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ANGKATAN KE-V

KARYA-TULIS

"SASTRAJAYA"

JUDUL

KEKUATAN UDARA (AIR POWER) DAN EFEKNYA
TERHADAP POLITIK DAN EKONOMI
NEGARA NEGARA BERKEMBANG

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AIR POWER AND ITS POLITICAL & ECONOMIC EFFECTS ON DEVELOPING
COUNTRIES.

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PREFACE.

1. This “paper” was submitted to the Command & Staff College of the Indonesian Armed Forces (Air Force Division) at the end of the Staff College Course (#5) in 1978/1979, by the undersigned.
2. The original of this paper was submitted in Bahasa Indonesia; and this is the English translation.
3. The reader has to also keep in mind that this “paper” was written in 1979.

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PART 1.

INTRODUCTION

General.

1. "AIR POWER" is a much used and debated term amongst most belligerent and peaceful Nations. It has been defined by numerous Military men and Statesmen. The term came into existence almost as soon as man started using the medium of air; by means of lighter/heavier than air machines, at the turn of the 19th century. The real impact and implication of the meaning of the term being exploited just after World War 1 and reaching its full implication during World War 2.
2. What is the real meaning of "Air Power"?

Let us take some of the definitions given to this term by a few leading Military Generals:

- a. General William Mitchell stated – "Air Power maybe defined as the ability to do something in the air. It consists of transporting all sorts of

things by aircraft from one place to another; and as air covers the whole world there is no place immune from the influence of aircraft”.

- b. 20 years after Mitchell, General H.H. Arnold, Commanding General of the United States of America Army Air Force pointed out that – “Air Power includes a Nation’s ability to deliver cargo, destructive missiles and war making potential through the air, to desired destinations to accomplish a desired purpose”; and also “that Air Power is not composed alone of the war making component of aviation. It is the total aviation activity – civilian and military; commercial and private potential as well as those that currently exist”.
3. Definitions come in varied forms; however, it all boils down to one basic Military meaning. i.e. – “Air Power” is the use of airspace by a Nation to enforce its’ will on another Nation in case of waging war; or to safeguard its’ own airspace in case of a threat from an external source or other sources; including internal strife.
4. The yardstick for war being “Preparedness”; Air Power becomes all important in a Nation’s War Potentials. Thus with this in mind let us see what affects the war potentials of a Nation; with particular emphasis on Air Power.

They may be tabled as follows:

- a. Will Power of a Nation: If a Nation does not have the will to fight; the war is lost before it is started.
- b. Armed Services: A powerful and well trained Armed Service/s which will stand up to any other Nation. Presently the requirement is for a well equipped and well trained Armed Service, rather than an Armed Service

with a large number of personnel. The present day wars will not be a war of attrition as in the days of yore; but a quick, decisive war of tactics and better equipment. It is in this context that Air Power plays a decisive and important role.

- c. Industrial & Technological Capacity: Without its' own resources for industrial and technological capacity; a Nation will have to depend on other Nations for supplies. This is particularly true of small Nations or Developing Nations. Hence it will be noticed that these Nations tend to lean on or obtain the support, inclusive of political support, from bigger Nations or shall we say the domineering "BIG POWERS".
 - d. Capacity for Research: This is closely tied up with Industrial and Technological Capacity. Here again the smaller or developing Nations relying solely on the Bigger Nations.
 - e. National Morale: A very vital factor is a Nation's will to fight. Apart from the love and patriotism for one's country, the economy will play a vital role in a Nation's will to fight. Obviously a land of plenty will produce a Nation with high morale. But a Nation in the quest for military might may soon squander its economy on military equipment at the expense of its National Development; and this is where the downfall occurs, internal strife and political problems commence.
5. If we should take the net result of the above points we should be able to plainly see that the war potentials of a small or developing Nation will revolve around its economy and produce its own war machinery. Economic resources, processes and administrative competence are the measurements in a Nation's ability to fight. Motivation determines the will to fight. However, it is not all Nations that have the where with all for this. It therefore becomes incumbent on these Nations to rely on friendly

Nations for their security in a World where the quest for Power is ever so prevalent. Thus they ultimately become pawns in the web of Power Politics and Ideologies. What happens in reality is that by aligning themselves with a “friendly” Big Nation, they are in reality supporting the economy of that “Big” Nation. This will be explained more in detail, as we go on.

PART 2.

AIR POWER AND ITS INFLUENCE.

Background.

6. Ever since the evolution of Earth and Life on it, it has been a case of struggle for existence and the survival of the fittest. If one should trace this process, we should be able to see this occurring in the lowest form of animal life to the advanced one – mankind.
7. Ever since one animal wanted to dominate another; or shall we say man wanted to take possession of something he did not have, that someone else possessed, therein the seeds of discontent and conflict was sown. The conflict between individuals that remains a scourge to the present and future lives of mankind. But as time went by this passion between individuals turned to his want for domination over groups of people; and thus the concept of Leadership was born. The strongest and cleverest (wily) often leading the weakest and meekest was the rule. This obsession ultimately led to the quest of domination over other groups. Thus the requirement for determination and planning with a clear vision or foresight was born. Along with this came the quest for the development of weapons to fulfill their aims – from the Stone Age weapons to the present day sophisticated weaponry; which seem to be forever being improved in its lethality and capability of inflicting sheer devastation. Thus “warfare” was born.
8. The Stone Age saw fighting with weapons and stones and cudgels; and man gradually developed his fighting instincts; and advanced to the use of the bow and arrow. The Bronze Age saw weapons manufacture out of metal in the form of swords, spears, axes; and included suits of armour, lances and

shields to augment the bow and arrow and other conceivable weapons of destruction. Man also used chariots and horses to mount attacks against their opponents. Man in his quest for out-beating his opponent and satisfying his greed/avarice began inventing weapons to outdo their opponents/enemies. Thus one must say the “Arms Race” was born.

