MILITARY INTELLIGENCE - A STUDY IN ORGANIZATION AND TECHNIQUES

Dissertation submitted to the Jawaharlal Nehru University
in partial fulfilment of the requirements
for the award of the Degree of
MASTER OF PHILOSOPHY

ATEEQUR RAHMAN KHAN

DISARMAMENT STUDIES DIVISON
CENTRE FOR INTERNATIONAL POLITICS
ORGANIZATION AND DISARMAMENT STUDIES
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067, INDIA

1991

जवाहरलाल नेहरु विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067

SCHOOL OF INTERNATIONAL STUDIES
CENTRE FOR INTERNATIONAL POLITICS,
ORGANIZATION AND DISARMAMENT
DISARMAMENT STUDIES DIVISION

CERTIFICATE

Certified that this dissertation entitled "MILITARY INTELLIGENCE - A STUDY IN ORGANIZATION AND TECHNIQUES", submitted by Mr. ATEEQUR RAHMAN KHAN in partial fulfilment of the requirements for the award of the degree of MASTER OF PHILOSOPHY of this University, has not been previously submitted for any degree of this or any other University. This is his own work.

We recommend this dissertation be placed before the examiners for evaluation.

PROF. M. ZUBERI
Supervisor

PROF.(Mrs) SUMITRA CHISHTI
Chairperson

GRAM : JAYENU TEL. : 667676, 667557 TELEX : 031-73167 JNU IN

ACKNOWLEDGEMENTS

I am extremely thankful to Prof. M. Zuberi, for the task of supervising my work. His valuable guidance and encouragement would always remain a great source of satisfaction and inspiration for me. Professor Zuberi was kind enough to have a number of discussions with me, not only did he provide me the necessary documents and other subject materials but also shared his valuable and scholarly insight on the subject to sharpen my sensibilities.

I am also happy to acknowledge with thanks the friendly service readily provided by Mr. R.C. Sharma (Librarian, Infantry School, Mhow), Mr. Mathur (Librarian, M.C.T.E.) and Mrs. S. Sharma and D. John (Librarian, College of Combat, Mhow). I am also very grateful to the staffs of College of Combat, Infantry School and M.C.T.E., Mhow.

In writing a dissertation one draws upon the contribution of so many other authors that separate acknowledgement of each of them, apart from some reference, is an impossible task. Therefore, I make no attempt at it.

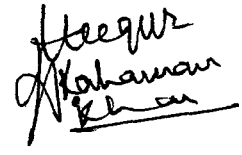
My special thanks are due to Dr. F.R. Khan, Assistant Professor of Military Science, Mhow, for his material support and keen interest in my progress.

I am also very grateful to Mr. Om Prakash for his timely cooperation and hard work.

Let me also thank my parents and family members for the patience shown during this study. Their guidance and

encouragement would always inspire me for more higher academic pursuits in coming years.

The views expressed, facts stated herein and shortcomings, if any, however are my responsibility.



(ATEEQUR RAHMAN KHAN)

PREFACE

Intelligence is known as second oldest profession in the human history. Intelligence and use of intelligence by armies throughout the world is as old as warfare itself. Today's battlefield demands better agents and agency to gain strategic and tactical advantage over their adversaries. 'Operation Desert Shield' has shown the importance of strategic as well as tactical intelligence. One expert has regarded Gulf War as a war of intelligence. In this war both sides use intelligence techniques for offence and defence. Iraqi attack on ALKNAFJI was an attempt to gather intelligence information about allied preparation, in technical terms it is known as offence for ORBAT (Order of Battle).

Saddam Hussein was not defeated by modern weaponary but by high tech intelligence network. The only thing which Saddam lacks was intelligence about allies.

Present study is a first attempt in the field of 'Military Intelligence - A Study in Organization and Techniques'. Topic covers wide area of research, but I paid emphasis mainly on mainstream of the subject. It is an effort to gather whole network of military intelligence, its functioning, its organization and its importance. Military intelligence has been playing major role in establishing and overthrowing of any government in world politics.

Introductory Chapter deals with the definition and subject material of Military Intelligence, its strategic

importance and need for today's battlefield.

First Chapter introduces C^4I&CM (Command, Control, Communications, Computer, Intelligence and Countermeasures) which is a new concept in modern technological warfare. It discusses about its elements, needs for battlefields and countermeasures against enemy's C^4I.

Second Chapter provides information about organization and functioning of world's major intelligence organization like CIA, KGB, GRU, MOSSAD, AMAN & MI5 etc. Their covert operations and other activities in the field of intelligence.

'Intelligence and war' the Third Chapter deals with intelligence requirement at various stages of warfare and in different environments. Intelligence and war are the two sides of same coin.

Last Chapter 'Intelligence Process Technology and Application' is an attempt to collect and describe the techniques and technological application of military intelligence in present and future warfare.

'Future of Military Intelligence' dominates the main theme of summary and conclusion. Extra emphasis is provided on the concept of Military Intelligence.

CONTENTS

*****
***
*

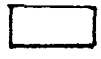
INTELLIGENCE EXERCISE MAP

TACTICAL STUDY OF THE TERRAIN AND WEATHER
NO.14, 16 JUNE 1991

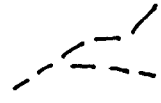
1. Mission: The 17th Armed Division will advance in zone, seize and secure crossings over the H River.

2. a. Weather: Continued clear and warm; wind 10-12 mph from west; ground haze over low ground at daylight, clearing at approximately 0900. End Evening Nautical Twilight 162040 June, full moon, sky overcast; beginning Morning Nautical Twilight 170515 June.

b. Topography:

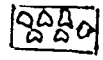
(1) Relief-  20-30 cm;  30-40 m;

 40-50 m;  50-60 cm.

Drainage-  unfordable;  fordable.

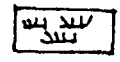
(2) Vegetation-

 coniferous, 10"-15" trunks, 10 yds apart.

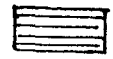
 deciduous, 6"-10% trunks, 30 yds apart.

 scrub, mixed coniferous and deciduous

(3) Surface materials-

 marsh or swamp

 peat bog

 clay, poor drainage

PLAN

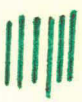

XX
B
C
G
I CANAL
F
D
E
A
N

(4) Cultural features-  two-lane, heavy duty road

 two-lane, medium duty road

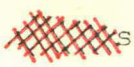
3. Military aspects:

(1) Observation-  ; poor over low ground until 0900.

(2) Cover and concealment until 0900  ; concealment in all areas fair

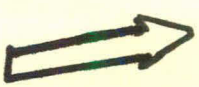
(3) Obstacles-   unfordable rivers

 steep slopes

 soft ground

 woods, densely planted

(4) Terrain objectives- 

(5) Avenues of approach- 

4. Tactical effect:

a. The unfordable H River and the wide, soft valley provide the enemy with an excellent barrier behind which to defend. Against a crossing at G the terrain favours an enemy counterattack from the north; against a crossing at E the terrain favours an enemy counterattack from the east.

b. There are only two existing crossings over the H River. They should be seized simultaneously in order to

effect a crossing. The terrain objectives indicated east of the river will secure the crossings of the river. The I Canal will split this objective line. Wind favours our use of smoke. Air support will be ineffective until after 0900.

NOTE: This study is valid only during the calendar period and under the weather conditions indicated. In the winter the deciduous trees would offer little, if any, concealment. In addition, depending on the temperature, many of the areas of soft ground might be frozen and thus be less of an obstacle. In the spring some of the streams indicated as fordable might become swollen—and unfordable. All of these variants have an effect on the selection of suitable avenues of approach for ourselves and the enemy.

Scale $\frac{1}{10,000}$

INTRODUCTION

"Before the army is despatched, calculations are made respecting the degree of difficulty of the enemy's land; the directness and deviousness of its roads; the number of his troops; the quantity of his war equipment and the state of his morale. Calculations are made to see if the enemy can be attacked and only after this is the populace mobilized and troop raised."

- Ho Yen-Hsi, C.1000

"If I am able to determine the enemy's dispositions while at the same time I conceal my own, then I can concentrate and he must divide."

- Sun Tzu, 400-320 BC, The Art of War.

"One should know one's enemies, their alliances, their resources and nature of their country, in order to plan a campaign. One should know what to expect of one's friends, what resources one has and foresee the future effects to determine what one has to fear or hope from political manoeuvres."

- Fredrick The Great: Instructions for His Generals, 1747.

Robert Debs Heinl, Jr., Dictionary of Military & Naval Quotations (Annapolis, 1985), p.120.

MILITARY INTELLIGENCE:

"The collection, collation and dissemination of information regarding the organization, equipment, training and tactics, personalities, order of battle, morale and education of the armies of foreign countries, their possessions and mandated territories. The consideration of political, strategical, geographical and topographical questions concerning them from a military point of view, as well as matters of policy which may arise concerning such countries."[1]

The use of intelligence by armies throughout the world is as old as warfare itself. No commander will take risk and put his troop in enemy's areas, without knowing their location, area terrain and other informations. In any appreciation of a war situation, it is essential for the commander of an armed force to include all relevant information concerning the enemy and the terrain, as well as summary of the courses of action open to the enemy commander and his opinion as to which of these courses of action the enemy commander is most likely to take.

This implies, however, in time of war and also in peace time, the need for military intelligence.

---

1. Peter Gudgin, Military Intelligence - The British Story (London, 1989), p.41.

Military Intelligence consists of

1. Strategic Intelligence and
2. Tactical Intelligence.

Strategic Intelligence:

"The collection, collation, evaluation and dissemination of information relevant to military and other decisions. The purpose of the activity is to support planning and to estimate the capabilities and forecast the intentions of other states."[2]

Strategic Intelligence is the intelligence required at the national level by strategic planners, government policy makers and high-level military commanders. It will normally include all categories of intelligence bearing on national strategy, such as political, economic, technical, scientific, military, geographic and sociological data. Most of the raw data is collected by overt means and consists of published and broadest materials and by other means. Covert means, including classic espionage, provide a small segment of the total data collected, and tend to relate to intentions rather than to capabilities.

TACTICAL INTELLIGENCE:

"IT...which may also be known as field or combat intelligence, is both collected and collated within the

---

2. Edward Luthwak, A Dictionary of Modern War (London, 1971), p.183.

theatre of war, and consists of that Intelligence required by a commander in the field to fight his battle successfully, it is concerned with enemy strengths, equipments, morale and intentions as well as with the terrain in the area of operations."[3]

The collection and evaluation of information about enemy forces or on a given terrain or about the terrain itself is known as "Tactical Intelligence". The main sources of raw data for tactical intelligences are

- Reconnaissance
- Interrogation of prisoners of war
- Clandestine operations
- Classic covert espionage operations.

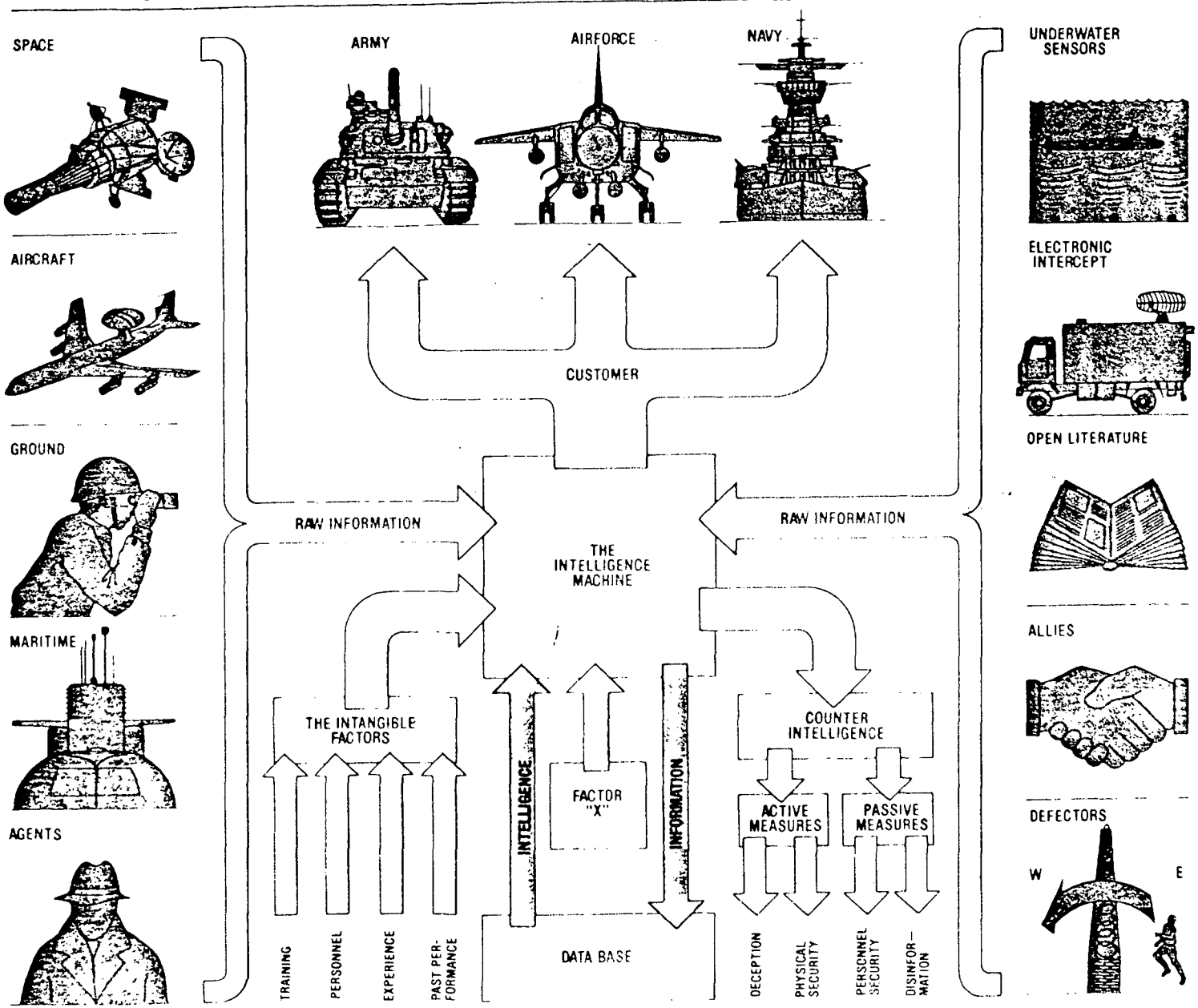
Tactical intelligence evaluation and dissemination is usually conducted at the level of the area or 'front' command with detached officers in major operational units; each branch of the armed forces represented in the area will also have its complementary Head Quarter.

