemy considering it the decisive attack, he may be compelled, by the personality of the general to whom he has delegated the command of the holding attack, to withhold from him the true nature of the operation. If he tells him to attack as if it were a decisive attack, and then says: "Of course, it is not a decisive attack," his subordinate may lack the determination to attack full-heartedly.

Thus we see that delegation of command is not so simple a problem as it appeared in the Great War, for it is a problem of psychology and not of arithmetic. No general-in-chief purposely wants to keep his subordinates in the dark, but circumstances sometimes compel him to do so. To treat all men as equal is to reduce human nature to a mechanical principle; a general-in-chief is not a Communist, save perhaps in bellicosity. No two men are alike; what, then, are their differences? For on these conditions depends how we determine the delegation of our responsibilities.

Even when command is delegated, direction over its determination can frequently be maintained. Thus, to revert to the above example of the holding attack, the general-in-chief does not really want it to be driven to a conclusion, for all he wants it to do is to bite and hold on to the enemy, to fix him in a position in which he can be annihilated by another force. Yet he orders his subordinate to attack in full. How can he control this attack? By allotting to it a force which cannot do more than hold. He, in fact, determines the endurance, in this case physical, of the attack by a just distribution of force, and yet he may not tell his subordinates that he is doing this.

In the last great war delegation of responsibility was stimulated by the promotion of mediocrity to command. The higher the

command, normally, the less efficient became the general. Men rose in rank according to the date of their birth or of their commissions, and seldom because they possessed ability. Senility sat heavy on all armies, since it is the exception and not the rule that old men prove the best commanders; and history proves this again and again. Napoleon said: "It is at night-time that a general-in-chief should work; if he tires himself uselessly during the day, his fatigue will overcome him in the evening. At Vittoria we were beaten because Joseph slept too much. If I had slept on the night of the battle of Eckmühl I should never have carried out that superb manœuvre, the finest I ever accomplished. I multiplied myself by my activity . . . a general-in-chief should not sleep."¹ In place, what do we see? Elderly men sleeping soundly, unruffled even by hopes of success or dreams of failure, for they have delegated all responsibility to others, save that of the heavy guns and the rearmost transport lines. They can determine nothing, so they slumber; and how can one blame them? Such was command during 1914-18, a command which would have made Darius blush.

10. THE MEANING OF INITIATIVE

Having examined the problems of the animation of the instrument and the delegation of responsibility, I come to another problem of equal importance, namely, the problem of initiative, for action depends largely on this quality—the will to act.

Throughout a great battle, a campaign, and a war, the principle of direction is maintained by correct concentration and distribution, and merges into the principle of determination when moral endurance is proof to withstand surprise, and, be it remembered, nearly every change in the conditions of war results in an unexpected situation, or one which demands an alteration in action, and, consequently, in the determination of will. On the part of the general-in-chief this alteration may prove extremely difficult, unless he has foreseen its likelihood and has distributed and concentrated his troops accordingly, for his main source of initiative lies in his reserves. With his subordinate commanders and with the leaders of the men the problem is more difficult, for, though they should also maintain reserves in order to meet unexpected situations, they do not possess the same freedom over distribution as the general-in-chief.

If subordinate commanders have definitely been delegated

¹ *Sainte-Hélène, Journal inédit, Général Gourgaud, ii., p. 159.*

control of certain operations, then they should be allowed full freedom of action within the terms of references of the plan. In such cases the interference of the general-in-chief is illegitimate, since delegation carries with it responsibility, and responsibility can only economically be centred in the will of one man. Without this centralization of will true initiative becomes impossible.

In the case of leaders—that is, of officers serving under a commander—their initiative depends on their ability to determine the true values of changes in conditions with reference to the endurance of their men. How far has each change reduced or increased this endurance, how far has it effected surprise and consequent demoralization—actual or potential—and how far has it stimulated the fighting spirit of the troops? It is the balance between the principles of surprise and endurance which results in determination, and it is the principle of determination which sets a limit to movement.

Once the leader has thought out these changes his action cannot solely be determined by what is of immediate benefit to his troops, but it must be referred back to the original plan and directed accordingly.