9. At the beginning battles were fought mainly on land and within or outside a land-locked country. However, when the whole land was dominated by one Power, he began seeking fresh pastures in terms of satisfying his greed with wealth and status. Ideology was not thought of at that time. Thus his thoughts strayed across the seas. Vessels were built for these foreign incursions/invasions and the concept of “Sea Warfare” was born.
10. History has it that Gunpowder was invented by the Chinese in the 9th century. However, Gunpowder reached its renown or notoriety in the mid 1800 AD. This changed the concept of face to face and hand to hand combat that were hitherto the main mode of fighting in “Close Quarter Combat” to that of “fighting from behind cover” and in most instances from “safe” distances. Guns, missiles, bombs and other explosive devices were to quickly replace the bows & arrows, spears & lances in the conduct of war and for purposes of self defense.
11. During that era, a combination of land and sea warfare was the main form of struggle for domination. This time not between individuals or groups but between belligerent Nations. Not content with this type of waging war; and in his struggle for supremacy, man turned his thoughts on the use using of the medium of Airspace in his bid to outwit his opponent.
12. In the early 1800 AD, man discovered the Lighter than Air vehicle in the form of the Hot Air Balloon. Thus he was able to utilize this invention (The Hot Air Balloon) to spy on the opposing forces from above by means of

aerial surveillance/reconnaissance. This was the incipient step in the entry to the concept of "Air Power".

13. The Hot Air Balloon was most successfully used in the American Civil War; the Franco-Prussian War; and the American Campaign in Cuba, in 1898. The Hot Air Balloon was mainly used in the Frontlines of war due to the lack of propulsion. These Hot Air Balloons were later used as "Tactical" weapons in addition to their surveillance and reconnaissance roles; by the addition of small arms and droppable bomb loads.
14. However, later in the 1800's and early 1900's the Germans incorporated a propulsion system to their Hot Air Balloons; as seen in their "Zeppelin" Hot Air Balloons. But the craft was so slow and clumsy that they were easy prey to the "Heavier than Air" aircraft that were developed by this time. Furthermore the Balloons, that were also called "Dirigibles", were filled with light inflammable gases to improve floatation; and the vulnerability to gunfire was increased. Many were brought down in flames in their combat encounters.
15. The use of Hot Air Balloons ceased with the advent of the Heavier than Air Machines (Aircraft) that entered into the realm of Aviation. This was the contribution of Wilbur and Orville Wright, by the invention of powered flight in December of 1903. But the Hot Air Balloon did appear again in England during World War 2. This time it was used as an Air Defence Weapon when they were deployed in big cities. Tethered and flown unmanned at different heights as a deterrent to the enemy aircraft that would fly low on their missions. Sri Lanka (Ceylon) too had a few deployed in around the Colombo City.
16. The Wright Brothers always meant the airplane to be a contribution to International Communications, Commerce and Goodwill. But apart from

fulfilling these roles it was later to become one of the primary weapons in waging war. The first airplane was sold by the Wright Brothers to the United States of America War Department in 1909.

17. Without the vast military expenditure in resources and research for the development the airplane would never have become a safe and/or usable vehicle.
18. The Heavier than Air machine was utilized most successfully during World War 1. Initially as a Reconnaissance and Artillery Spotting vehicle; thus replacing the Cavalry that was used earlier. The airplane in this role was causing adverse effects on the war plans of either warring side. This led to fighting between rival aircraft or “Dog Fighting” as it is popularly known. Each pilot trying to destroy the other in order that their respective ground plans could be carried out without hindrance from the air; or without losing the element of surprise in their ground attack plans. The air plane was also used to harass the ground forces with their bombing and strafing capabilities. Thus we saw the birth of “Aerial Warfare”; in its infancy.
19. In 1925. Captain Basil H. Liddel of Great Britain published “Paris or the Future of War”, in which he advanced the thesis that Germany capitulated in 1918 not because her Armies had been defeated; but because her morale had been broken. Liddel’s belief was that the purpose of future military operation should be to break the enemy’s will to fight rather than to defeat his armed forces in the field. This prophecy was to come true in World War 2, when in Africa, General Irvin Rommel was convinced that if the enemy controls the air, movement of large bodies of troops is impossible (as stated by Guderion in his book “Panzer Leader”). In July 1944 General Von Kluge, Rommel’s superior, wrote to his Fuhrer Adolf Hitler regarding the lowering of morale of the troops due to constant unhindered bombing and staffing by the Allied Forces.

20. Once the requirement of Aerial Warfare was experienced and established the concept of "Air Power" was born. Its importance felt and gigantic steps taken to strive for improvement and advancement. But the real impetus for Air Power was only developed in earnest during World War 2.
21. The importance and decisiveness of Air Power was not accepted by the United States of America until later on during World War 2. In 1941, a group of young Cavalry Officers put up a "Paper" to the U.S. Army-Navy Joint Board. Their plan asked for the establishment of the highest priorities to develop a strategic offensive against "war supporting" targets in Germany; and later in Japan, that would force the enemy to surrender; probably without ground invasion. This was not accepted. To the contrary the Board warned that "Naval and Air Power may prevent wars being lost; and thus by weakening enemy strength may greatly contribute to victory. By themselves, however, Naval and Air Forces seldom if ever win important wars. It should be recognized as an almost invariable rule that only Land Armies can finally win wars".

The Domination of "Super Powers" over Newly Developing Nations.

22. The views and concepts of the General of the U.S. Army, General Marshall, during World War 2 was that war can only be won by ground forces supported by the Air Force and the Navy.
23. World War 2 was to prove that most of these theories were wrong, as the Air Forces of the Allied Powers won such decisive victories in Germany and German occupied territories; and Japan and its occupied territories. Thus the Axis Powers were pounded into submission.