The intelligence machine collects, collates and evaluates information from a wide variety of sources and interprets it to provide both facts and forecast for its customers. Its sources are mostly overt and most of the information is

---

3. Peter Gudgin, op. cit. (1989), p.9.

What is intelligence?



publicly available, but some sources are covert and these must be carefully protected.

Intelligence Machine:

The military intelligence machine is a very expensive business which in the more important countries is active every hour of every day of the year. The various sources used for collection and management of information are:

SPACE

Space is currently the intelligence man's dream with the sensors over every country. Unfettered by fewer or frontiers, there are no "nogo" areas for satellites known in political circles as 'national territorial means'. Satellites brings send back information as detailed as the first flight of a new aircraft, or the accuracy of a missile, or even whether the calibre of a new tank gun is 123 mm or 125 mm.

The United States government is orbiting a constellation of super-secret surveillance satellites that capture details never before possible. The latest generation of eagle-eyed space spies give intelligence analysts detailed reconnaissance pictures even when the Earth's surface is cloaked in darkness or by dense clouds.

"Advanced optics for its telescope/TV camera with image enchancement techniques let the latest KH-11 spy

satellite zoom in from space to capture objects roughly the size of grape fruits, experts believe. Reconnaissance specialist using computer enhancement may be able to read license plates or book titles."[4]

AIRCRAFT

Surveillance and reconnaissance can be done with the help of aircrafts. Aircrafts, like AWACS, have radar and other sensors which can see far into hostile territory and which can feed the "take" down to their bases as it is received i.e. in "real time"? Although at first sight they appear vulnerable, they are able to detect threats early and to organise counter-measures.

GROUND

On ground intelligence can be obtained by sensors ranging from radars and remote sensors, such as the ADSID, to the soldiers with a pair of binacoluras. The major problem is range limitation, due to terrain and weather, which is why so much emphasis is placed upon airborne recce. The use of HUMINT COMINT AND SIGINT can help in making elaborate plans and decisions vital for national safety.

MARITIME

Maritime surveillance includes both surface ships and submarines. Mounting a multiplicity of sensors, these ships

---

4. William Burrows, "Space Spies", Popular Science (New York), vol.236, No.3 (1990), pp.61-65.

can range over the world's oceans limited only by the extent of 'territorial waters'.

"The sensors now available to each ship are becoming increasingly numerous and individually more capable, ... Infra red image-intensification and thermal-imaging techniques are now being used by various navies for direct observation."[5]

AGENTS

Human factor in intelligence is traditional and most reliable "source of the most vital information". An agent can operate in hostile system to gain information about an enemy's capabilities and intentions.

"...for many years, Soviet spy Kim Philby was able to give the KGB information on morale, organisation and personalities inside British Secret Intelligence Service (SIS). Such information is simply not available by other means."[6]

UNDERWATER SENSORS:

To check and control the activities of ships and submarines the underwater sensors are used for this purpose. These sensors are placed at "choke points" and on other

---

5. William Kennedy, The Intelligence War (London, 1983), pp.176-77.

6. Ibid., p.14.

highly sensitive areas of oceans. They play a major role in detecting submarines.

ELECTRONIC

Electronic warfare is today one of the most important means of gathering information in both peace and war. Radio intercept can provide raw information from insecure radio links, but can also build up pictures of deployments, tactical dispositions, individual idiosyncrasy and equipment utilisation. Such intercept activities cover radio, radar microwave and other electromagnetic transmission.

OPEN LITERATURE

A vast amount of military literature is produced by each nations, which are considered as major source of information about their strategic build up and their preparedness for war.

ALLIES

Allies are frequently available source of information and also help to spread the load in this very expensive undertaking. Unfortunately the traffic on such "two way-streets" does not always flow with equal freedom in both directions.

DEFECTORS

Defectors are invaluable prizes to intelligence service because, like the better agents, they can give information in depth about their specialised are.

DATA BASE

This is considered as a pool of knowledge but up by the intelligence machine over the years, which enables every new set of information to be analyzed properly. It is rather like a jig-saw pezzle where each piece is fitted in using a combination of the fragment of a picture and the shape of the sides with each new piece making completion slightly easier and slightly more inevitable.

INTANGIBLE FACTORS

These factors are

Training

Personnel

Experience

Past performance,

also contributes to the effectiveness of the machine. Israeli secret service 'Mossad' regarded as world's most advanced and modern intelligence service. In 'Mossad' and 'Aman' these intangible factors are taken seriously by the organizations.

FACTORY

It is an important aspect possessed by the some organisations. It is the ability to be in the right place at the right time, to know who has a certain piece of knowledge, and sometimes just be lucky. All these disparate elements have to be welded together and processed leading finally to an output intelligence. This is then handed over to the

operator - military or political - who must then decide what to do with it.

COUNTER-INTELLIGENCE

To protect our own intelligence system not to be defected by others counterintelligence is necessary for this. This includes active measures such as deceiving the enemy and the use of disinformation.

"Since it is essentially a negative activity, counter-intelligence seldom produces information that is of value to the central intelligence gathering activity.... The more people and material resources the counterintelligence part of the agency control, the more likely its operators are to gain the upper hand in the agency as a whole and so to create a "tail-wagging-the-dog" situation."[7]

Principle of Intelligence:

"The production of military intelligence is a science a matter of logic. It is governed by principles which have an application as universal as the principles of war. Without a thorough understanding of these principles of intelligence the production and use of intelligence becomes a confused maze of unrelated and useless notions."[8]

---

7. Ibid., p.17.

8. Phillip B. Davidson and Robert R. Glass, Intelligence Is for Commanders (Pennsylvania, 1952), p.3.

Within the past generation, the use of the internal combustion engines in vehicles and aeroplanes and satellites has freed intelligence operations from the limitation imposed by the speed and stamina of the horse. The advent of nuclear weapons, radar and electronic warfare equipments have radically changed intelligence requirements and information collection methods. Techniques and methods will always change to reflect the capabilities of the material which is available at the time. However, like the principle of war, the basic principles of intelligence remain unchanged. An understanding of these principles will make it easier to use new and future methods and equipment and to handle new intelligence requirements.

The Principle of Collection

The Principle of Processing

The Principle of Use

The Principle of Direction.

The Principle of Collection:

Each collecting agent or agency of a command is responsible for collecting and transmitting all informations of intelligence value to adjacent and higher headquarters with the least possible delay even in the absence of specific instructions.

The intelligence officer obtained such meagre information as was then available on the size, shape and location

of geographical features plus location of troops and lines of supply. The emphasis is also placed on prevailing weather and hydrographic conditions.

The Principle of Processing:

The information which was collected and it is processed to get better result. These facts were evaluated and interpreted the intelligence officer. Much of the information was in sketched form, little of it was up-to-date.

Information is evaluated to determine the credibility of its source and the accuracy of the information itself, evaluated information is interpreted to determine the significance in the light of all other intelligence at hand.

The Principle of Use:

Intelligence is presented to the commander in a form which will permit him to use it in the formulation of decisions and plans. The all required information about a military operation is provided to commander in a certain formal. This includes direct access to the data base at the command control and communication, satellites surveillance reports as well as the new development in that particular region of combat.

The Principle of Direction:

The efforts of collecting agencies are specifically directed within the capabilities of each agency, so as to

insure a coordinated search for the information needed by the commander to govern the future conduct of his unit.

In this case, the importance of C3I becomes very crucial. The combination between command, control and communication with special assistance of Intelligence regulates the every step of battle in battlefield.

Intelligence for Today's Battlefields:

The intelligence requirements of a commander in the battle are generated by his mission and by level of command which are developed by his need to visualize or see the battlefield and are modified by his own perceptions.

Thus at company level the captain and his troops must actually fight the enemy in a designated level or area which is prescribed by the limits of usual observation and direct fire of their weapons. Control and direction of this battle is accomplished by the lieutenant colonels and colonels who command the battalions and brigades, while the generals who command the divisions and corps (and higher echelons) concentrate the forces under their command to achieve the proper combination of resources at the point or points of actual combat.

The battlefield intelligence can be obtained from these:

I. The Electro-Magnetic Spectrum

This can be obtained by detecting and using information collected from the electronic emission of enemy-signal intel-

ligence (SIGINT) or Communication intelligence (COMINT).

II. Imagery Intelligence

Imagery intelligence is obtained from radar, including newer types of side looking radar (SLAR), infraced radiation (IR) detection and photographic sensors by aircrafts and satellites.

III. Human Intelligence

This type of intelligence is obtained by human patrols, reconnaissance, information, captured prisoners, documents and equipments.

"The use of nuclear weapons greatly influence intelligence requirements. These requirements vary with the military operations that are possible under different scales of nuclear weapon use. The degree to which nuclear weapons are used affect the relationship between fire and manoeuvre. This in turn influences target acquisition activities and production of intelligence on avenues of approach. Similarly, the size of the area required for dispersion of units and installations is also affected with consequent influence on the production of intelligence of the area of operations."[9]

In situation short of war intelligence that provides warning of outbreak of hostilities is of utmost importance

---

9. Irving Heymont, Combat Intelligence In Modern Warfare (London, 1960), p.93.

Commander also requires information and intelligence of all areas in the world where their force may be committed.

A significant by product of the military, technological revolution was the tremendous increase in the importance and number of functions assigned to military intelligence.

In times of little technological progress or change, intelligence and up-to-date information were not of paramount importance, because the behaviour and strength of one's adversary did not change very frequently. The shape of each war differed only marginally from what of earlier wars. But this is not the case in a world of rapid technological changes, were each new weapon and continually changing rates of military industrial production may give the innovator a critical unilateral advantage almost overnight.

Although military technology has revolutionized almost every conceivable aspect of military performance, the one area in which it has made little progress, ironically enough, is that of anticipating surprise attack.

Likewise we see a clear intelligence operation in middle east. "Operation Desert Shield" sounds like military operation against belligerent Saddam Hussein of Iraq but in this operation U.S. and others using high tech intelligence against Iraqi troops movements. AWACS and radars positioned

at Saudi eastern border with also great help from satellites surveillance and remote sensing.

Strategic Importance of Intelligence:

"...The numerically inferior side is able to take the initiative by concentraing superior forces at the time and place of its choosing, thereby vastly improving the likelyhood of achieving decisive.

Understanding the intelligence function is now more important than at any time in the history of the human race. For the first time since the 1950s the concept of surprise strategic attack (first strike) now dominate the international debate.

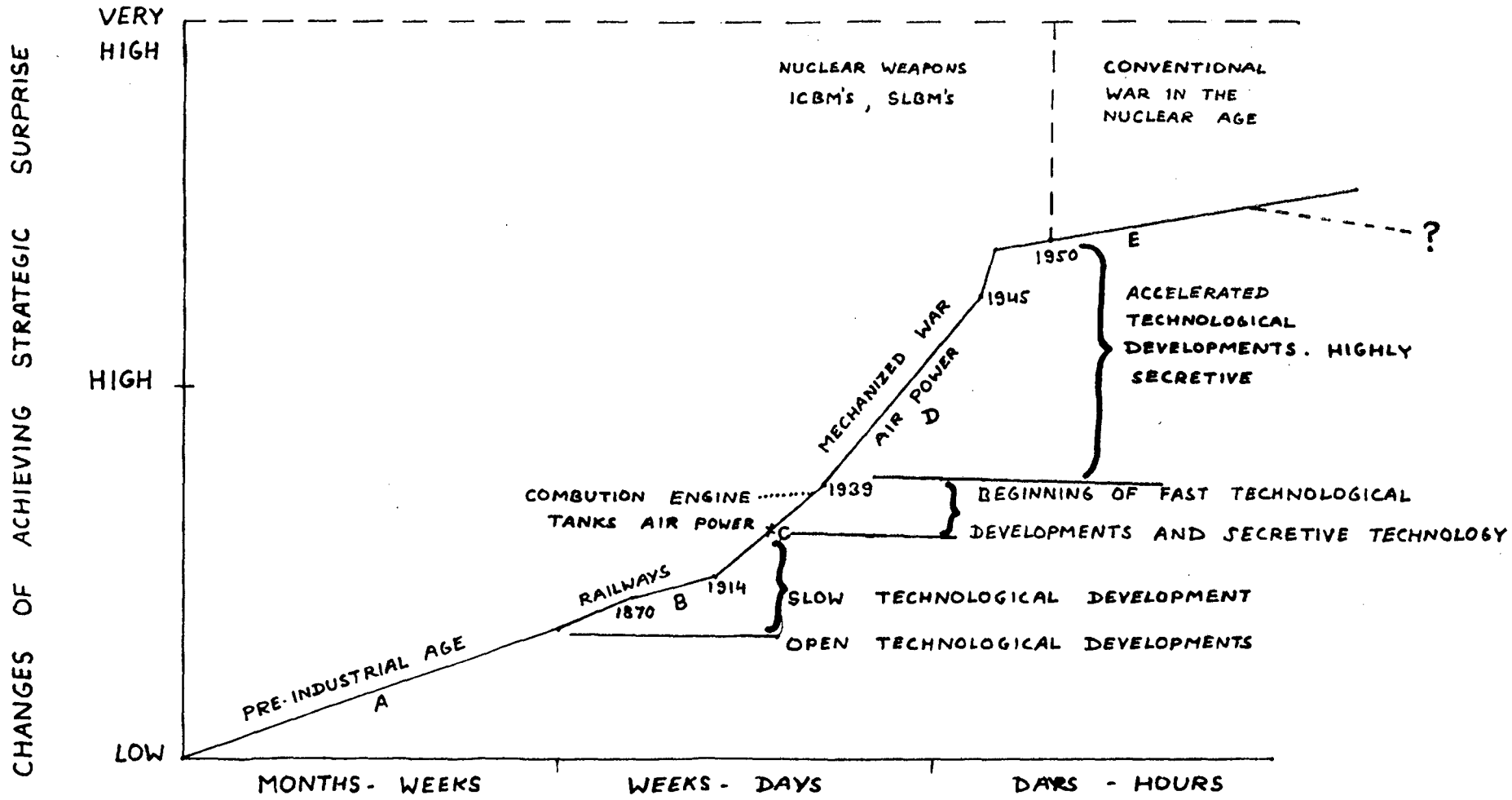
Karl Von Clausewetz emphasises on the belief that strategic surprise was greater theoretical interest than practical value.