If, in the opinion of the leader, the plan has, through change in conditions, become inoperative, then he ceases to be a leader, and becomes, for the time being, an independent commander, and he must act as if he were a general-in-chief. That is to say, he must replace the inoperative plan by an operative one—that is, one which will permit of the economical expenditure of force. To carry on a plan which manifestly has failed is the act of a fool, whether he be the general-in-chief or a private soldier. Once again we come back to our starting-point, namely, intelligence.

II. SINGLENESSE OF PURPOSE

Singleness of purpose and simplicity of organization are powerful means of enabling determination to express itself. The old Roman saying that a nation should not wage two wars simultaneously is a wise one, and neither should a general. In the Great War of 1914-18, amongst ourselves, we see the commander-in-chief in France not so much commanding the British armies as waging war with the Government at home. His back is to the enemy, and he faces those whom politeness demands should be called his friends. In chapter v. I suggested a means of overcoming this difficulty, namely the appointment of a generalissimo who possesses singleness of purpose towards fixing the military object of the war. Policy must be clean cut, for on

its stability depends the solidarity of the forces with which it is proposed to gain the military object, the gaining of which psychologically depends on the endurance of the "will to win."

This will should be centred in the mind of the general-in-chief, whose plan of action expresses the military method of enforcing the national policy. This plan must also be clean cut; that is to say, it must be so simple that it contains no undetermined or undeterminable complexities.

As the stability of this plan will depend on the stability of the policy, the commander-in-chief must not only be acquainted with the nature of this policy, but with any changes rendered necessary in it due to fluctuations in national and international conditions. Inversely, any important changes in plan will entail modifications in policy, consequently we find that both the plan and the policy are correlatives, since there exists the closest relationship between them, their respective values being determined by each other's stability.

As every policy must be plastic enough to admit of fluctuations in national conditions, such as commerce, industry, social solidarity, and neutral and hostile influences, so must every plan be plastic enough to take the impressions of war; that is, a plan must be so thought out that it is possible to change its shape without cracking its substance.

This plasticity is determined, psychologically, by the degrees of mentality possessed by the two opposing forces. There is the determination between the two commanders-in-chief and between them and their men, and ultimately between the two forces of men themselves. The "will to win" is, therefore, first a duel between two brains, each controlling a weapon called an army; and, secondly, a struggle between two armies, each equipped with various means of waging war. If all the various weapons, each influencing in its own degree the mentality of the wielder and that of his opponent, can be reduced in numbers, the principle of determination becomes more simple of application. If, again, similarity of protection is possible, it becomes simpler still. And if, finally, similarity of movement be added, physically the simplest form of army is evolved.

If the will and *moral* of each individual can be brought to a high but equal level, and his fear to a low and equal level, the commander-in-chief will possess known quantities out of which to construct his plan. We find, therefore, that, in its broadest sense, the principle of determination aims at obtaining a rational simplification of the means, so that the will of both the chief and his men may be directed towards the objective, and concentrated on it.

12. THE PRINCIPLE OF MOBILITY

Mobility is the third controlling principle of war, a principle which endows all military operations with activity, whether offensive, protective, or logistical, and it finds its expression through the element of movement which draws its power from physical energy. Mobility is, therefore, the principle which governs the expenditure of force, and, as I stated in the last chapter, if it were possible to move correctly, then this principle would coincide with the law of economy of force.

In chapter viii. I examined movement in its forms of the approach and attack, or, in other words, protective and offensive movements. Though the former constitutes the base of strategy and the latter of tactics, there is no definite dividing-line between these two. Strategy cannot be divorced from tactics, for, in the battle itself, strategical movements are continued in the form of the approach. To state that strategy comprises all movements before battle and tactics all movements during battle is to suppose that a division between these two essentials can be established by the firing of a shot. Further, it is apt to suggest that the principle which governs strategical movement is not the same as the one which governs tactical movement; consequently that in place of one principle there are two. The difference is not to be sought in the principle of mobility, but in the conditions in which it is applied. These conditions, if rightly read, dictate which elements of war should become the predominant partner, and, according as one element becomes paramount, so does mobility place its form. Thus, if conditions enable movement to take place without the use of weapons, the form which mobility takes is strategical, whether during, or before, or after battle. Or, again, if weapons have to be used to facilitate movement, then the form is tactical. I mention this here because the dependence of the principles of war on the elements of war as influenced by the conditions of war, which either resist or facilitate movement, must never be overlooked.