24. True the occupation of the liberated lands and the land of the aggressors were done by the Ground Forces; but this could not have been possible had not the strategic and tactical targets been first wiped out by Air Power.
25. The 1967 Israeli – Egyptian War (also known as “The Six Day War”) too proved the high rating of Air Power when the Israeli Air Force annihilated the Egyptian might which was 3 to 5 times greater than that of the Israeli Armed Forces. Air Power proved its worth and paved the way for the Ground Forces occupying Egyptian Territory up to the Nile; in addition to lands belonging to Syria and Jordan.
26. In 1945, General H.H. Arnold of the U.S.A emphasized on the 5 Air Power lessons learned from the experiences of World War 2 :-
 - a. The Unitary Nature of Air Power.
 - b. The need for the control of airspace by Air Superiority.
 - c. The transcendent importance of a combat ready Air Strike Force in a National Team of Air, Ground and Naval Forces.
 - d. The inherent superiority of offense over defense.
 - e. The ability of an air attack on an enemy’s vitals so as to deplete specific industrial and economic resources; and on occasion the enemy’s will to resist, as to make continued resistance by an enemy impossible.
27. In 1945 he also stated that:

“Today’s Air Force cannot be tomorrow’s Air Force.
Today’s challenge will not be tomorrow’s challenge”.

“Unless you give your utmost dedication to Aerospace Power, you can rest assured that the United States of America will not be able to meet the challenges that it will encounter in the future”.

28. How best can small Nations or newly developing Nations conform or tie up with these doctrines and the lessons learned, will depend greatly on its war potentials; and the need for defence/self defence. The question that requires to be answered is – Can they afford this luxury? To begin with let us face reality. In a World of turbulent times there will always be a requirement for a Defence Force no matter how small or large. The chances of a small developing Nation having the wherewithal to dominate the world will be very or extremely small; or none. This will be the basis on which we will devote our study of Air Power among developing Nations.
29. Notwithstanding all this, developing Nations could most certainly help other Nations with mutual understandings; through the United Nations Organization or “Big Power” Nations depending on their ideological leanings. The major current ideologies being Democracy (Capitalism) in various forms on one hand; and Communism in the other.
30. If smaller Nations do not get into an alliance as above; then they will remain Non-Aligned or Neutral and will have to think of Air Power in terms of preventing internal conflicts/threats and to seek the support for such conflicts/threats from outside, as the situation necessitates. If invasion is confronted, then there is always the United Nations Organization to turn to. But very unfortunately the effectiveness of this August Body is not as effective or speedy as one would expect to be.
31. This is due to the dominance of the United Nations Organization by the 2 major “Super Powers” in the United States of America (USA) and the United

Socialist States of Russia (USSR). In matters of security; the Security Council of the United Nations comprise of these two Nations along with China, France and United Kingdom are vested with “VETO” powers. Most major security problems around the World are virtually decided by these Nations; with decisions being voted for or vetoed depending on the political and ideological situation of the countries involved in the conflict. This gives the Big Powers more prominence in their Ideological Doctrines and thus making other Nations dependent on the Big Powers for making major decisions; and making them more inclined to side with one side or the other to garner favourable decisions. Thus the case of remaining “neutral” becomes difficult to maintain.

32. If we should take Nation by Nation and analyze their leanings in the field of Power Politics, we will find that all Nations side with one Power or the other very openly; or have them sympathizing with one or the other.
33. Thus Neutrality would appear but superficial. We must also admit that in the requirement of possessing the equipment necessary for achieving Air Power, the smaller Nations will be dependent on the major Arms Producing Countries. In this context the leading suppliers of the most sophisticated weaponry will be the U.S.A and the USSR; with France and Great Britain too contributing towards the Arms inventory.
34. The creation of Air Power is complicated, time consuming and extremely costly. Only 4 Nations today have the wherewithal, know how; and are equipped to design, build and maintain Air Power as a major element of their defence establishments. These powers are U.S.A; USSR; Great Britain & France. Great Britain’s and France’s economy, however, may not permit them to compete either with the U.S.A or the USSR.

35. Let us look at the attitude of the Big Powers in their role as suppliers and as protectors to other Nations. We will find firstly they will not part with their latest and most sophisticated equipment to anyone other than their extremely close strong allies. These in fact being kept for their own purposes and gain, in order to maintain Air Superiority. The next best of their armoury are always sold to Nations that are their allies/followers; and are strategic to the security of their homelands. The obsolete or obsolescent being passed onto Developing Countries who are insignificant in their plans; but are its general supporters; in addition to the economic gains that may accrue by the sale of such equipment.
36. In the game of Power Politics and struggle for dominance the Big Powers plan their defence strategy on the strategic position (location) of other Nations. (See Appendix "A"). These positions are well selected to ensure the security and protection of the respective Big Power. One could say that it is the first Line of Defence; in the event of foreign aggression. The Big Powers also bank on the fact that by forming alliances eg. NATO; WARSAW PACT etc., with other Nations, the war that may ensue between the Super Powers will be fought in other countries and not in either of their countries. In this respect it will be pertinent to quote – In 1952, before the Junior Chamber of Commerce, California, General of the Army, Omar Bradley said "In the event of war, Americans will have to fight on the ground (Air), 3000 miles from Home, if they are to provide protection to New York, St. Louis and Pasadena.
37. General J. Lawton Collins puts it even more directly – Our troops in Europe are not there simply for the defence of Europe. They are really there in defence of the United States of America. Armed Forces on the front line will bear the brunt of heavy fighting and casualties; should an aggressor move. This statement was made on 5th May 1952 before the United States of America Armed Services Committee. The same modus operandi is true of

the opposing Super Power viz. USSR. This could be clearly seen if we peruse a World Map and plot the Nations and their support to either side.