"Basically surprise is a tactical device, simply because in tactics time and space are limited in scale. Therefore, in strategy, surprise becomes more feasible the closer if occurs to the tactical realm, and more difficult, the more it approaches the higher line of policy.... While

---

10. A.C. Maurer et. al., Intelligence: Policy and Process (London, 1985), p.239.

STRATEGIC SURPRISE IN HISTORICAL PERSPECTIVE
-THE DECLINE OF WARNING TIME



the wish to achieve surprise is common and, indeed, indispensable, and while it is true that it will never be completely ineffective, it is equally true that by its very nature surprise can rarely be outstandingly successful. It would be a mistake, therefore, to regard surprise as key element of success in war. The principle is highly attractive in theory, but in practice it is often held up by the friction of the whole machine."[11]

FIG.

A. Pre-industrial age, slow mobility, limited fire power, chances of strategic surprise very low (1870)

B. Railway age, Increased mobility, Mobilization, Slow increase in fire power, Chances of a successful strategic surprise low but possible (1870-1916).

C. Combustion engines, Tracked vehicles and tanks, rise of air power and fire power, Mechanized warfare Blitzkreig, chances of strategic surprise is high (1916-1938).

D. Further development in mobility and fir power chances of strategic surprise high - but also improvements to intelligence (1939 to present).

---

11. Michael Howard et. al., eds., Karl Von Clausewitz On War (London, 1976), pp.198-99.

E. Development of Nuclear weapons and later ICBMs and SLBMs, Par excellence the weapons of strategic surprise. War can be decided Theoretically and Practically in Minutes (1915 to present).

F. Improvements in Conventional mobility and fire power, Increased importance of air power, High chances of success for strategic surprise, But slowed increase given the Technical Developments of Reconnaissance (Air Photography, satellites, electronic intelligence), Potential for surprise is somewhat levelled off by Reconnaissance and familiarity with tactics of Blitzcrieg. Yet despite all the Technological improvements that may help the Defense.

Clausewitz later emphasises on preparation for war, for this he said it usually takes months concentrating troops at their main assembly points generally requires the installation of supply dumps and depots, as well as considerable troop movements.

Modern nuclear weapons and ICBMs whose staggering concentrated fire power, capable of being activiated in minutes meant that strategic surprise could be both the beginning and the end of a war. Technological advances in the last hundred years has reduced the time required by or for concentration of troops, launching weapons for strategic surprise from months to weeks and days and ultimately to

hours or even minutes.

Because no one knows what will happen after the first nuclear weapon used in a future conflict, every statesman who has nuclear weapons at his disposal will be tempted to 'preempt' the use of such weapons by a real or supposed enemy. Elaborate command and control bunkers dug into mountains and hill sides testify to the belief that there is some margin of chance for survival by the leadership that strikes and with the overwhelming force.

The second influence driving intelligence and its strategic importance to the forefront of international concern was the powerful thrust of U.S.S.R. towards superiority over the Western world in strategic nuclear armament.

U.S. strategic planner always have tended to assume that, based on a superior intelligence capability, the U.S. would have advance strategic warning of an enemy nuclear attack. Uptil the mid and late 1970s U.S. strategic nuclear power was so secure that even if the assumption of such a superior intelligence capability had been incorrect, the United States could have absorbed a surprise attack and still have responded with overwhelming force. As pointed out by Prof. William R. Von Cleave, Director of Defense Studies at University of Southern California:

"We have permitted severe vulnerabilities to develop in our strategic forces, and in our command, control,

communication and intelligence capabilities as well. The result is that we are making our forces more and more dependent on that assumption of intelligence superiority and effective strategic warning at the very time that assumption itself is more and more questionable."[12]

The outcome of strategic nuclear war is uncertain and the military condition of world is dangerous, more emphasis is now being placed by rival powers on economic and political moves design to destroy an opponent short of war. An effective intelligence system is essential to defend against such actions of the adversaries.

12. Ibid., p.16.

CHAPTER I

COMMAND, CONTROL, COMMUNICATIONS, COMPUTER, INTELLIGENCE AND COUNTERMEASURES

(C^4I&CM)

"Superiority of material strength is given to a commander gratis. Superior knowledge and superior tactical skill he must acquire. Superior morale, superior co-operation, he must himself create."

- Admiral Joseph Mason Reeves
1872-1948

"When I took decision, or adopted an alternative it was after studying every relevant and many an irrelevant factor. Geography, tribal structure, religion, social customs, language, appetites, standards, all were at my finger ends. The enemy I knew almost like my own side. I risked myself among them a hundred times to learn."

- T.E. Lawrence: Letter to
Liddle Hart, 26 June 1933

"One should know one's enemies, their alliances their resources and nature of their country, in order to plan a campaign. One should know what to expect of one's friends, what resource one has, and foresees the future effects to determine, what one has to fear or hope from political manoeuvres."

- Frederick The Great:
Instruction for his
Generals, 1747 (about
intelligence)

Robert Debs Heinl Jr., Dictionary of Military & Naval Quotations (Annapolis, 1985), p.150.

"The issue of communicating and coordinating intelligence from the highest levels of government to the tactical commanders in the field - and vice versa - is at least as old as the battle of Marathon in 490 B.C. To apprise the Greek leadership of the defeat the Persians, Rheiddipides, the fastest runner in the Greek Army, had to run 26 miles from the plains of Marathon to Athens. Unfortunately, upon completing his mission, Pheiddipides dropped dead."[1]

To provide timely useful intelligence in the hands of a myriad of consumers where and when they need it is the raision d'etre of military intelligence. If the timely information is not provided, that will create a critical situation may mean the difference between failure or success in the future operations.

Direct support to military operations, including command, control, communications, countermeasures (C3CM) is one of the key areas where improvements in intelligence support can make a critical difference between success and failure of an operation.

The omission of many outdated informations and the words of dramatic incident in past wars where intelligence failures (Pearl Harbour) or intelligence successes (Battle

---

1. Leonard H. Perroots, "New Approaches to C^3 Interperability in the intelligence Community," Signal, Sept. 1988 p.31.

of Midway) have had a major impact.

It has been assumed that weapons system available to the adversaries in any war will decide its outcome. The importance of command, control and communcations has increased with striking revolution in the fields of sensing devices and micro computers.

The importance of this revolution stems from the fact that what were previously a haphazard collection of radios, radars, Sonars , satellites and computers has now been organized and is available to the commander with information which is up to date and easily assimilable.

C^3I have become ever more important as the complexity, geographical spread response, speed and capability of land forces have increased. C^4I has also become important as the way of seeking to optimise the use of scarce resources i.e. as a force multiplier. It is an indication of the importance placed upon C^4 that an era of tighter budgets few, if any western armies reducing their expenditure on C^4I, instead they are maintaining existing levels, or in some cases actually increasing them.

"In this era of declining budgets, we face many challenges in the defence-wide-information system areas. We began significant programme developments in the early 1980s, in

recognition that our defense-wide systems were in need of modernization."[2] High technology systems have the potential to turn tide of battle across the spectrum of warfare, from low intensity conflict to general global war. They are extremely important in the vital areas of command and control (C^2) and responsive intelligence delivery. The state of the art in command, control communication and intelligence (C^3I) provides U.S. tactical military forces with a critical war fighting advantage.

Command, control, communications,computers, Intelligence and Interoperability (C^4I^2) strive to provide the battlefield commander with command, control and communications (C^3) and computers, intelligence and interoperability that will enable him to make quicker and better informed decisions than any potential adversary. Though the use of satellites, position location equipments, a digital communications backbone, burst transmission equipments, improved antijam and communications security (COMSEC) improved high frequency radios and other new C^3I developments.

"Advances in computing and communications have caused a blurring of the separation between different command and control (C^2) system as well as between communications and

---

2. Diane D. Fountaine (Director, OASD/C^3I),"Department of Defense C^3 Modernization Goals are Achievable," SIGNAL, Vol.6(1989), p.38.

automated command and control information system (ACCIS). The result of this trend is that individual, command and control communication and intelligence (C^3I) systems effectively have become parts integrated systems."[3] The trend in sharing data bases and distributed processing of a single data is continuing to evolve. The application of these advances not only improves the effectiveness of C^3I system but also conserves scarce human and material resources. It also gives the chance to use these systems similarly in peace and war, one of the longstanding goals. Integration in C^3I systems is a natural development of advances in automation.

The technical superiority of Allied Forces over potential adversaries is a cornerstone of western military strategy. For example, the clear advantage of the United States over the Soviet Union in critical C^3I technologies allows more rapid analysis and evaluation of alternative courses of action and consequently, more efficient, command and control decision cycles.

Advances in artificial intelligence, micro-electronics, photons, acoustics and advanced signal processing appear to have significant potential for providing leapahead capabilities for C^3I systems. The state of the art in these

---

3. R.J. Donahane,"Technology: A Driving Force in C^3I, Information Systems for Civilian and Military C^3I: Exports & Leaders State Their Views," SIGNAL (Fairfax), Vol.6, (1988), p.42.

systems today having a dramatically improved dynamic range and bandwidth, and the sensors and other C^3I systems having a capability for aided target recognition, rapid processing of threat signals, automated situation assessment and planning and teleoperation of sophisticated vehicles. These system capabilities made possible by advances in technology involving statistically based machine vision, expert systems, quantum well electronic devices, second generation sensors, very high speed integrated circuits - (VHSIC) Phase I and hybrid optical/digital/surface acoustic wave (SAW)/non-numeric processing. The Army/Defence Advanced Research Project Agency (DARPA), Air land Battle Management (ALBM) and the Strategic Defense Initiative Organisation (SDIO) national test bed (NTB) are examples of near-term programmes in C^3I employing state-of-the-art technology.

C^4I is perhaps the most obvious of the term we have to define. All commanders and staff have their own interpretation of its meaning, which is probably one of the reasons why it currently has no officially accepted definition within NATO.

"For I am and man under authority having soldiers under me, and I say to this man go and he goeth, and to another, come and he cometh..." (-Mathe (C8,V9) Bible)

This definition brings out both the functions of command. At simplest level both command and control exercised by a single person. Thus within headquarters which made up

of commander and his staff, we may say that the commander commands by taking the major decisions and his staff control by turning those decisions into detail orders and issuing them for execution.

"The process of directing and coordinating military forces in the execution of the commander will and the exercising of his authority over all or part of the activities of subordinate organizations.[4]

ELEMENTS OF C3:

Cybernetics theory deals with control and communication processes in animals and machines. Command control in military context is concerned with the control of the events and processes through the transmission and receipt of messages and the concept of cybernetics and directly relevant. A commander in the field exercises command and control through a number of cybernetics or feedbacks troops which contain the following elements:

Surveillance:

The commander will wish to have available to him intelligence from a large number of individual and from a whole range of sensors.

---

4. D.M. Christopher and F. Foss, Modern Land Combat (London, 1987), p.65.

2▲

ELECTRONIC COMMAND, CONTROL, COMMUNICATIONS AND COUNTER-MEASURES

The modern battlefield, with its overt and covert threats, its highly sophisticated weapons systems, and its multiplicity of specializations faces the commander with an increased management problem in efficiently utilising the resources at his disposal. This is leading, in most armies, towards an integrated command-and-control (or C²) system. Such integration will only work, however, if it is associated with a properly designed communications system, the so-called C³. This is the sort of concept the British Army is heading towards with its integrated Ptarmigan, Clansman, Wavell and Bates, giving a C³ system designed from the start to work as one. This diorama shows the sort of elements which may be expected on today's battlefield. Starting with the ground force HQ (1), this must clearly work to its subordinate armour (2) and artillery (3), and the latter must also work to their observation parties (4). The ground force HQ works back to its superior HQ (5). Tactical aircraft (6) must be able to communicate with the army units they are supporting (2), and back to their base (10). Within the air force communications exist between airfields (9), air defence missile units (8), and the superior HQ (5). The early warning system (7) is also linked into the national HQ (5). The national trunk backbone system (11) links the civil capital (12), the naval forces (13) and reconnaissance (14), together with strategic air forces. Aircraft are shown using internal/external ECM systems to thwart attackers. The sheer complexity of such a system and the volume of information to be transferred is increasingly leading towards data processing and digital communications. The problem is, of course, that while the C³ logic leads to this overall system the enemy is being provided at the same time with an enormous EW target, and this is the dilemma which military planners in many countries are trying to reconcile. In most armies the two fastest growing corps are those responsible for communications and technical maintenance.

(Source: Based on information from IAI Elta Industries Ltd.)

3▲

4▲

Communications:

A data is provided to commander and his staff only available if suitable communication system is provided.

Data Processing and Management:

The information received at headquarters must be passed to the commander and his staff after processing, filtered and displayed in suitable format.

Decision Making:

This is a matter for the commander aided by his staff. The organization of headquarters, its internal communication and the aids provided for the decision making are all important element of this activity.

Communication System:

The only element to occur twice in cybernetics loop, communication system to convey orders that result from the decision making process is just as important as communication to bring information into headquarters. The communication system can be thus fairly described as doubly important to command and control as they must convey commands as well as return the control informations.

Action:

The purpose of surveillance, ADP, computers and all other constituents of cybernetics loop is to indicate action, the end product of command and control system.

ARMY AND C3I:

"Today the army stands closer than ever to revolutionizing the prosecution of land warfare through the introduction of sophisticated command, control, communications and Intelligence systems (C3I). The marriage of battlefield sensors systems, advanced communications and unprecedented battlefield computing power will provide future commander with the ability to strike the enemy quickly, precisely and repeatedly. The capability to do this is within our grasp if we field and upgrade key system across the tactical, strategic and sustaining base environment."[5]

Modernization in terms of automation and improved communications is revolutionizing operations intrinsic to the conduct of war. Automated systems supporting the primary functional areas of manoeuvre control, fire support, intelligence and electronic warfare, air defense and combat service support are currently in the process of development and fielding as the communications network comprising the information distribution systems.

Looking beyond the 1990s into the 21st century, we can see challenge requiring the infusion of new technologies to meet projected threats and to compensate for a likely declining pool of soldier recruits. There will be need for

---

5. Brue R. Harris," Army C3I Today And Tomorrow - Information Systems For Civilian And Military C4I," SIGNAL (Fairfax, Vol 6(1989), p.38.

miniaturization, automation and utilization of artificial intelligence in war fighting systems, including C2, to a degree beyond comparison in today's world.