13. THE DEPENDENCE OF MOBILITY ON THE CONDITIONS OF WAR

Having provisionally decided upon our objective, and having distributed our forces protectively and offensively, the next question to decide is how to move them, and it is here that a close study of the physical conditions of war come to our assistance. Of these, ground and communications are of the highest

importance, and, though this is obvious, it is frequently overlooked.

Throughout history, rivers have constituted the main lines of communication, and even to-day it is along the river valleys that the greater number of roads and railways wind their way. All these communications lead to and from towns, which become centres of communications, and, consequently, positions of strategical importance. Along rivers, where the soil is usually alluvial, cultivation is profitable, and during war-time cultivated areas constitute an administrative assistant and a tactical resistant, that is to say, they assist the supplying of armies but impede their movement on and off the battlefield.

We see, therefore, that communications which follow the river-lines influence in varying degree the strategical, tactical, and administrative movements of armies. Thus certain roads and railways have to be followed, consequently approaches cannot be kept secret; and as these roads and railways often run along low ground commanded by high, and through towns which can be converted into field fortresses, and through cultivated country which provides these strong points with all types of obstacles to their approach—hedges, ploughed fields, plantations, crops, ditches, wired fences, and isolated houses, etc.—the defender has much to support him in holding them, and the attacker much to overcome in advancing through them. All these conditions must be carefully weighed before the principle of mobility can be applied.

Great wars, normally, take place in well-watered areas, for these, being generally the centres of civilization, not only offer economic objectives, but give rise to economic and political disputes. On the other hand, small wars generally take place in badly watered districts—mountainous and desert country where natural obstacles abound. In these areas wars are waged more against these obstacles than against the enemy himself, and, communications being scanty and difficult to protect, supply usually takes precedence over tactics.

In the past, in both types of war, communications, their defence and attack, have constituted the woof and warp of military operations. In mechanical warfare our present theory of communications will have to be modified. In great wars—that is, wars in which battles are fought on flat and undulating ground—the width of roads will be widened indefinitely until they cover vast areas, and possibly entire theatres of operations. In desert warfare the same will occur; but in mountain warfare, though precipitous valleys will restrict lateral movement, the roads and tracks following them will be rendered far less vulnerable to

flank attack by the use of armoured mechanical supply columns. I note this here for the possibilities of mechanical warfare must to-day be considered when we study the conditions of an area of operations with reference to the principle of mobility.

14. THE DEPENDENCE OF MOBILITY ON THE PRINCIPLES OF WAR

I have already stressed the point that it is not possible correctly to apply any one of the principles of war without reference to the remainder. In the present case this becomes readily apparent. If the objective selected cannot be approached, the principle of direction is violated, because the principle of mobility cannot be applied. If communications lead to an impossible offensive area, then, if we follow them, we shall violate the principle of mobility through rendering ourselves powerless to apply the offensive and incidentally violate the principle of concentration. And, if they lead through areas which cannot be protected by the means at our disposal, then again shall we violate the principle of mobility by being unable to apply that of security, and without security our distribution has proved itself faulty. We see, therefore, that the line of least resistance is not necessarily the easiest line to advance by, but, in place, the line which will enable protected offensive action to succeed.

To apply the principle of mobility we must have a definite object as the directing idea of movement. The danger in changing an object mainly lies in the changes of movements which result, and especially of administrative movements. To take a very simple case: a battalion is drawn up in line on its parade ground, with its transport in rear of it. It is facing east, when an order is given for it to face west. As regards the men, all that is necessary is to say, "About turn," but the transport has to move to its new position either by going round the battalion or through it. When armies are concerned, such an operation is normally impossible, and even lesser degrees of change of direction generally lead to friction, and consequent loss of energy.