38. There is no doubt whatsoever in the fact that the war potentials of a Big Power is immense; and their advancement in the sphere of equipment, to achieve Air Power, is such that the latest product is always obsolescent; as when the latest product is pushed out a new one is being planned out on the drawing board and will be produced very expeditiously. Thus in other words modern technology and technological changes are advancing very rapidly and is continuous. The aircraft built one year ago may be markedly inferior to those produced two or three years later. Thus the "Arms Race" is born in earnest. Indeed when new weapons are delivered to the armed services, these may already be more or less obsolete; when compared with those on the drawing board or those being already tested in the laboratories or proving/testing grounds. On the other hand, the equipment of modern forces represents a huge investment of resources for any Nation; even for the largest industrialized countries. They will find it exceedingly onerous, if not prohibitive to undertake substitution of new for old equipment. The question one must ask is – can a developing or small Nation afford this luxury?
39. The production seems never ending. In the process of development it will also be noticed that most of the newly developing/small Nations become unwitting accessories and partners to the Big Nations. We will also find that warring equipment are in fact carried out in battle conditions and experiments in battle conditions that may prevail in the developing/small Nations around the world. A good example will be the Vietnam War of a few bygone years.
40. Another aspect would be the fact that by purchasing these equipment from the Big Powers we are indeed supporting their economies; in addition

to the testing of their products and helping indirectly in their research programmes.

41. At times the equipment is given as “aid”, but one finds the cost of buying accessory equipment and spare parts to maintain these equipment will cost much more than the cost of the “free equipment” itself. It is also an established fact that the “aid” giving Nations will send its own Technicians/Engineers/Trainers to assemble, maintain and train the “locals”; on the equipment supplied. Here again benefitting their economy and experience for their own Technicians, Engineers and Trainers; and of course the cost of spare parts and other associated costs.
42. The normal form of free “aid” in more ways than one is comprised of obsolete or near obsolete equipment. The newer ones will have to be paid for in hard cash (foreign currency) or barter (trade); and is always sold with restrictions of use and other “strings” attached. The question to be raised is – is it worth it?; and what are the chances of survival if we do not tie up with the Big Power to obtain the necessary equipment?

Conflict Between Ideologies.

43. The above can only be answered if we analyze the ideological factors involved. There are, today, 2 main basic ideologies on which Nations base their structure of economy and well being, namely Democracy (Capitalism) and Communism (Socialism). These two ideologies are interpreted in many ways by various countries. Democracy (Capitalism) has many meanings; but in the modern world its use signifies that the ultimate authority in political affairs (and economics) belongs to the people. As opposed to Communism (Socialism) which is defined in “Wikipedia” as Classless political theory or

system in which all property and wealth is owned in a classless society by all members of the society.

44. In addition the term democracy is used in several senses. Viz:

- a. In its original meaning, it is a form of Government where the right to make political decisions is exercised directly by the whole body of citizens, acting under procedures of majority rule. This is known as "Direct Democracy".
- b. It is a form of government where citizens exercise the right, not in person though, but through representatives chosen by and responsible to them. This is known as "Representative Democracy".
- c. It is a form of government, usually Representative Democracy, where the powers of majority are exercised within the framework of Constitutional Restraints designed to guarantee the minority in the enjoyment of certain individual or collective rights; such as Freedom of Speech and Religion. This is known as "Liberal or Constitutional Democracy".
- d. Finally the word Democratic is often used to characterize any Political or Social systems which, regardless of whether or not the form of Government is democratic in any of the above senses, tends to minimize social and economic differences, especially differences arising out of the unequal distribution of Private Property. This is known as "Social or Economic Democracy".

45. At times Democracy is popularly labeled as Capitalism and also as Democratic Socialism.

46. Let us see what Communism (Socialism) has to offer. Communism is a political ideology in as much as Democracy (Capitalism); and is a term used to denote systems of social organizations based on common property or on equal distribution of income. Specifically and currently it refers to the doctrines underlying the revolutionary movement that aims to abolish Democracy (Capitalism); and ultimately establish a society in which goods will be socially owned and controlled and in which distribution will be in accordance with the maxim – “From each according to his capacity, to each according to his needs”.
47. It is distinguished from Socialism, which aims, by Constitutional and Democratic methods to nationalize gradually only the essential needs/means of production; and to organize distribution on the basis of a just reward to each person for the amount and quality of his or her work.
48. Some countries have produced their own Socio-Economic systems based on the above 2 ideologies, with of course, leaning towards one side or the other. It is against this back-ground that an analysis has to be made into the rivalry that exists between countries. As we will see, as we go along, ideology not only plays a major role in political differences between countries but it also plays a major part in the internal policies of a country too. One would find that in a land of plenty i.e., in an economically sound country Democracy (Capitalism) will prevail; and in a land that is economically deficit, Communism (Socialism) will thrive. However, if a Democratic (Capitalistic) country should become economically deficit there are the chances of such countries being influenced by Communism (Socialism) and therein lies the onset of turmoil and internal political strife that will plague the country.
49. Ideologies also play a big role in the problems that may confront or occur between countries. The problem may be some dispute not really connected

with ideologies, but the mere fact that the Big Powers support a country will by itself create an Ideological War/Conflict. We will also find countries of strategic importance to either Big Power being wooed by either of them – by means of aid being poured into these countries or failing which, creating internal strife by subversive and other means to topple the Government in existence and the installation of a Government favouring the ideology.

50. There is no getting behind the fact that the Ideological War has come to stay. Almost all Nations follow either one of the Ideologies; if not directly, then by creating a doctrine similar to the two main ideologies.

Connection between “Air Power” and “Ideologies”.

51. One would ask what has Ideology got to do with “Air Power”? This is simple to answer. If a country has no potentials in the sphere of Research, Raw Materials and the Industry to produce its own Military Equipment for its own defences and other purposes they will have to obviously purchase those countries that produce them.
52. We will find that the countries producing the most sophisticated military equipment, including aircraft are the 2 Big Powers. Britain and France too are producers of such equipment; but are strong followers of Democracy (Socialism) and firmly allied with the United States of America.
53. Thus to gain Air Superiority, a country will have to be aligned with one of the Big Powers. Thus to purchase and to maintain a supply will become a matter of how close you are to the Power you sought alliance with. If the country is strategically placed between the two Powers, then there is the

inevitable alliance or pact or treaty that a country could enter into with one of the Big Powers. e.g., NATO; WARSAW Pact etc.