Battlefield requirements are increasing rapidly C3 services under new doctrine and the growing technical capability to move, store and process data. Furthermore we are seeing strategic systems, such as the Worldwide Military Command and Control System (WWMCCS), being extended into the battlefield more every year. As consequences, there is a greatly magnified requirement to achieve integration and to produce system that accommodate different data, function requirements and performance demands serving each echelon of the force. At the same time, technology is accelerating its pace of change, and we are facing a reduced fiscal situation.

FUTURE OF C3 TECHNOLOGIES:

"Much of tomorrow comes from yesterday, and the transfer of ideas from the past into the probable actions of the future is often the way to prepare for tomorrow."[6]

Demand is the driver of all future enterprise, and technologies research is the magnet for demand. The demand

---

6. Jon L. Beyes,"The Future Influence of C3 Technologies," SIGNAL (Fairfax), Vol.6,1988), p.113.

for reliable, interference-free communications moved satellites from drawing board to actual orbit and consequently broadened the scope of limited arsenal terresterial and sea cable communications. Demand puts satellite and computer and the satellite together so that the data could be rapidly stored, collated, retrieved and swiftly distributed to any worldwide users.

Engineers will design C^3 system to take advantage of this new photon-electron knowledge to reduce internal noise and man-made and atmospheric interference and thus increase the reliability of transmission. Voice, data and computer security will be provided with powerful chip and analytical devices furnishing automatic key alignment instantaneously. A part of the key alignment will be by special recognition features using sender and receiver anatomy characteristics.

Transreceivers will be lighter and more durable than the radio and transmitter units currently in the field. They will be powered by the low wattage, small batteries. These batteries will have a 20 year life and will be automatically revitalized through chemical cells, drawing energy from surrounding sources.

Transreceivers will have their own computer capabilities using two inch reusable optical desks for data storage, manipulation and source material, classified messages will be laser screened onto them, though memberance of composite material fixed with special chemicals so that, in the event

of capture, the membrance will evaporate. The message memoray will remain in the store capsule of the transreceiver, which itself will have a self-destructor device.

In the command centres for special strike teams and brigades, expert knowledge and artificial intelligence (IA) systems will be featured to sort out information quickly and to propose to the commander and his staff various options and possibilities of enemy reactions based on enemy known or sensed capabilities.

The Space Station will be the largest and most complex international space project to be built by the National Aeronautics and Space Administration (NASA) and its international partners - Canada, Japan and the European Space Agency (ESA). The space station will be required to support the C^3I functions far excess of any vehicle built by NASA. The assurance of successful C^3I functions is provided by three programme systems; the Space Station Information System (SSIS), the Technical and Management Information System (TMIS) and the Software Support Environment (SSE).

"Future command and control systems will need to be supported by highly automated and integrated communication and processing systems, which must be able to manage and reconstitute themselves at the network and internetwork level to ensure survivable C2 architectures. Emerging technologies in automated communications-resources management,

distributed processing and artificial intelligence (AI) will provide the foundation for building such future systems."[7]

C4I FOR TODAY'S BATTLEFIELDS:

"A commander at any command level has the major assignment of understanding the current situation, evaluating the situation against objectives and conducting the unit to achieve objectives as he understands them."[8]

Today's battlefields place demands upon commander and their staff which far exceeds the traditional capabilities for seeing, planning and acting. Furthermore, the traditional solutions which would have mandated larger staffs or large centralized computer capabilities would have increased the target value and vulnerability. Therefore to provide survivability while retaining information availability for the entire staff micro-computer have been introduced.

The commander other facing an unfavourable force ratio must be able to rely on accurate and timely data on his resources and enemy capabilities if he is to know which of his force to move and when and where to move them. The essence of the problem is the same as it has been for commanders for centuries. Only now there is more battlefield to

---

7. Michael S. Frankel,"In Pursuit of Survivable C3," SIGNAL Vol.6 (1988), p.137.

8. D.G. Bawen and Benjamin V. Cox," Tactical Communication To Support Intelligence," SIGNAL, Vol.6,(1988), p.185.

see, more data to use in developing and effective plans and less time to act. The speed, depth and the destructiveness with which modern combat powers can be brought to bear significantly compound both the the opportunities and the consequences of command control failures.

The enemy's detection and attack capabilities present an unprecedented threat to command and control facilities at the same time that the demand on these facilities have expanded geometrically.

"The requirements for commanders to 'see', 'plan' and 'act' are the guidelines for command control in the simplest of terms. However, the simplicity of the terms inverse to the complexities associated within the dynamic contemporary battlefield. The depth of the coverage of the sensors, the increased range of lethal weapon systems and the nobility of force all expands the horizon for commander at all echelons and demand the skillful allocation and manoeuvring of his forces."[9]

The commander can be either helped or hindered from executing the command cycle by command, control communication, computer and intelligence (C^4I) structure that he has fielded. The C^3I architecture connects the commander to the

---

9. Charles H. Jundt,"C^3 for Today's battlefield", Military Technology, vol.IX, Issue y (1985), pp.43-44.

outside world to provide the senses of the unit. The inputs to the commander therefore must follow some basic rules:

1. The commander should receive all intelligence concerning the external situation and his unit pertinent to his command responsibilities.

2. The intelligence input must be timely enough to make a difference in the conduct of the commander's execution of objectives.

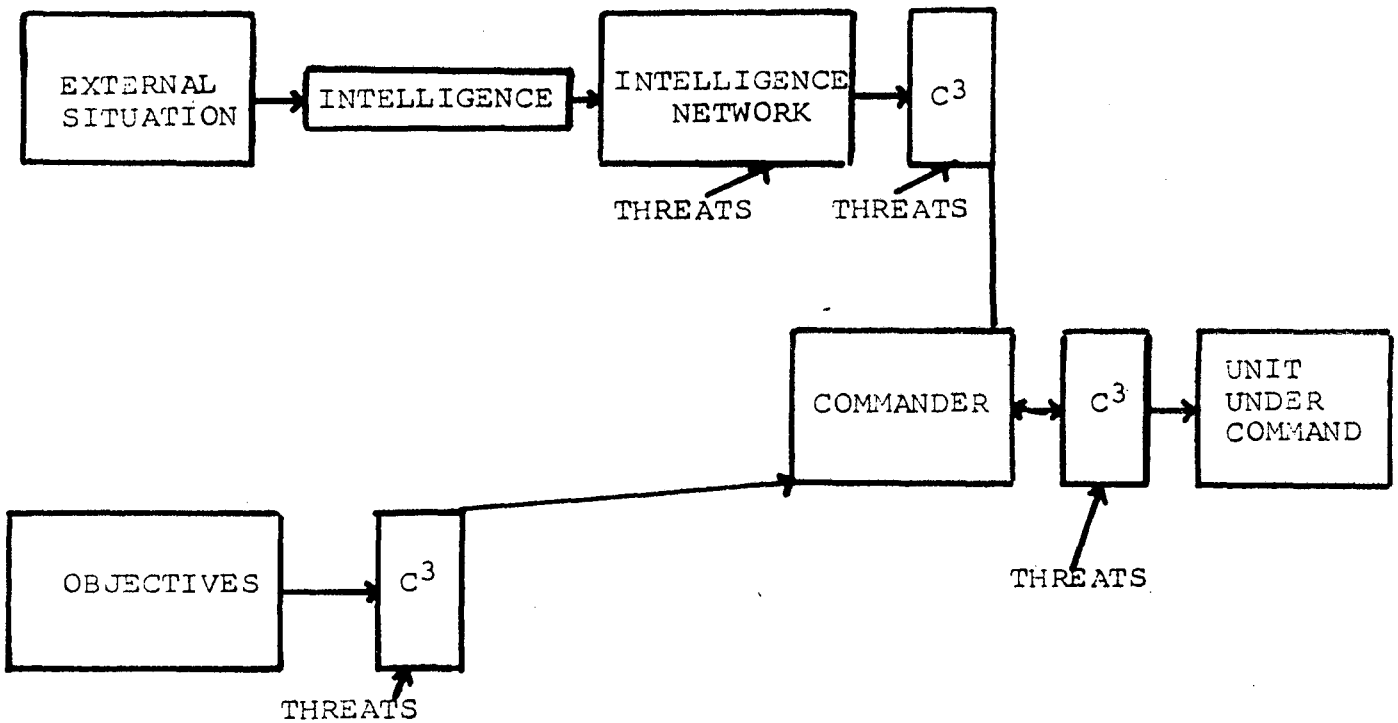
3. The intelligence input must be assimilated easily into the objective assessment of the situation and should not be ambiguous.

4. The intelligence must be available through all levels of conflict and through all dynamic modifications of command structure or location.

5. The intelligence must be supportable within the commander's resource base.

6. The intelligence implementation should not endanger the community.

The commander's desires for access to all intelligence data generated about his area is typically accommodated with a mix of intelligence collection assets. This mix includes assets that are organic and nonorganic to the commander, machine or human, deployed on a variety of platforms, and capable of covering an area for various times at various



COMMANDER'S COMMAND, CONTROL, COMMUNICATIONS & INTELLIGENCE REQUIREMENT

angels and resolutions. The command, control and communications (C^3) systems must be able to provide all necessary C^3 functions against this menagerie.

The question arises is that, how to formulated the traditional C^3 requirements into capabilities which will satisfy the need of the contemporary commander?

Traditionally the solution would be to expand the size of the staff. However the exponential increase in information cannot be handed by more people. The vulnerability of command post would increase as it became larger and slower and more difficult to move. Survivability demands mobility and low detectability. Therefore the answer is obvious use computer to support the commander and his staff.

Micro computer have become an important in C^4I and supported areas and that threshold has just been crossed. The evolutionary integration of microcomputer at all echelons will serve to bring the information revolution of the 80s to today's battlefield.

By computer we can provide update data such as intelligence data base. The easy access to data is made due to direct inputs from sensors or reconnaissance units. This made strategy and tactics both comprehensive to achieve, fire control, fire control-mobility-manoeuvre and deployment, air defense and allocation of defense resources.

"It is not much the mode of formation as the proper combined used of the different arms which will insure victory".

Jomini
Precis de l'Art de la Guerr 1838.

COUNTERMEASURES:

The Soviet concept of radio-electronic combat involving the integrated employment of both destructive and jamming systems to attack opposite electronic system.

Thus were joined perception of need (overcome-numerical inferiority) and threat (Soviet radio electronic combat) resulting in immediate recognition of general concept as a high pay off approach to war fighting. Known as command, control and communications countermeasures (C^3CM), this concept was developed, discussed, defined through the course of several Departments of Defense and Air Force studies between 1975 and 1978.

Several terms can be applied to C^3CM, a strategy, a tactics, even a philosophy. C^3CM is a war fighting techniques - a way of approaching mission accomplishment. The major point about C^3CM, is that C^3CM is a methodical approach to the integrated, balanced and complementary employment of available lethal and nonlethal means to attack the enemy's C^4, while simultaneously protecting our own C^4 from similar enemy activities.

C^3CM is defined by Department of Defense (DOD) and Joint Chief of Staff (JCS) policy guidance C^3CM is,

"The integrated use of operations security, military deception, jamming and physical destruction, supported by intelligence, to deny information to influence, degrade, or destroy adversary C^3 capabilities and to protect friendly C^3 against such actions."[10]

It comprises two separate but closely related component.

- Counter C^3: These measures (from the basic C3CM definition) taken to delay adversary decision makers the ability to effectively command and control their forces.

- C^3 Protection: These measures taken to maintain the effectiveness of friendly C3 capabilities (in the face of) actual or potential adversary counter C3.

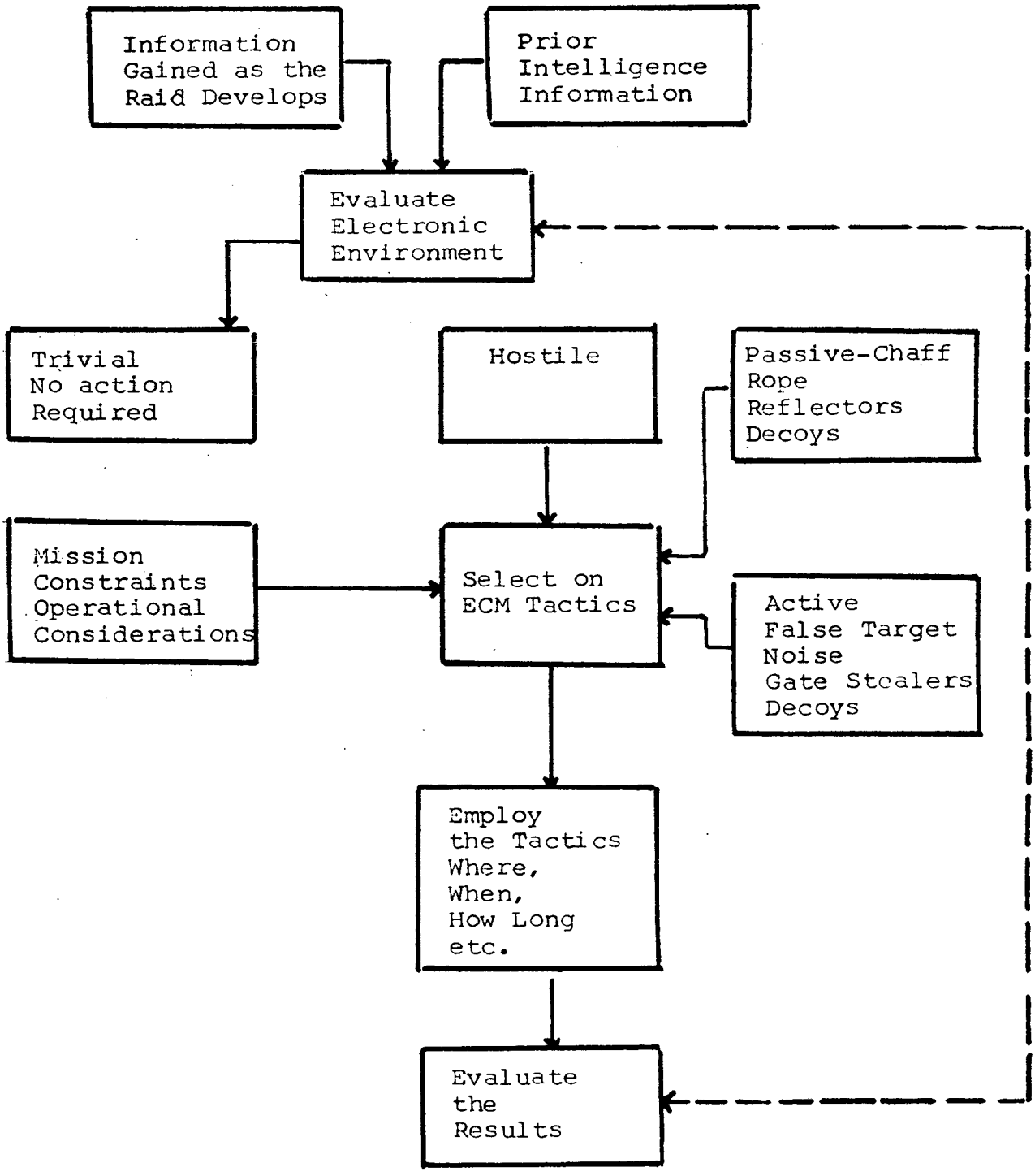
Planning Process for C3CM:

The planning process for C3CM really is not new. It begins, as with almost all other planning, with a mission statement to, or developed by, a unified or specified command commanders in chief or joint task force commander. At this level, it is mandatory, under the Joint Operation Planning system format for deliberate planning that operations annex

---

10. Charles F. Smith, "C3CM", Military Review, Jan.(1983), p.67.

DYNAMIC DEVELOPMENT OF ECM TACTICS



Source: Principles of Electronic Warfare, p.5.