To maintain the principle of mobility, not only must the objective be fixed, but the base of operations must be secured as well as the lines of communication running forward from this base. A change of base is even more dangerous than a change of objective. It is for this reason that attacks on communications, rather than against the armies themselves, form the most important operations in war. An attack against the base of an army frequently forces a commander to change his object. It has therefore a dual influence; it not only forces an enemy to

change his intention, but to fight for the maintenance of his communications in place of attempting to destroy his adversary. A good example of such an operation is the opening campaign of 1914. The French base of operations was Paris, and the French object was an offensive in Lorraine. The movement of the German right wing through Belgium against the French communications caused General Joffre to abandon his plan in order to secure his base ; it also forced Sir John French to change his base from Havre to St. Nazaire.

The principle of mobility, we see, is immediately dependent on the principles of security and of offensive action. As these two principles are maintained, so does mobility flourish, and as they are violated, so does it wither away. In their turn, security and offensive action are determined by the state of moral endurance, or of demoralization, existing in the troops themselves, which is dependent on the correctness of distribution and concentration as expressed in the direction of the operation. If direction is, or rather could be, perfect, then the law of economy of force has been obeyed. Obedience to this law does not in itself guarantee victory, but what it does guarantee is the most profitable expenditure of force in the circumstances which surround it.

15. THE MOVEMENT OF IDEAS

The expenditure of physical force through movement is, as I have shown, dependent on the will to move, and its economical expenditure on the direction of this will. The first is generally recognized, but, though the second is recognized in so far that every sane man knows that the right way is better than the wrong way, amongst soldiers so little is known of the science of movement that the art of moving is considered the natural prerogative of each separate individual. Hence, when a new idea is put forward, in place of it being analysed and valued it normally is accepted or rejected, not on sufficient evidence, but on personal predilection. I intend, therefore, first of all to examine the movement of ideas, and, secondly, the existing organization of movement, for, in my opinion, the changes which to-day face all armies are mainly connected with movement, and, unless ideas are scientifically examined, organization will remain unchanged, or the changes introduced will be uneconomical.

Movement of ideas depends on liberty of thought, just as movement of things depends on liberty of action, and unless ideas—strategical, tactical, and administrative—are permitted to move, concentration of effort will not result, and in proportion

as unity of action is lacking, so will the moral and physical strength of an army be squandered in detail until a time arrives in which the minimum result is obtained from the maximum effort.

The central idea of an army is known as its doctrine, which to be sound must be based on the principles of war, and which to be effective must be elastic enough to admit of mutation in accordance with change in circumstances. In its ultimate relationship to the human understanding this central idea or doctrine is nothing else than common sense—that is, action adapted to circumstances. In itself, the danger of a doctrine is that it is apt to ossify into a dogma, and to be seized upon by mental emasculates who lack virility of judgment, and who are only too grateful to rest assured that their actions, however inept, find justification in a book, which, if they think at all, is, in their opinion, written in order to exonerate them from doing so. In the past many armies have been destroyed by internal discord, and some have been destroyed by the weapons of their antagonists, but the majority have perished through adhering to dogmas springing from their past successes—that is, self-destruction or suicide through inertia of mind.

Mental lassitude, or the abiding by the letter in place of the spirit of the law, which so frequently passes for military ability, is the dry rot, not only of armies, but of kingdoms, republics, and empires.

Though an army should operate according to the idea which, through methodical training, has become part of its nature, the brain of a commander must in no way be hampered by preconceived or fixed opinions; for, whilst it is right that the soldier should have absolute confidence in himself and his comrades, and through this confidence should consider himself invincible, it is never right that the commander should consider himself undefeatable. Contempt for an enemy, however badly led, has frequently led to disaster. It is, therefore, the first duty of a commander to maintain his doctrine in solution, so that it may easily take the mould of whatever circumstances it may have to be cast in.

We here obtain a dual conception of doctrine. In the first case, doctrine must be looked upon as a fixed method of procedure, so that, when an order is issued, all may understand it, and unity of action may result. In the second case, doctrine must be looked upon as power to formulate a correct judgment of circumstances and to devise a course of procedure which will fit conditions. If this be a correct definition, then it stands to reason that, if the will of the commander is to control the actions of his army, the

doctrine of an army must be such as will permit of *any* rational idea moving it without friction. The question now arises: How can we train our men to follow a method which will in no way hamper the liberty of thought of their commander? The answer is: By basing the art of war on the science of war. If this be done, then the commander who thinks scientifically will find at his disposal an instrument on which, metaphorically, he can at will play any tune. This means that, until a science of war has been formulated, it is not possible to establish a doctrine which can be other than transient. In the past, practically every doctrine established during peace-time has proved itself to be obsolescent immediately it is put to the test of war; the reason being that these doctrines have been built on rules of strategical and tactical procedure dependent on the success or failure of fixed organizations, such as a battalion of infantry, a regiment of cavalry, etc., in varying circumstances, in place of on the elements of war. I will now attempt to explain this more fully by examining the organization of military movement.