54. In addition most countries get into defence Pacts with either Big Power so as to ensure guarantees in case the country is attacked by any external force. e.g., as in the recent past in the Middle East and in the African Continent. Invariably we will find that the opposing forces have the opposite Big Power – surreptitiously or otherwise. All in all the smaller Nations are and will be mere pawns in the game of Power Politics played by the Big Powers. When such games are being played the United Nations Organization remains a most non-effective “Body”. Almost everyone agreeing but no effective actions being taken to achieve a desired result. One would even say that the Big Powers “draw the strings” depending on how advantages it is to their own mandates. The Power of Veto wielded by the Security Council of the United Nations Organization; and which is vested in a few of the Big Nations too plays a very vital role in Security measures/matters concerning Nations around the World. Thus smaller Nations appear to be almost non-effective in such matters.

Cost of Air Power.

55. In Communist (Socialist) Countries, it costs little to keep a man in the armed force. Everyone works for the State. Collective Farms provide for the Nation. State owned industry manufacture and provide the weapons. Raw materials flow from mines and lumber camps operated by forced labour or on small wages. Essential imports are purchased with gold and minerals mined by forced labour. The economy of a planned State is thus not greatly dislocated by the establishment of huge military establishments. This is true of the Big Power, however smaller Nations will have to rely on the Big Power for its supply of military equipment and technological know-how;

and the associated training of personnel. If one was to analyze the cost of Air Power, the total cost of such may be found to be very prohibitive.

56. Let's see the costs of maintaining a Fighter or Bomber Wing. As per Western estimates it would cost:-

\$ 90 Million for an Infantry Division.

\$240 Million for an Armoured Division.

\$175 Million for a Combat Wing of 30 Bombers or 75 Fighters.

The ideal ratio of Infantry to Armour being 3:1

Bomber to Fighter being 3:5

Note that no allowances are made for training aircraft in the above costs.

57. If we take only the Air side this will amount to a princely sum for the maintenance and operation of a Wing of Aircraft. The question will arise as to from whence the smaller Nations can get the wealth for such spending? Normally this will or inevitably be done at the expense of the progressive and indigenous; and developmental requirements/projects of the Nation. It will be pertinent to mention that some countries make barter deals for purchases; and some a combination of barter and monetary loans for such purchases. We will see that most countries facing internal strife or fear of invasion would build their Armed Services at colossal expense. The Air Wing of course swallowing a major part of the Defence Budget.

58. Let us tabulate the Defence spending of a few of the Asian Countries:

COUNTRY	Defence	GNP	Population	Armed Forces		
	Expenditure			Air Force	Army	Navy
China	Unknown	Unknown	950,000,000	400,00	3,000,000	300,000
Taiwan	US\$ 1 Billion	US\$ 16 Billion	17,235,000	70,000	320,000	35,000
Japan	US\$ 6 Billion	US\$560 Billion	114,000,000	14,000	155,000	40,000
N. Korea	US\$ 1 Billion	US\$ 8.9 Billion	16,720,000	45,000	430,000	25,000
S. Korea	US\$1.8 Billion	US\$ 18 Billion	35,200,000	30,000	560,000	25,000
India	US\$3.4 Billion	US\$ 89 Billion	622,375,000	100,000	950,000	460,000
Pakistan	US\$809 Million	US\$10.1 Billion	74,190,000	17,000	400,000	11,000
Malaysia	US\$544 Million	US\$ 8.6 Billion	13,340,000	6,000	52,500	5,500
Philippines	US\$413 Million	US\$16.5 Billion	45,295,000	16,000	63,000	20,000

*These figures are from Asia Yearbook of 1979.

Effects on Economy.

59. Supplementary to the aforementioned tabulation the countries mentioned possess the following number of aircraft:

- a. China 5,200 aircraft
- b. Taiwan 296 aircraft
- c. Japan 207 aircraft (Navy)
- d. North Korea 630 aircraft
- e. South Korea 335 aircraft
- f. India 670 aircraft
- g. Pakistan 247 aircraft
- h. Malaysia 34 aircraft
- i. Philippines 104 aircraft

60. Along with the above figures let's consider the essentials or the criteria required to achieve Air Power or Superiority. In addition to the fleet of aircraft, Air Power will require the following back-up support and maintenance for its aircraft/missile to facilitate its effectiveness and preparedness in the operational and other peacetime roles:

- a. Long and sturdy runways.
- b. Runway lighting facilities.
- c. Communication systems – Electronics.
- d. Hangarage or effective/protective shelters for aircraft.
- e. Spares and technical back-up.
- f. Transport communication system – internal and external.
- g. Defensive system for protection of airfield and aircraft.
- h. Storage facilities for fuel, oil, lubricants and ammunition.
- i. Navigational aids including surveillance radar.
- j. Meteorological services.

- k. Fire fighting services.
- l. Accommodation and messing.
- m. Medical services.
- n. Workshops for maintenance and repair services.

61. If one should cost the above requirements that are mandatory for Air Power/Superiority one no doubt will understand that this infra structure would be costly. Thus Air Power will not only mean purchase of aircraft and ancillary equipment, not forgetting missiles and other armament requirements, it will also mean the cost of up-keeping the equipment up to date for the maintenance of Air Power with the added cost of the infra structure maintenance as stated at paragraph 60. Of course one should not forget the cost of replacement of equipment as they become obsolete, as is always the case, if one wishes to keep ahead in the Arms Race. The common fallacy that has led to the fall of many Governments has been the colossal expenditure incurred; and the often neglect of the common requirement/welfare of the local populace. Thus leading to National internal strife; often goaded on by the Opposition (Political) Parties and at times inflamed by Outside influences with agendas based on Ideology; material/minerals (natural resources); or Geopolitical reasons.