(Annex C) address C3CM to "establish procedures necessary to effect the integration of supporting disciplines to insure maximum effectiveness of C3CM operations."[11]

For C^3 countermeasures to be implemented in a fully coordinated manner designed to truly disable the enemy's C^3 and to protect our own, the very first consideration must be at the theatre's highest levels. Thus, the theatre commander's plan should address.

A C3CM concept in the operation annex,

- Implementing instructions in the various appendices to the operations annex and in other annexes.
- Intelligence requirement and operations to support execution of the C3CM concept.
- Communications arrangements.

For command establishment of priorities and resource allocations:

- Priority of jamming effort to a given type target and/or reallocation of jamming resources to critical areas.
- Priority for protection of critical C3 nodal points (command posts, communication centres, early warning data sites and so forth, and allocation of material and engineer forces for hasty construction.

---

11. Ibid., p.67.

- Priority for employment of ground attack air sorties.
- Allocation of specified theatre artillery assets to support a particular counter C3 operation.

Protection of C3:

Protection of our own C3 from enemy's countermeasures is very necessary for proper function of troops on battlefield. Using new technologies, strategies to avoid jamming critical command control communication and computer system, as to gain strategic advantage over enemy.

Destruction

This the classical approach. There are all sorts of way to go about it; artillery, close-air or high level bombing support or naval gunfire. Nothing quite so disrupts a command posts or communications centres as spreading it non-coherently over several acres of real state.

Manoeuvre:

Manoeuvre can likewise result in destruction, but also offer the extra added attraction of possible capture.

Deception:

This is a difficult area to treat in an unclassified way, even in the abstract. It is enough to say that deception on battlefield is designed to mislead enemy decision makers, usually through their intelligence system.

Psychological Warfare:

This type of warfare can be waged against enemy both directly and indirectly, for example, through third parties such as the indigenous population. However it is done, the C3CM objective is still somehow to destroy degrade or deceive the enemy's C3.

Communications Jamming:

This is an extremely limited resource in the Army, especially in light of the redundancy most modern military forces build into their communication system.

Operations Security:

This is absolutely vital to success of the counter C3 efforts as well as to C3 protection. This is especially true with deception activities where operation security not only will have to advise on protection of deception plans and operations but also will have to figure out how to "leak" the misleading information to the enemy.

CHAPTER II

WORLD INTELLIGENCE ORGANIZATIONS

"Generally, management of the many is the same as management of the few. It is a matter of organization."

- Sun Tzu, 400-320 B.C.
The Art of War.

"If I am able to determine the enemy's disposition while at the same time I conceal my own; than I can concentrate and he must divide."

- Sun Tzu, 400-320 B.C.
The Art of War.

"The necessity of procuring good intelligence is apparent and need not be further urged. All that remains for me to add, is that you keep all the whole matter as secret as possible. For upon secrecy success depends in most Enterprizes of the kind, and for want of it, they are generally defeated, however, well planned and promising a favourable issue."

- George Washington: Letter to Colonel Elias Dayton, 26 July 1777.

Robert Debs Heinl Jr, Dictionary of Military & Naval Quotations - Organization and Intelligence,(Naval Institute Press Annapolis, 1985), pp.160 and 227.

"The earliest recorded intelligence report, dated some 2000 years before Christ, was written on a day tablet by a man named Bannum, commanding a desert patrol, to his 'lord' in Mari beside the Eupheates where it was found. It stated that the border villages of the Benjamites were exchanging fire signals, and though the significance of them was not yet known. Bannum intended to find out what was going. He recommended that in the meantime the guards on the city walls should be strengthened."[1]

Espionage, the covert gathering of intelligence or information, is a sinister dangerous and glamorous business which has been the suspect of fascinated speculation through the ages. Intelligence, its organized form has been called the second oldest profession, and its links with the oldest run from Rahab to Mata Hari and beyond.

"Among similar records found in the Hittie of Chattusas was a tablet of about 1370 B.C. relating to the widow of Tutankhamun who had suggested that the Hitties, menacing the Egyptian frontier, might provide her with another husband. The Hittie prince Mursilis despatched his chamberlain Hattu-Zitis to Egypt with instruction to find out whether the request was genuine or part of a plot.

"Bring me back," he writes, "reliable information."[2]

---

1. Jock Haswell, Spres and Spymaster - A concise History of Intelligence, (London, 1977), p.7.
2. Ibid., p.7.

Intelligence is fundamentally a service required by those who have to make decisions and, because there is nearly always some difficulty in acquiring other people's secrets, inherent in it is an element of doubt.

Sun Tzu, the Chinese military authority who wrote his act of war in the fourth century B.C. summarized the function of intelligence when he said, "Those who know the enemy as well as they know themselves will never suffer a defeat", and he followed this with, "What enables the wise sovereign and good general to strike and conquer and achieve things beyond the reach of ordinary men, is foreknowledge."

One of the earliest medieval state intelligence organizations was established by Charles V. (the wise). He came to throne of France in 1364, on the death of his father, who had been captured by the Black Prince at Poitiezs. Charles instituted a form of police force with object of promoting the security and thereby adding to the happiness of his people. In practice his plan led to a network of spies, agents and informers, operating largely clandestinely to deprive Freudmen of their liberty.

FUNCTIONS OF MILITARY INTELLIGENCE ORGANIZATION:

"However it is organized and whatever its other functions, the prime function of a military Intelligence Organization, at whatever level, is to give advice concerning

the armies of the enemy or potential enemy; this was laid down in 1904, for British Army at the report of the Esher Committee into working of the Mobilization and Intelligence Department during the Boer War, and has remained as a clear-sighted definition of the military Intelligence function ever since."[3]

The advice offered by the intelligence organization is to be accepted by the commanders to handle the portend situations.

There are well documented eases of the advice of the intelligence staff being rejected in both world wars, at the strategic and tactical levels.

A worse case, from First World War the rejection by Haig's head of Intelligence Br gadier-General charters of Intelligence reports of the arrival of German divisions from eastern fronts in November 1917, just before the battle of Cambrai, because they conflicted with his own views. For this reason he failed to show reports to Haig, with result that Haig, with the result that Haig was completely unprepared for the devastating German counter-attack which reversed the previous British successes.

---

3. Peter Gudgin, Military Intelligence: The British Story, (London, 1989), p.71.

Information:

The primary function of a military intelligence organization is the collection of information, it is also considered as continuous function. The acquisition, analysis and interpretation of information is performed at both strategic and tactical levels.

Categories of informations which military intelligence organization is interested in acquiring include

- Orders of battle
- Organization details
- Unit and formation identification markings
- Personality details
- Training states and readiness for war
- Weapon and equipment details
- Mobilization plans
- Details of land defences, military airfields, ports, communications, geography, climate, endemic, diseases etc.

Information received and is placed in a collation file, collation information is periodically collated and processes and the result now known as intelligence, is put into a 'confirmed information' file.

Order of Battle (ORBAT or OB):

The section is related with the informations about enemy strengths, subordinations and locations of army units

and formations, as well as to their identification marking and the names and personalities of their commanders.

To understand a enemy army's ORBAT, knowledge about army organization especially total numbers of units, personnels and equipments, knowledge about composition of units is also essential.

Organization Information:

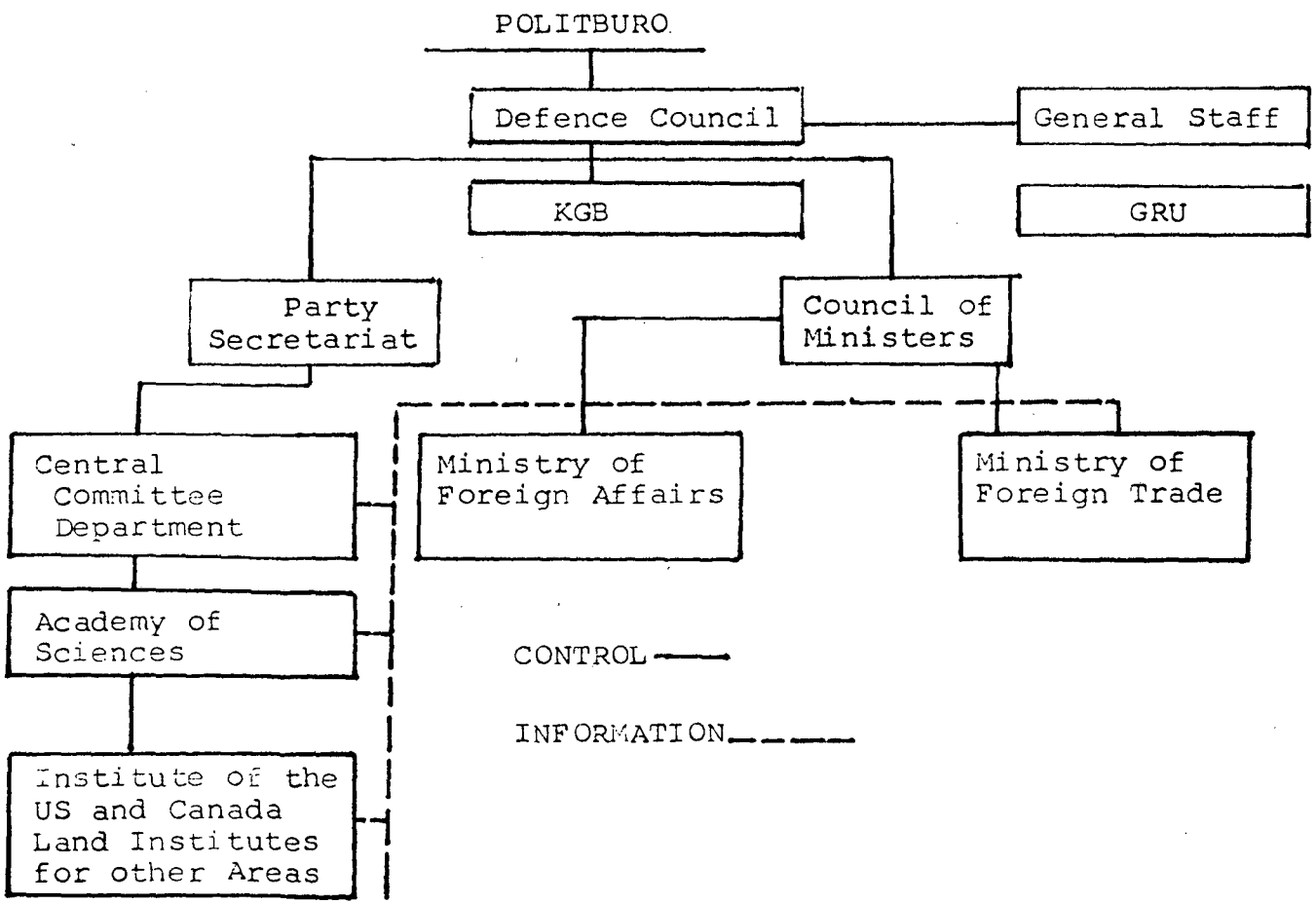
To know about the organization of foreign army one has to put his all efforts in gathering information about their training, equipments and units formation identification marking plus personality details.

Information about organization can be obtained from various sources, as by agents, military literature, allies, defectors and by surviellance and reconnaissance. This information then processed and evaluated by military experts to evaluate the strength and readiness for war, of a particular army organization.

K.G.B.

The basic mission of the KGB is, as has always been, to preserve and expand the power of the Communist Party oligarchy throughout the world by essentially clandestine means. Within the past ten years or so, however, the KGB has undergone some organizational changes. They reflect shifts in operational emphasis, a guest for efficiency,

THE PLACE OF THE KGB & GRU IN THE SOVIET SYSTEM



reaction to past reversals, and an effort to repair conspicuous deficiencies.

KGB headquarters are organized into five Chief Directorates, which are divided into services and departments. The first Chief Directorate conducts KGB operations abroad; the second Chief Directorate is responsible for counter-intelligence and control of the civilian population within Soviet Union; the unnumbered Border Guards Directorates administer the KGB troops who patrol the frontiers and form an elite military force; the fifth Chief Directorate is charged with suppression of ideological dissidence; the eight Chief Directorate monitors and tries to decipher foreign communications.

Additionally, there are lesser, independent directorates assigned specialized duties.

"In March 1954 the state security organization was denoted by the name it bears today - KGB (Komitet Gosudarstvennoy Bezopasnosti), or committee for state security. It was assigned traditional political police functions; responsibility for all clandestine operations abroad (except those allowed to the GRU) and the securing of the national border."

FIRST CHIEF DIRECTORATE:

There are three separate Directorates within the first Chief Directorate:

- Directorate S.
- Directorate T.
- Directorate K.

Three services

- Service I.
- Service A.
- Service R.