16. THE ORGANIZATION OF MOVEMENT

In chapter v. I examined at some length the structure of an army, and, in brief, I stated that formerly, and even to-day, tactical organization was based on the following idea: whilst the guns protect the infantry, the infantry attack the enemy's infantry, and when the enemy is demoralized, the cavalry charge home and annihilate him. If we examine this idea we shall see that:

(i.) Infantry are related to offensive power, and that the more this power is protected the stronger it will be.

(ii.) Artillery are related to protection, and the more it can protect the infantry the more will their power be economized.

(iii.) The cavalry are related to movement, and the more thoroughly the infantry carry out their work the sooner will the cavalry be able to operate.

Briefly, the gun protects rifle-power in order that mobility may be attained by the cavalry. Formerly cavalry was the decisive arm, but to-day it is no longer so, and as infantry, when pursuing, cannot move faster than the retreating enemy, the result is that pursuits have become less and less frequent. Throughout the war, on the Western Front, there were many retirements and advances, but not a single sustained pursuit on an important scale. In Palestine a magnificent pursuit was

carried out in the autumn of 1918, because conditions favoured cavalry movement. The crucial question in the modern attack is: How to re-establish mobility by ability to pursue—that is, how to annihilate the resistance of the enemy?

An answer to this question I feel can be found in the tank, which, being able to move faster than infantry, *can* pursue, and not only pursue, but also attack through virtue of its armour. As the tank can use its weapons and carry its own protection when in movement, it will enable the present static fighting to be replaced by dynamic fighting; that is to say, the soldier, whether infantryman or gunner, will not have to halt in order to deliver blows, but will do so whilst in movement. This possibility must sooner or later lead to a radical recasting of tactical organization, as radical as that which followed the introduction of gunpowder. Yet the anatomy of whatever organization replaces the existing one will be in nature the same, for it must be based on the elements of war. Thus, if we examine history we shall always find that when tactics flourished there were three classes of fighters, namely offensive or close-combat troops, protective or distant fighting troops, and mobile or pursuit troops. Whenever one of these classes disappeared, such as I have noted was the case during the Middle Ages, tactics declined, and the art of war grew primitive in nature. To-day we are entering a new epoch of war, and if our tactics are to be maintained at a high level we shall have to reorganize our forces according to the changed values of the three physical elements of war so that the mind of the commander may control the battle; for unless he can control it he cannot apply the principle of mobility. In other words, he must so organize his forces that this principle can be applied in its fullest extent—that is, with the least possible loss of energy through friction or delay.

17. THE ENDURANCE OF MOBILITY IN WAR

Once we have created an organization which will enable movement to find full expression, the next problem to solve is the maintenance of movement during active operations. If an army be compared to a machine which draws its power from a series of accumulators, then, if its commander wishes to maintain movement, he can only do so by refilling one set of accumulators while the other set is in the process of being exhausted.

In war the power to move must first be considered as the general will to move. In battle the forward impulse comes from the leaders and the troops themselves; they are, in fact, self-propelling projectiles, and are not impelled forward by the

explosive energy of command. Such energy scarcely, if ever, exists, but what does exist is direction to its impulse and the reinforcing or recharging of this impulse with more power by means of reserves. Reserves not only endow the combatants with physical energy, but with moral power and security which impel them forward.

In the initial phases of a war it may be laid down as a general maxim that reserves cannot be too strong, and in these phases, when conditions and intentions are still uncertain, the principle of mobility is normally maintained rather by possessing power to move in its potential form—that is, locked up in a large reserve—than in its active form of an extensive or intensive offensive.