62. How many countries can indulge in an Arms Race (In which Air Power takes a prominent role, as established in World War 2)? Does the economy permit such spending? And if so, at what sacrifice?

63. It has been established in the earlier paragraphs that the requirements is for a substantial sum of money (wealth) to be spent on arms purchases; and the continuous spending thereafter, that is required if a Nation has to keep-up their policy in the Arms Race – no matter how much “Aid” it

receives from other Nations. If we were to go deeper into details of maintain Air Power we will have to go deeper into finding and evaluating the components of war potentials confronting a Nation. This would be never ending and would call for a continuous up-keeping with the changing economies and requirements of a Nation.

64. There are various theories on this subject. If we must quote some of them; they are as follows:

- a. Nicholas J. Spykman stated in “America’s Strategy in World Politics” – Components of War Potentials will depend on size of territory; nature of frontiers; size of populations; absence or presence of raw materials; economic and technical development; financial strength; ethnic homogeneity; effective social integration; political stability; and National Spirit.
- b. S. Steinmetz Rudolf in “Soziologie des Kreiges” goes on to state: Population size and structure; size of territory; wealth; political institutions; leadership; National unity and cohesion; respect and friends abroad; and moral qualities.
- c. Guido Fisher in “Der Wehrewirtschaftliche Bedarf” – Political factors; geopolitical position; size of State; number and density of population; organizational skill and cultural level; kinds of frontiers; and attitude of neighbouring countries.

65. In addition one must also consider the following factors:

a. **Physiological Factors.**

Economic flexibility; inventive skills; perseverance and adaptability of the population.

b. **Economic Factors.**

Fertility of the soil and mineral wealth; industrial organization and the state of technology; development of commerce and transportation; and financial strength.

66. Hence the spending on Air Power will really depend on how much of the above conditions can be fulfilled by the Nation; in its efforts to use the medium of Air to fulfill its defence requirements. Individual cases will really have to be studied according to each Nation's ability and to its requirements.

67. Only a few of the theories have been quoted; however, an analysis will show that they all have the same meaning, virtually. It will all boil down to the determinants of potential Military Power being classified into 3 broad categories:

a. Economic Capacity.

b. Administrative Competence.

c. Motivation for War (Including National Morale).

The first 2 will measure a Nation's "ability to fight" and the 3rd will determine "the will to fight".

68. Count Montecucolli, an Austrian General of the 17th century, is presumed to have said that there are 3 things absolutely essential to the conduct of war: 1st, Money; 2nd, Money; and 3rd, Money. Even at the beginning of the present century (20th Century), war finances were regarded as the primary subject of war economics. But the course of World War 2 shattered this assumption. Since then, it has been generally understood that financial problems are of secondary significance in modern warfare; and it is the availability of real resources which sets limits to a Nation's war efforts.
69. To be sure, the problems of war finances and monetary policy are by no means negligible. If for no other reason than that money is a claim to resources – and this is of course is what Count Montecucolli had in mind when he made the above statement. In addition to all these factors that go to make up the elements of war potentials and the finance availability there is one point of immense importance and that is – "Continuous Long Term/Range Planning".
70. Continuous Long Term/Range Planning is essential if mobilization is not to drift from one crisis into another, continually calling for piece meal adjustments in one's war efforts. To enjoy the maximum of Command over changing events rather than to be pulled and pressed by them, policy makers must anticipate and face problems before they arise. To expand on this it would mean – Unless war is imminent, Nations are unable to prepare precisely for the war which they may have to fight in the future. Hence, the

requirement for Continuous Long Term/Range Planning becomes very integral to the Nation.

71. Let's take a close look at the role of Technology in a Nation's war potentials. Especially when we know of the giant technological strides taken in the advancement of armament (inclusive of aircraft), explosives, electronic systems and other allied equipment to augment or increase lethality as the Arms Race dictates.

72. Technology can be said to be another source from which a National Economy may draw resilience. A thriving and inquisitive technology is a search of doing new things or doing old things better. By coming up with substitute materials; new end products; new productive processes and new management techniques, it will help the society to meet and adapt itself to the myriad challenges of Modern Warfare. National Security will depend on a large extent on Technical Superiority of weapons (inclusive of surveillance equipment). Military Power is no longer thought of as deriving exclusively from "Manpower, Wealth and National Resources". Now in these modern times it is heavily dependent upon science and technology.

73. Let's look at the Geographic/Geopolitical Factor which affects a country's war potential. It can be assessed an important factor which remains outside the estimate of war as a general problem, although this factor greatly affects the Military Power of Nations. This is the location of the countries on the Globe. This location affects/influences military strategy and foreign policies that might involve Nations in War; because it impinges heavily on the amount of fighting forces/power that a Nation can contribute into the field of battles.

74. The distance between belligerents affects the warning/alarm time they receive of Air Attacks; and also affects the vulnerability to bombardment by guided missiles.
75. Lastly we find the effects of inflation and the prevailing energy crisis; which is reducing the total amount of resources available and thus eroding the economy of the country and its war potentials along with it. This would lead to internal political problems as surely as inflation and depression that could follow economic strife.

Effects on National Politics.

76. The state of a country's economy will obviously affect National Politics. In spending to attain Military and Air Power the ruling Government is naturally going to be questioned by the Opposition. If the country's economy is poor, standards of living is poor and the daily needs of the people are not met, then the Opposition will look for ways and means of toppling the Government in office. One of the main and common objectives of an Opposition would no doubt be the Defence Budget – which has always been so in many countries. Needless to quote there have been many examples of this in the recent past in a number of Afro-Asian/Arab countries.

Ways and Means of Minimizing Military Expenditure.