Directorate S:

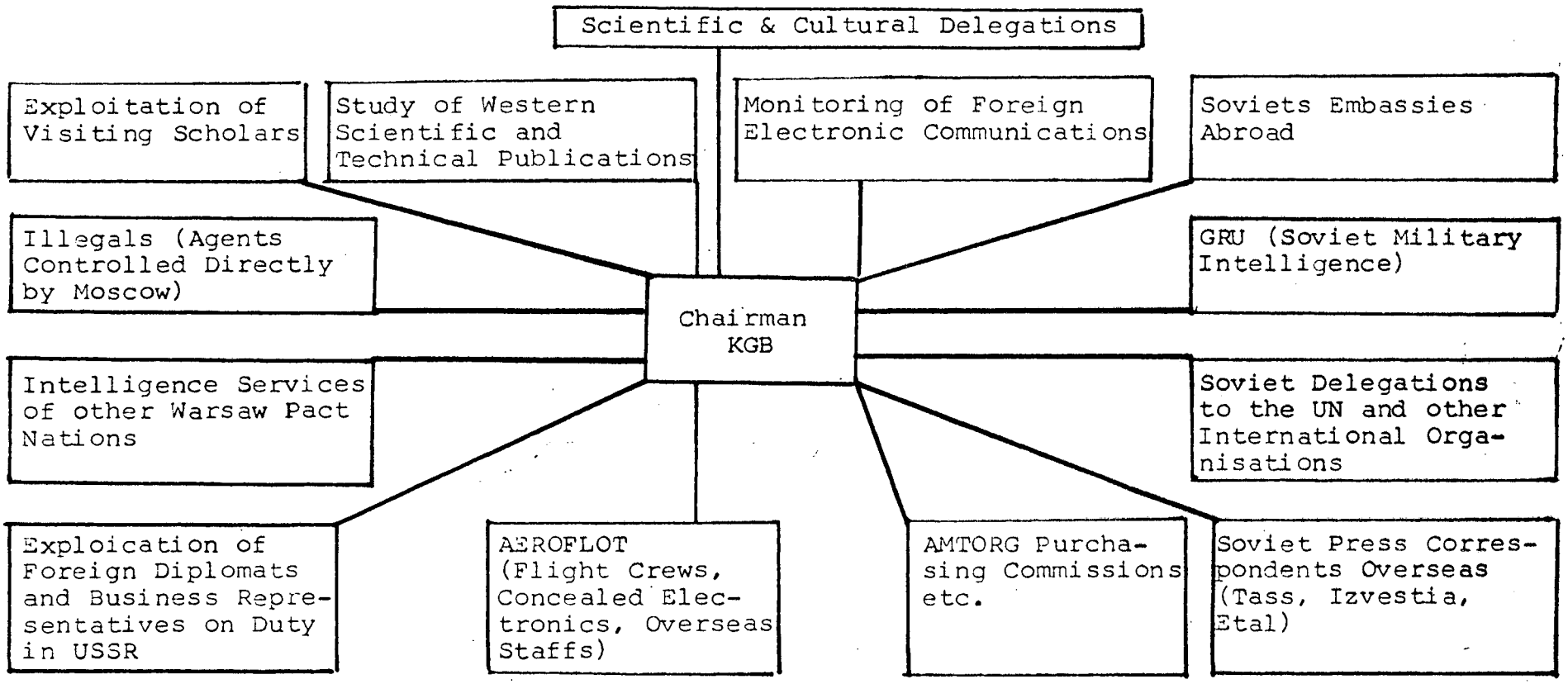
The largest is in charge of KGB illegals through out the world and functions independently of other elements. One division recruits and trains Soviet citizens to be Illegals. Another prepares the stories or legends and false documentation that will enable them to assume fictitious identities in foreign societies. A third manages the agents already deployed, and a fourth administers the Illegal Support Officers stationed in foreign Residencies.

Directorate T:

This directorate is responsible for collection of scientific and technological intelligence, including the theft of high technology of all types.

In addition to having been trained to clandestine tradecraft and languages, many, perhaps a majority, of Directorate T officers are qualified scientists or engineers and a large number hold advanced degrees.

KGB FOREIGN INTELLIGENCE



Directorate K:

This directorate known in the field as line KR, is responsible for penetration of foreign intelligence and security service and for enforcement of ideological conformity among Soviet citizens abroad. It also asserts the Ministry of Foreign Affairs in maintaining the physical security of Soviet embassies.

SERVICES:

There are three important services within first Chief Directorate.

Service I:

Sometimes referred to in the KGB as service I, analyzes and disseminates the intelligence clandestinely collected by all elements of the first Chief Directorate. It also publishes a daily summary of current events for the Politburo and regularly submit forecast of future world developments.

Service A (Sluzhba Aktivnykh Meropriyatiyi):

Service A evolved during 1970 out of former Department A, which was long known as the Disinformation Department. Its growth into one of the most important divisions in the KGB manifests greater reliance upon Active Measures as a means of projecting Soviet influence.

Service R:

This service continuously analyzes in detail. Service R examines the files and records of each officer. Important as the respective services are, the operational core of the Foreign Directorate lies in its eleven geographic Departments. These departments send out and administer the officer who form line PR in each Residency, and generally they are the most able the KGB has in the field.

The eleven Departments and their attack areas are:

First Department: United States and Canada.

Second Department: Latin America.

Third Department: UK, Australia, New Zealand and Scandinavia.

Fourth Department: F.R. Germany and Austria.

Fifth Department: France, Italy, Spain, Netherland, Belgium, Luxemburg and Ireland.

Sixth Department: China, Vietnam, Korea, Combodia.

Seventh Department: Japan, Indonesia, Philippines, Thailand and Singapore.

Eighth Department: Arab nations, Turkey, Greece, Iran, Afghanistan and Albania.

Ninth Department: African nations where English is the predominant language.

Tenth Department: African nations were French is the predominant foreign language.

Eleventh Department:

It conducts liasion with and penetrates the intelligence services of Soviet satellites nations, all of which in their foreign operations are required to serve the KGB, Soviet control of these services is effected primarily through relationship between the Moscow oligarchy and the oligarchies of the satellite state.

Twelfth Department:

It is an imaginative innovation and perhaps grows out of Yuri Andrapov's conviction that "all spheres" of the world are part of the combat arena. The concept underlining it is that senior officers who have proven themselves abroad should be free to chase and capture quarry anywhere in the world.

Department Thirteen:

No information or source available about the Department thirteen.

Department Fourteen:

It operates, develops and supplies the technical tools of clandestine operations, concealment devices, self-destruct containers for transporting secret documents and film, disguised audio and radio equipments, incapacitating chemicals, special cameras, secret writing etc.

Department Fifteen: maintains the archives of the First Chief Directorates.

Department Sixteen:

One of the most secretive of all, direct operations against foreign cipher personnel of all nationalities.

Department Seventeenth:

India, Bangladesh, Pakistan and Sri Lanka.

Personnel Department: which unnumbered recruits new officers for the First Chief of Directorate seeking bright graduates from the ranking universities.

Second Chief Directorates:

The directorate administers the vast apparatus of internal repression that reaches into every city, town, village and farm of the Soviet Union, local KGB offices throughout the nation are under its jurisdiction.

Border Guards Directorate:

The directorate actually constitutes a special military force, equipped with artillery, armour and patrol ship. Its personnel, estimated to numbered between 300,000 and 400,000, are deployed, along Soviet frontiers, where they are concerned equally with keeping foreign intruders out and with keeping Soviet citizens from escaping.

Third Directorate:

Officers and agents of the Third Directorate work in every unit of the Soviet armed forces down to the company

level. They even spy on the General Staff and GRU. Together and political officers they are responsible for purging the military of any dissidence and guaranteeing its obedience to the oligarchy.

Fifth Directorate:

Known as the 'dissident' or 'ideological' Directorate, the Fifth was created under Andropov especially to harass, intimidate and ultimately eliminates non-conformists. It is widely despised among KGB officers because of its methods which includes beatings and mailing of threatening letters signed by criminals or terrorists.

Seventh Directorates:

It works as surveillance Directorate. It employs more than 3,000 personnel and they are well equipped with infrared binoculars, long-range cameras, miniature radios and endless disguises.

The Eight Chief Directorate:

The Directorate has two primary functions. It develops ciphers and cryptographic systems for the KGB and Ministry of Foreign Affairs and maintain security of government communication within Soviet Union. Directorate personnel additionally monitors,intercepts and tries to decipher foreign communications, using satellites, ships and equipments inside Soviet embassies.

The Ninth Directorate:

The Ninth Directorate safeguards the personnel security of party leaders as well as the physical security of important installations including those of KGB.

"The KGB embraces every areas of intelligence subversion, lying, corruption, killing, spying, analysis. It is the classic espionage service of a great continental power to whom neighbours are enemies and of an ideological power to whom disagreement is infidelity."[4]

GRU (CHIEF INTELLIGENCE DIRECTORATE OF GENERAL STAFF)

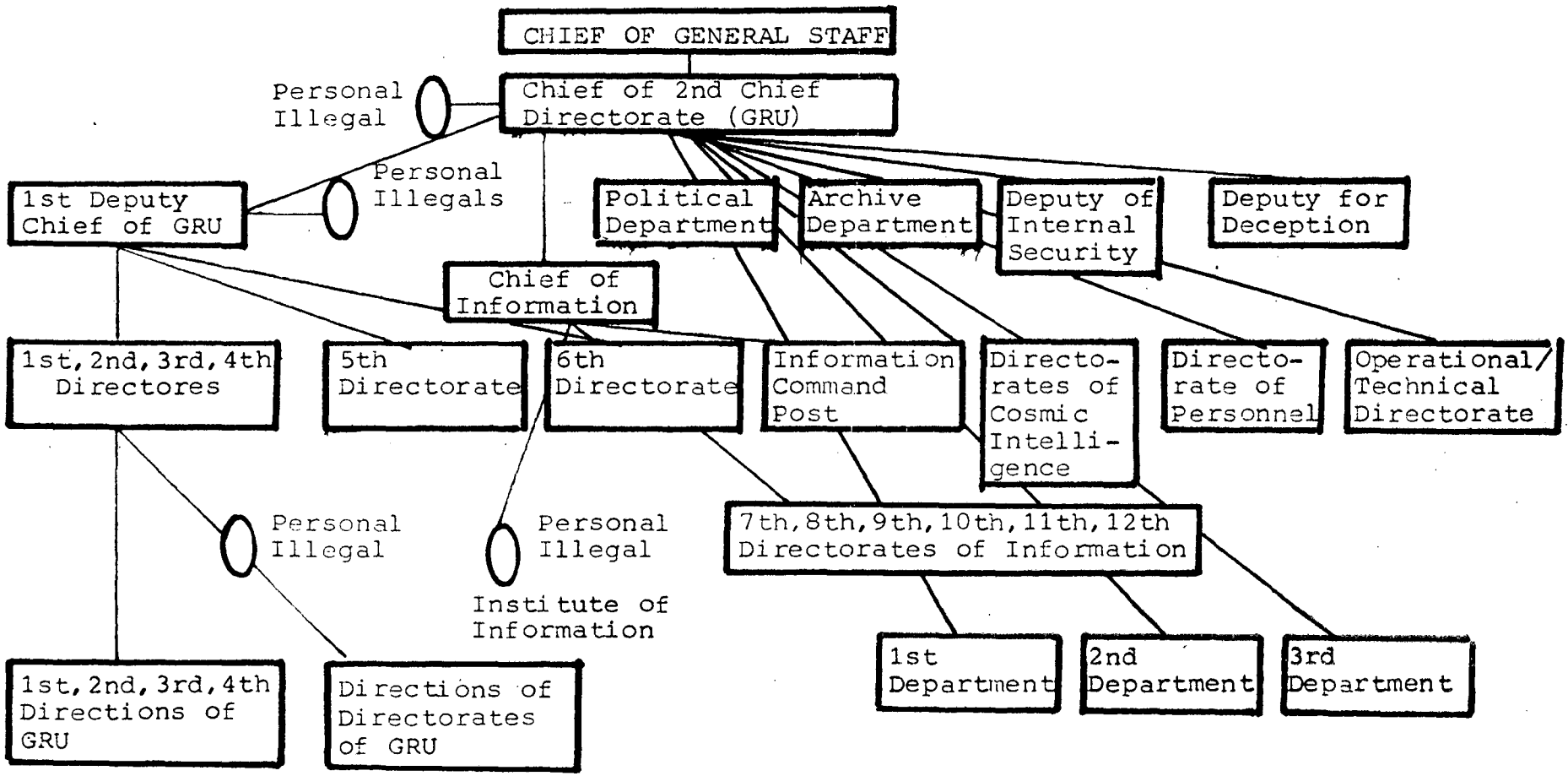
There is debate about the most powerful secret intelligence service in the world. Without the slightest doubt the answer is KGB. Soviet Union also possess the second most powerful secret organisation and the organisation itself is called the Chief Intelligence Directorate of the General Staff.

"Each system of governing the state is duplicated and reduplicated. Soviet power itself is duplicated. If one visits any regional committee of the party and then the Regional Executive Committee one is struck by the fact that

---

4. John Ranelagh, The Agency - The Rise & Decline of the (New York, 1986), p.710.

GRU : INTERNAL STRUCTURE



two separate organisations having almost structures and deciding identical problems nevertheless take completely contradictory decisions. Neither one of these organisations has the authority to decide anything independently."[5]

On the initiative of Lenin, it was seen as essential that each powerful organ or organisation which is capable of taking independent decisions be counter-balanced by the existence of another no less powerful bureaucratic organisation.

The creation of a system - "Tcheka" and it had spread out over the frontiers and the Bolkshevik leaders were forced to create yet another parallel organisation to Tcheka. On the personal order of the indefatigable Lenin on 21 October 1918, an external intelligence service, completely independent of the Tcheka, was created under the meaningless title of the Registered Directorate of the Workers and Peasants' Red Army. At present time it is called the Chief Intelligence Directorate of the General of the Soviet Army, and also known by its military classification as 'unit 44388'.

The organisation created in 1918 has, in principle, survived to the present day. Certainly the founding rules are fully applicable to our own time. These are,

---

5. Victor Suvorov, Soviet Military Intelligence, (London, 1984), p.7.

1. Each military staff must have its own independent intelligence set up;
2. the intelligence set up of subordinate staffs is to be fully under the command of the intelligence of superior formations;
3. the agents network must be part of the composition of the general staff intelligence network and part of the composition of the front and fleet intelligence services;
4. diversionary intelligence is subsidiary to agent intelligence. It must be found on front or fleet level, military district level, and group of forces and also at the level of armies and flotillas.
5. Military intelligence must be quite separated from the organs of enforcement and their intelligence services.