In war, reserves form the capital of the commander, and, if he opens the game with a maximum stake, it may not be long before he finds himself bankrupt. A good player knows the value of a cautious game until he can judge the value of his opponent's skill, and then the value of an audacious use of his capital. In war it is the same. Maintaining the initiative does not necessarily mean attacking and advancing. If the reserves be strong, it may frequently mean defending and retiring in order to create a situation in which their use may lead to decisive victory. In prolonged actions, as the original reserves are used up so must fresh ones be created in order to maintain power to move, and through movement influence the battle.

18. THE INFLUENCE OF MOVEMENT ON DOCTRINE

Earlier in this chapter, by examining the conditions of communications, I pointed out the influence of the conditions of war on the application of the principle of mobility. Sometimes conditions are so adverse that it is most difficult to apply a principle, and if any one principle cannot be applied, then all the remaining principles must suffer.

Before the outbreak of the Great War all civilized armies were imbued with the spirit of the offensive, and simultaneously they were equipped with weapons of great power, such as the magazine rifle, the machine-gun, and the quick-firing field-gun. War was not thought of in terms of security; in fact, the application of the principle of security to the changes introduced by these weapons was grossly neglected. The result was that within a few weeks of the declaration of hostilities movement ceased, because conditions were such that the principle of mobility could not be applied with the existing instrument.

Now, it is beyond question an axiom that nothing can be

accomplished without movement, and it is a self-evident fact that a principle is not a means of war, but an abstract idea which, when translated into action, directs the use of the means employed. I have already stressed the fact that these means are changing. Before the war the main changes were towards an increase in weapon power; to-day they veer towards an increase of movement. We must understand this change, for, if we do not, we shall never learn how to apply the principle of mobility when the next war is declared.

In 1913 we did not realize the protective power of weapons, and the result was static warfare. In the next war, if we do not realize the influence of new forms of movement on weapons and protection, the war, in place of being in nature static, will be dynamic in the extreme; we shall be swept into the sea or into some neutral country.

To-day our conception of strategical, logistical, and administrative movements is what I have called one-dimensional. In a few years' time, when armies largely consist of tracked vehicles and aircraft, to this one-dimensional movement will be added movement in two or three dimensions. I do not here intend to speculate as to the nature of these changes; visibly they will be immense. In place, I wish to emphasize this fact that, unless we are willing to scrap our old conceptions of war and replace them by new ones, when war comes we shall without doubt attempt to apply the principle of mobility to new conditions as if they were old conditions, and without doubt we shall be surprised by our ignorance. Unless conditions are understood it is not possible, save by chance, to apply a principle correctly. We do not know these conditions; nevertheless, by making use of our intelligence we can discover their tendencies. We can test out ideas concerning them, and so gain experiences through a process of trial and error. It is for this reason that in place of considering mobility from the normal and stereotyped point of view—of interior and exterior lines of movement and manœuvre, and of parallel, oblique, eccentric, and concentric marches—I have not only dealt with the relationship of the principle of mobility to the elements, conditions, and remaining principles of war, but have also discussed the movement of ideas.

Armies are conservative organizations; they adapt themselves slowly to new environments, and especially to new mental surroundings. To-day a new epoch of war is dawning, and we are surrounded by a veritable fog of new ideas. We must neither accept them as they stand nor pass them by, but we *must* examine them and *test* out their values. What are they, and what changes do they foretell? If armies are to be endowed with a new means

of movement, then most of the existing offensive and protective means of waging war will be changed. As the three physical elements of war change their present values, so must our present conception of war—the expression and value of the mental elements—change with them and not only with them, but we must foresee these changes. If mentally we cannot keep pace with the changes in the physical elements of war—the changes in weapons, movement, and protection—then our strategy and tactics will remain obsolete; that is to say, they will not enable us to express the principles of war when once again we are called upon to apply them. We shall go to war as we did in 1914—under a misconception. If fortune favours us on the battlefields, we shall learn from the changed nature of these elements most costly lessons. If our luck be out, or if our adversary be mentally superior to ourselves, we shall be annihilated, because whilst in 1914 we misjudged weapons—weapons which could be countered by the use of trenches—in the next war we shall have misjudged movement, which has rightly been called “the soul of war.”