77. In whichever way we look at it, Military Force or Power is one of the instruments through which Nations attempt to settle International or Internal Conflicts. With this in mind let's see how best we can alleviate or recover the expenditure incurred in attaining Air Superiority/Power. That

will be basically the aircraft being the primary equipment of utilization. These aircraft will fall broadly into 4 basic categories: The Fighter; The Bomber; The Transport; and the Rotary Wing (Helicopter).

78. The question will be how well we can adapt these categories of aircraft to benefit the country other than in its military role? As for the Fighter aircraft, it will obviously have no civilian role; other than the training of Pilots and Technicians who could on the expiry of terms of service be employed in Civil Aviation or Private Airline. The same could be said for all servicemen that are trained in the military and seek civil employment on the tenure of their official duties. As for the Bomber aircraft – could we not convert them during peacetime as passenger aircraft? Thus, these aircraft could supplement the Transport aircraft and be utilized for normal civilian flying purposes. There are some Nations that do operate their aircraft in this manner during peacetime. A good example is the Sri Lanka Air Force which utilizes their fleet of Transport and Helicopter fleet for such purposes. This not only brings in revenue but it also gives the Pilots the necessary additional flying experience and expertise. It is also understood that a few of the African and South American countries too engage in these types of undertaking.

79. In general, the Air Force or Air Arm of a Nation can undertake various task in the support and benefit to the Nation in the development and other projects such as:

- Crop spraying.
- Cloud seeding during extended periods of drought.
- Medical Evacuation.

- Air Sea Rescue.
- Jungle Rescue.
- Food Drops and Reconnaissance during a natural catastrophe/floods.
- Aerial reconnaissance, mapping and aerial photography; and
- Any other tasks as required by the Government in the aid to the civil population.

80. Let's also look at the back-up services required for the operation of the aircraft and its effects. The main element would be the Runway which would include:

- Radio & Radar surveillance equipment.
- Telecommunication facilities.
- Refueling facilities.
- Security for aircraft.
- Meteorological services.
- Technical services.
- Medical services; and
- Other related services as required.

So, in other words these services too could be provided to Public, Private and Corporate uses in making money for the Government coffers. This to a certain extent could offset some of the cost for maintaining Air Power.

81. On the personnel side, although some skills may in fact be built up in Military training, these may be a net loss because of public education being/are cut out; and because of the induction of younger men into the armed forces, does at times, interfere with their advanced education and training to meet the needs of the Civilian World.

PART 3.

CONCLUSION.

82. Despite modern technology and World (International) Bodies/ Organizations advocating for Peace, the horrors of a modern war and human violence are always prevalent and looming. Organizations of Pacifists and Religious Mentors may preach non-violence and the pursuit of a peaceful and rich life. But the realities of life indisputably show that wars and internal strife are prevalent and do exist; and are currently raging in various parts of the World today.
83. Conflicts do arise between States and are often due to economic, ideological or territorial disputes. Violence and political instability originates from social and psychological factors; and social injustices. It is against this back-ground that an Armed Service is built up – to suit the needs of a Nation. During peacetime, deplorable conditions of economic and social welfare are the bug bears of an Armed Service. Since such the retention and cost of the Armed Service would be viewed as a waste of the Nation's wealth.
84. Since man's first "heavier than air" powered flight, the International Community has on two occasions negotiated solemn "Treaties" that were to deny military violence as a means of settling disputes between Nations. In the Nuremberg and Tokyo International Military Tribunals; the "Paris Pact" was the basis of charges relating to the waging of an "aggressive war". The Peace Pact was signed in Paris on 27th August 1928; and 40 years since the signing of the Charter of the United Nations have passed with a major General War. However, these agreements have not prevented a wide

range of localized but devastating armed conflicts in which Air Power has played a significant role.

85. Presently the 2 Major Powers have been conferring on how best to reduce or end the Arms Race with particular emphasis on Nuclear Armament; namely the Strategic Arms Limitation Talks (SALT) which is primarily for Nuclear Arms. It is ironical to note though that on 24th November 1974, President Gerald Ford of the U.S.A and General Secretary of the U.S.S.R reached a historic “Arms Limitation Agreement” at Vladivostok; however, the U.S.A received operational F-15 Fighters on the first week of December and on the 23rd, the B-1 Bomber made its first flight. Both types of aircraft having the capacity to carry nuclear armament. Similarly it is almost certain that the U.S.S.R too would have had its delivery of their sophisticated weaponry and delivery systems. This trend appears to go on in spite of all the well intended “Treaties” and “Agreements”.
86. I shall be failing if I do not touch on the nuclear armament systems in this nuclear age – even though to most newly developing countries Nuclear Armament is a far cry. The primary goals of a “Policy of Deterrence” in this Nuclear Age will be:
- a. To prevent conflict altogether; or failing that
 - b. To contain all conflict at the lowest practicable level, thereby deterring escalation of conflict; or failing that
 - c. To deter all out Nuclear War.
87. It must be remembered that a nuclear war could definitely bring about untold destruction. Finally it boils down to the fact that the Military Organization has come to stay, with Air Power playing an integral role in it.

Thus for its effectiveness, strategy forms the plan of the war. It links together the series of operational plans and the execution of such plans that would lead to a final decision. Strategy is the architect and the builder – it conceives and implements. Sound strategy is in no way wasteful; it requires continuous effort. Strategy therefore cannot take its hands away from its work and is a continuous process in a country's Long Range/Term Planning.

88. Strategy must also develop a war plan and create armed forces that will:

Be a deterrent to war, if possible

Be victorious if such wars cannot be avoided

And in such planning, Air Power will undoubtedly be of immense importance and play a very definite leading role. The cost will no doubt be as immense as the task; especially so in this era of inflation, energy crisis and population explosion – not forgetting the political instability that follows depression and poverty in the wake of the above.

Noor R. Rahim

Group Captain (Retired)

EPILOGUE.

The reader must appreciate the fact that this “paper” was written in 1978/79. Since then there have been many changes in the Political Arena and marked improvements in Technology, related to advancements in armament and explosives; and leaps and bounds of advancement in Aviation and Missile Technology (inclusive of Space Technology).