Basic Functions of GRU:

"The function of the GRU may also be stated in one parallel, but quite different phrase to prevent the collapse of the Soviet Union from an external blow."[6]

The prime important functions of the GRU can be divided in to mainly four fronts i.e.

---

6. Ibid., p.12.

1. Military Front,
2. Military-technological front,
3. Military-political front,
4. Military-economic front.

Military Front:

Protection of Soviet border from external threats and preserving internal peace and stability. The importance has been given to the composition, quantity and deployment of the armed forces of all countries of the world; the plans and thinking of the military leadership and staff, mobilisation plans in case of war, the type and direction of military training of forces, the organisation of forces, the means of supply: morale and others.

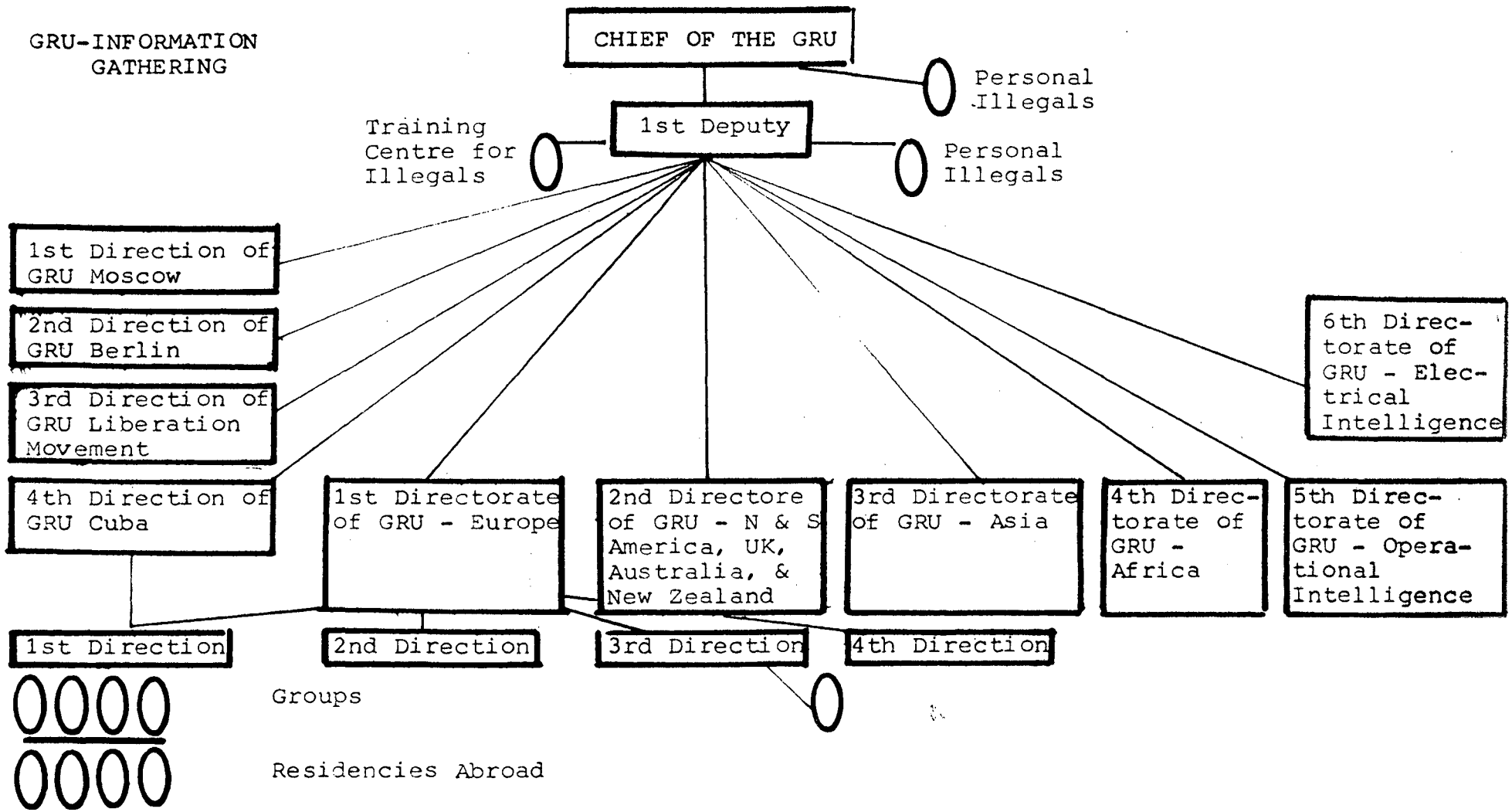
Military-Technological Front:

GRU operates and handles the intelligence related to the developments of new kinds of armaments and military techniques in the countries of a probable enemy, the carrying out of trials and tests; new technological processes which might be utilised for military ends.

Military-Political Front:

It relates with the relationship between countries of the world: overt and covert disagreements; possible changes in political and military leadership of military and economic blocs, new alliance any even the slightest,

GRU-INFORMATION GATHERING



change in the political and military orientation of armies, governments and whole blocs and alliances.

Military-Economic Front:

This front presents exceptional interest for the GRU, interest in weapon production. GRU also interested in gaining knowledge about industrial potential, energy, transport, agriculture, the presence of strategic reverse, vulnerable areas of economy and energy.

GRU Organization:

All units of the GRU are divided in their designations into procurement, processing and support.

1. Procurement Organs:

First Directorate,

Second Directorate,

Third Directorate,

Fourth Directorate,

Fifth Directorate,

Sixth Directorate.

Four Directions:-

1st GRU Direction,

2nd Direction,

3rd Direction,

4th Direction.

2. Processing Organs:

(i) the information command point,

(ii) six information directorates,

(iii) the institute of information,

(iv) the information services of intelligence directorates of military district and groups,

(v) the information service of fleet intelligence,

(vi) all the organisations of military intelligence listed below which are concerned with the processing of secret material acquired.

3. Support Services:

Political Directorate,

Personnel Directorate,

Operational/Technical Directorate,

Administrative/Technical Directorate,

Communication Directorate,

Financial Department.

Procurement Organs:

The great majority of the procurement organs, the providers of information are controlled by the first deputy chief of the GRU.

First Directorate:- This directorate conducts intelligence operation in European continent. This directorate consists of five directions, each which carries out agent intelligence on the territories of several countries.

Second Directorate:- This directorate operates agent intelligence in north and south America.

Third Directorate:- It carried out intelligence in third world especially in Asian countries.

Fourth Directorate:-It deals with the intelligence operation in Africa and Middle East area.

Fifth Directorate:- Fifth directorate controls the activities of the intelligence directorates of military district, groups of forces and fleets. This directorate is a kind of controller of vassals. Directly under its control are twenty intelligence directorates belonging to the military districts, groups of forces and fleet intelligence.

Sixth Directorate:- This directorate is concerned with electronic intelligence and cosmic intelligence. For this purpose its officers are posted to undercover residencies in the capitals of foreign states and there form groups which intercept the decipher transmission on governmental and military networks. It also operates regiments of electronic intelligence on the eastern bloc.

Each directorate contains about 300 high-ranking officers in the Moscow centre and about 300 abroad. Besides these four directorates there are also four directions which undertake same duties.

1st GRU Direction: carried out agent intelligence in Moscow.

2nd GRU Direction: operates intelligence activities in east-west Berlin.

3rd GRU Direction: agent intelligence in national liberation movement and terrorist organizations.

4th GRU Direction: It operates from Cuba against many countries including United States of America.

GRU-Processing Organs:

The GRU processing organs are sometimes called the information service or more frequently simply 'information'. The chief of information has the rank of colonel-general and is a deputy to the GRU chief.

The main organs are:

i) the information command point,

ii) six information directorates,

iii) the institute of information,

iv) the information service of intelligence directorates of military districts and groups,

v) the information of fleet intelligence,

vi) all the organisation of military intelligence listed below which are concerned with the processing of secret material acquired.

Support Services:

All GRU organs which are not directly concerned with the provision or processing of intelligence material are

considered as support services.

Political Department:

The Political Department is concerned with the ideological monitoring of all GRU personnel. All political directorates and departments of the Soviet Army are subordinated to the chief political directorate of the Soviet Army, which is at the same time one of the Central Committee Departments.

The Personnel Directorate:

The Personnel Directorate is directly beneath the chief of the GRU. The head of the directorate, a lieutenant-general is also a deputy to the chief of the GRU. The directorate is staffed only by intelligence officers who in common with officers of the procurement and processing organs the political department and other branches of the GRU, regularly go abroad for a period of several years and then return to work at domestic postings.

Operational/Technical Directorate:

The main function of this directorate is with the development and production of all espionage equipment and apparatus.

"On the orders of the procurement organs the directorate prepares equipments for secret writing and micro-photography, several kind of dead letter box, radio appliances, ever

dropping materials, armaments and persons, to name but a few."[7]

Administrative/Technical Directorate:

It is in charge of foreign currencies and other items of value. It plays as a middleman between military industrial commission and operational users. It controls all the currency resources of the GRU and also carries out secret speculative operation on the international market.

Communications Directorate:

It deals with the organisation of radio and other communication between the GRU and its overseas units.

FRENCH INTELLIGENCE

"The most difficult of the principal West European intelligence service to describe or assess are those of France."[8]

From the end of World War II until 1981 the primary French Intelligence service was known as the Service de Documentation Exterieure et de Contre-espionage (SDELE), called colloquially "The Pool". That is, it was a "pool"

---

7. Ibid., p.19.

8. William V. Kennedy, The Intelligence War (London, 1983), p.31.

of pre World War II civilian and military services staffed by service members and civilians.

"With the inauguration of President Francois Mitterand in 1981 there was a substantial revision of the Gaullest structure. The SDELE became the Direction Generale de la Securite Exterieure (DGSE), but its function remains substantially the same."[9]

The functions of DGSE carried out by the three Directorates:

1. One Directorate responsible for collection and analysis of foreign intelligence;
2. One for counterespionage outside of France and
3. Action Directorate that plans and conducts political military operations abroad.

Other are very much concerned about the maintaining of French influence in former French African colonies.

In various French administration the SDECE and its successors have reported to the Minister of Defence, the Minister or direct to the President.

Directorate for Surveillance of the Territory (DST):

DST is totally responsible for internal security, operating in conjunction with the Surete, the overall police

---

9. Ibid., p.31.

system. In general terms their roles are analogous to those of MI5 and Scotland Yard in Britain.

"DST counter-espionage activities resulted in the expulsion in April 1983 of 47 Soviet officials for spying, a suggestion being that prime target were the Hades and Excoeet missiles, and Francis neutron bomb developments. These expulsions and others recently from Britain, Italy, Spain, Belgium and Holland, indicate the usefulness of the information gleaned during 1982-83 from KGB agent who defected to American agents in Europe."[10]

Deuxieme Bureau:

It performs military intelligence activities. The term describes a staff function ("G-Z" in American parlance) rather than a separate organization.

"There is, for example, a Deuxieme (Second) Bureau at battalion level consisting of one officer and successively larger "Deuxieme Bureau" up to the level of the Army General Staff. The Navy and Air Force have their own intelligence services."[11]

Deuxieme Bureau performs many of the same functions as DGSE performs. The problem arises due to the obscurity

---

10. Ibid., p.31.

11. Ibid., p.32.

of functions of two organizations i.e. Deuxieme Bureau and DGSE.

This problem has been compounded by the establishment under various French administrations of special intelligence and security organizations designed to serve the special interest of ministry or the President himself.

JAPANESE INTELLIGENCE

Japan developed an efficient intelligence system based on British model after the Meizi Restoration of the latter 19th century which saw Japan's transformation from a medieval to a modern state.

World War II with all things in Japan and under US and its allies supervision Japan grows its intelligence power through diplomatic, academic and business sources.

"Indication that Japan has begun to rebuild a clandestine service came to light in June 1982, when the U.S. Government charged 18 Japanese businessmen with an attempt to steal confidential computer information from the US-based International Business Machine Corporation."[12]

Post World War II Japanese Military intelligence build up was very slow due to the public hostility to Japanese

---

12. William V. Kennedy, The Intelligence War (Salmander, London, 1983), p.33.

military built up.

The Japanese military intelligence system exists at present as office for specific geographic areas in the civilian bureaux of the defence agency in the J-2 (intelligence) section of the small joint staff, and in the intelligence sections of the Grounds, Air and Maritime Self Defence Forces - the euphemism imposed for Army, Navy and Air Force under the no war restrictions of the Japanese Constitution.

"It is extremely important for Japan with its exclusively defence-oriented policy to constantly conduct surveillance on such military trends and aircraft movements in peripheral waters and air space of Japan... it is equally important to collect information on world trend."

- Japanese Defence White Paper 1978-9[13]

A small corps of highly trained multi-lingual intelligence officers is being developed in each of these organizations. The Japanese genius for electronic is producing and expert electronic intercept service. It was this service that monitored fighting on the Sino-Soviet border in 1969, producing tapes of Russian tactical radio traffic.

---

13. Richard Deacon, Kempei Tai - A History of the Japanese Secret Service (Beaufort Books Inc., New York, 1983), p.241.

The Japanese intelligence and military capability overall has developed to the point where Japan can keep an accurate track of Soviet air and naval operations in the vicinity of the Japanese archipelago.

GERMAN INTELLIGENCE

Maj. Gen. Reinhard Gehlen, Chief of Department 12 (Intelligence Eastern Front) Germany Army General Staff managed to move his staff and its superb files into western zones of occupation during April and May 1945. This files, first under auspices of US Army intelligence and then as department of new Federal Republic of Germany. This men and material has formed the nucleus of present Federal Intelligence Service (BND).

"Wisner organized a successful operation to encourage doctors and other professional people to leave the East for the West. The Office of Special Operations developed relations with the embryonic West German Federal Intelligence Service of General Reinhard Gehlen, which had grown under US Army auspices. It was to become West Germany's principal military intelligence organization."[14]

---

14. William V. Kennedy, op. cit. (1983), p.32.

Federal Intelligence Service (BND)

The BND seems to be the most truly centralized intelligence service of any NATO nation. The basic functions of the BND are

1. Gathering of order of battle information, using members of the military detailed to BND for that purpose,
2. Strategic electronic intelligence,
3. Interrogation of prisoners in time of war.