The U.S.A possesses arsenals of extremely powerful weaponry.

- Nuclear powered submarines, aircraft carriers.
- Space Monitoring Stations.
- Aircraft capable of flying at more than twice the speed of sound.
- Aircraft that cannot be detected on radar or other surveillance equipment.
- Aircraft with the capacity of attacking targets anywhere around the world; without having to refuel enroute, except perhaps by air to air refueling if only necessary – and that too is a reality in this age.
- Flying drones, armed with missiles that are used to attack targets remotely controlled from the ground.
- Use of Rotary Wing (Helicopters) in the troop and heavy equipment deployment, inclusive of artillery pieces to the battle front for Tactical Air Support to ground troops/reinforcements.

- Sophisticated radar and infra-red sighting and tracking devices; capable of precision and accurate aid to “launch and destroy” enemy targets.
- The composition of the North Atlantic Treaty Organization too has changed very drastically and included countries that were once with the USSR.

The list goes on and on; and is never ending. But the basic principles explained in the “paper” will continue to give meaning and support in ones application to the future concepts and with further advancement in Technology.

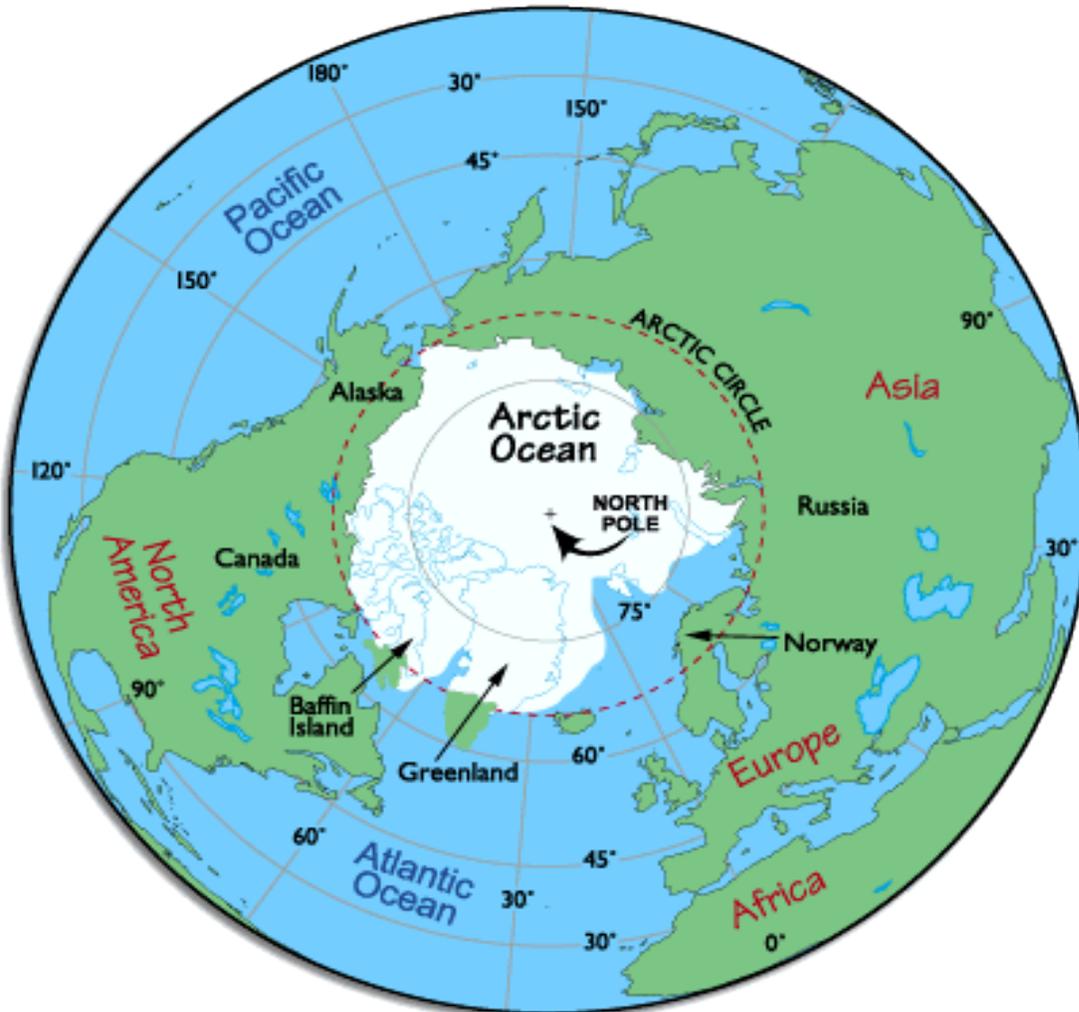
As stated by General H.H. Arnold of the U.S.A – “Today’s Air Force cannot be tomorrow’s Air Force. Today’s challenges will not be tomorrow’s challenges. Unless you give your utmost dedication to Aerospace Power, you can rest assured that the United States will not be able to meet the challenges that it will meet in the future”.

Hence one cannot foresee any changes in this way of thinking and the “Arms Race” no doubt will go on and on. One must also mention the fact that China too has entered into the “Arms Race” in a big way; and is on par with that of the other major “runners” in the “Arms Race”. I guess the Human Race will have to live with it as long as there is strife and power struggles in the World.

Group Captain Noor R. Rahim (Retd.)

November 2013.

Map of the World as seen from the top of the North Pole.



If one should plot the "NATO" alliance Countries, on the map, with the United States of America, one can see the "Defence Buffer Zone/Ring" created between the U.S.A and the USSR.

In the event of any pre-emptive attack on the U.S.A; it will be initially (presumed) met by its allies within the "Defence Ring"; and it is in this context that the U.S.A require to have a very strong and dominative "Air Power" element in its war potentials so that the war will be waged away from its own land.

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