Primary target for BND is Economic Intelligence as to seek to maintain and expand its position in industrial world.

"The expanding scope of the West German intelligence services is indicated by relevations in the German magazine 'Konkert' in March 1982 that an attempt was made to recruit an "agent of influence" in the official family of US President Richard Nixon, apparently in 1970 for the purpose of reaching Nixon "with German points of view" Allegations were stated in the same report that Hans Langemann, then apparently an agent of either BND or the internal security service, Bfv, succeeded in gaining US Central Intelligence Agency cooperation in suppressing documents of former German Chancellor Kurt Georg Kiesinger."[15]

---

15. Ibid., p.32.

Military Intelligence (MAD)

Military intelligence (MAD) confines itself to tactical intelligence only. Tactical intelligence is only gained after direct contact with an enemy and apart from the key prisoner interrogation function.

The German Internal Security (Bfv)

Bfv works with cooperation of BND and MAD to maintain external security and stability. Bfv also reflects hard lessons from the 1930s and World War II. Instead of highly centralized Gestapo of nightmarish memory, the Bfv functions as a decentralized system in which several German states retain significant responsibility for internal security.

BRITISH MILITARY INTELLIGENCE

A large and well organized strategic military intelligence staff is available in peace time as well as in wartime for British Army. Several international crises keep up pressure for the change British Armed services.

It has taken at least a hundred years, with the examples of the Crimean War, the Boer War and Second World War before them, for the British Government to recognize that the best insurance against war occurring to be prepared for it; and one of the most essential preparation is to be known as much as possible about one's potential enemy. Intelligence can

provide this information, can define the risk ahead and can estimate the cost of providing warning against each of them, and the British Army, together with the Royal Navy and the Royal Air Force, is now well placed to do this.[16]

As in the First World War, British Military Intelligence in the Second World War was extremely efficient and successful, the enemy's order of battle and its weapon, aircraft and tank capabilities and production were accurately estimated, its industry accurately located and its strategy accurately predicted. With one notable, although as it turned out not disastrous exception, British failures to react correctly to enemy actions were not due to the failure of intelligence to predict these actions correctly but rather to failure of Commanders to accept the accurate intelligence they were given. The exception was the production and stockpiling by the Germans of not one but three types of nerve gas, of which British Intelligence remained completely unaware throughout the war; luckily, the Germans did not use it.

Organization:

When the General Staff system was first introduced into the British Army in 1904, the Chief of the Imperial General Staff (CIGS) had under him three principal staff

---

16. Peter Gudgin, Military Intelligence, (London, 1989), p.75.

officers:

Adjutant General (AG) - Administration of personnel (A matters)

Quarter Master General (QMG) - Supply & Quartering (Q matters)

Master General of the Ordnance (MGO) - Weapons & equipments procurement.

These operation branches covering operations, Intelligence, Training and Staff Duties came under the CIGS and were collectively responsible for 'G' matters.

In 1980, all these titles were changed. Under this change, which applied to all formation and command headquarters but not to the headquarters of the Ministry of Defense and all branches of these lower headquarters were deemed to be General staff branches and were given the initial letter, 'G' to denote the branch duties, 'A' branch was given the number '1' Intelligence '2', Operations and Staff Duties '3', and 'Q' branch '4'. These were written as G1, G2, G3 and G4, while staff officer 1, 2 or 3 (SO1, SO2 or SO3) according to the rank of the appointment, as in the former system, Grade 1 officers were Lieutenant-Colonels, Grade 2 officers Majors and Grade 3 officers Captains.

Britain is represented on various NATO HQ headquarters at all levels by members of all three armed services. The

highest level is represented by the Chief of Staff Committee in Brussels, on which Britain's representative is the Chief of the Defence Staff. Below this committee come the National Military Representatives and their staffs, but it is at the next level, the International Military Staff (IMS), that the first military Intelligence representatives are found; under the Director of the IMS there is an Assistant Director Intelligence, on whose staff are several representatives of British military intelligence.

Supreme Headquarter of Allied Powers in Europe (SHAPE) also located in Belgium, and commanded by the Supreme Allied Commander Europe (SACEUR), in which there is a larger Intelligence Division containing a British Military Intelligence contigent.

Under the hand of SACEUR is a mobile reserve force known officially as the Allied Command Europe (ACE),Mobile Force (AMF), and colloquially as NATO's fire brigade, commanded by a Major-General, with a G2 staff headed by a Lieutenant-Colonel and composed largely of British Intelligence officers, the AMF is a separate NATO command with the same standing as, say the Allied Forces North (AFNORTH) but with a completely different role from any other NATO command.

Land forces under command of SACEUR are divided into three components:

1. Allied Forces Northern Europe (AFNORTH) Headquarter - Kolsaas, Norway.
2. Allied Forces Central Europe (AFCENT) HQ - Brunssum - Holland.
3. Allied Forces Southern Europe (AFSOUTH) HQ - Naples - Italy.

British Intelligence represented in the Intelligence Division or on the G2 staffs of all these headquarters (HQ) although it is at its strongest in the headquarters of Northern Army Group (NORTHAG) in Germany, as this Army Group contains the main British land forces contribution to NATO, NORTHAG HQ is located at Meenchengladbach next to the headquarters of the British Army of the Rhine (BAOR) at Rheindahlen, and is subordinate to the Commander-in-chief, Central Europe (CINCENT) at (AFCENT). The Intelligence staff at HQ NORTHAG is commanded by an Assistant Chief of Staff G2 (AC of SG2) with the rank of brigadier.

As BAOR absorb by far the biggest proportion of the total British Army peacetime strength, it is logical that we should deal first with British military Intelligence organization within the various formations and units which it comprises.

I(BR) Corps is the second senior British HQ in BAOR. It is located in peacetime at Brefield. In addition to the

general Intelligence and security coverage by the G2 staffs, there are certain other specialist types of intelligence gathered in the corps area, such as artillery, engineer and signal intelligence, which although primarily intended for their parent arms, will also be of interest to the G2 staffs.

Within the HQ of brigades, the G2 staffs consist only of one captain, assisted by small detachment of Intelligence Corps NCOs from the divisional Intelligence section. In major units such as armoured regiments, artillery regiments and Infantary battalions, there is an Intelligence Officer (IO) and a small Intelligence section all of unit personnel and security officer, there are no Intelligence Corps personnel in these units.

Britain also send the Defence and Military Attaches in British Embassies and High Commissioners around the world.

CHINESE INTELLIGENCE

The People's Republic of China is heir to one of the oldest intelligence system in the world. Jenghiz Khan founded well organized intelligence system to establish his empire from China to Caspian sea, so that one single, ingenious, intelligent but unscrupulous and barbarian ruler of Mongol empire showed the great importance of good intelligence for a successful plan or conquest is must.

... However Jenghiz's best informer were the Muslim merchants as they controlled all the trade between China and Central Asia... Jenghiz Khan had a long acquiantance with them often entertaining them at court, listening for hours to their information, and surmising how important their experience would be for the achievement of his plans.[17]

Jenghiz Khan also paid great attention towards military intelligence. He also sends spies into enemy land for the collection of information about their military strength, about ruling class. He also introduces scouting parties to march well ahead of main armies to gain knowledge about terrain, mobilization of enemy's army and about lines of supply.

Modern Chinese intelligence service is under control of Communist party and about its organization the information is not available.

Communist Chinese Intelligence Service is organized as one of the 13 secret departments among total of 30 operated by the Central Committee of the Communist party. That would appear to put intelligence at a considerably lower level than is the case in the Soviet Union and other Communist governments but, as in the USSR, what shows in the

---

17. Francis Dvornik, Origins of Intelligence Services (Rutgers University Press, New Jersey, 1974), pp.274-75.

organizational charts may not reveal the actual influence of intelligence chiefs operating under another title in the top organs of government.

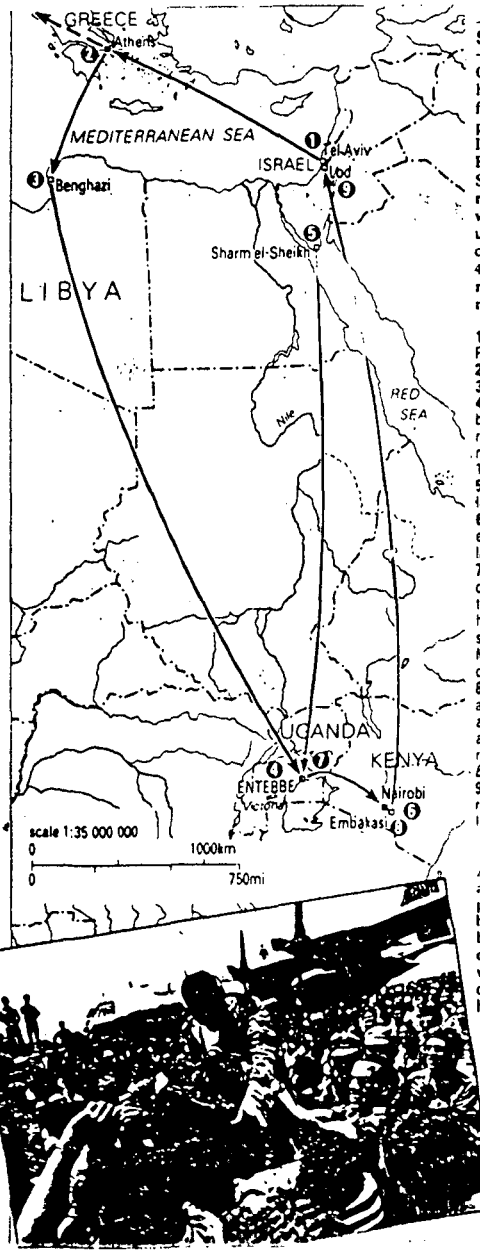
ITALIAN INTELLIGENCE

The smaller West European nations depend largely on their diplomatic services, including the military attache component, membership in the North Atlantic Treaty Organization and bilateral arrangements with larger countries to gain needed intelligence.

The spectacular success of the Italian internal security agencies in rescuing US Brig. Gen. James L. Wozier from Red Brigade terrorists came at a time when Italy's office of intelligence coordination was in great disarray owing to the arrest of high civilian and military officials in connection with the activities of a Masonic lodge thought to be establishing a right-wing state within a effectively when free of such involvement was demonstrated not only by the Wozier episode but also by the successful detection of what apparently was a Soviet nuclear submarine intruding on Italian Navy manoeuvres off Tranto in March 1982 and the pursuit of the submarine to international waters.

ISRAELI INTELLIGENCE

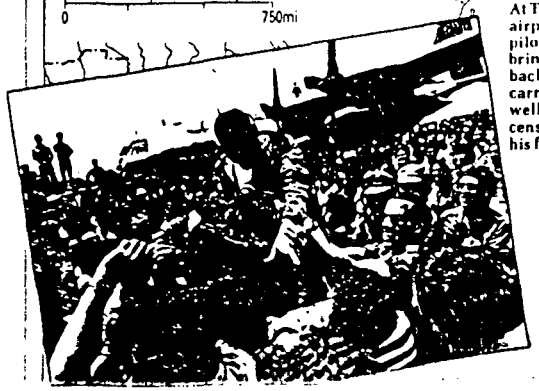
The spectacular successes of Israel's most famous intelligence organization. The Mossa, have captured the



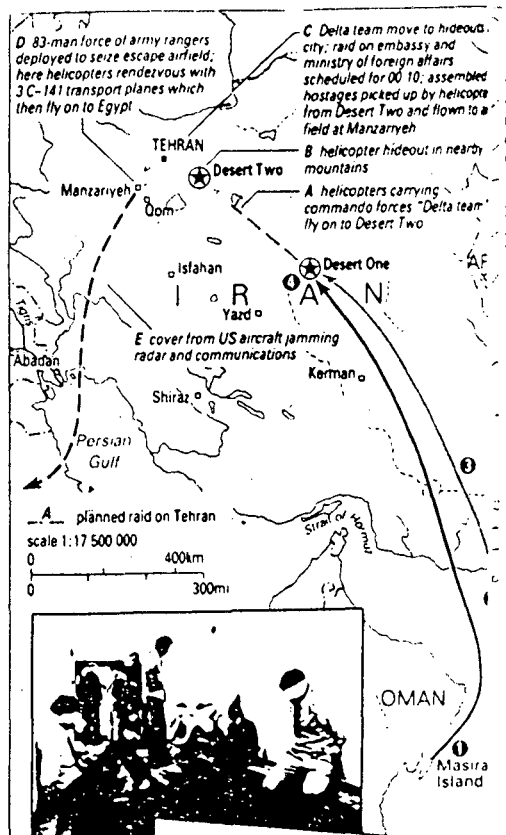
SUCCESS AT ENTEBBE

On 27 June 1976 Palestinian hijackers seized an airliner from Athens carrying 247 passengers including 70 Israelis. It was ordered to Entebbe airport, Uganda. Some hostages were released, but the remainder were threatened with death unless 53 prisoners in five countries were released. On 4 July Israeli commandos raided the airport and rescued 196 hostages.

1 27 June: departure of Air France A300–B airbus to Paris
2 11.00: plane hijacked by PFLP
3 plane forced to land and refuel
4 hostages held in old terminal buildings; hijackers demand release of 53 political prisoners by noon 1 July; deadline extended to 11.00 5 July
5 15.30 3 July: 3 Israeli C–130s leave for Entebbe
6 23.26: Israeli *Boeing* 707 equipped as a hospital plane lands
7 23.01: Israeli forces land, occupy control tower and storm terminal buildings; 7 terrorists, 3 hostages and 33 Ugandan soldiers are killed, 11 Ugandan MiG fighters destroyed; the whole operation lasts 53 minutes
8 once hostages freed, Israelis abandon plan to refuel at Entebbe and head for Embakasi airport arriving at 01.00 4 July; there they refuel and rendezvous with the *Boeing* 707.
9 4 July: Israeli forces and rescued hostages arrive back in Israel



At Tel Aviv's Ben-Gurion airport in April 1976 the pilot of a C-135 transport bringing rescued hostages back from Entebbe is carried shoulder-high by well-wishers. Israeli censors have blacked out his face and rank.



FAILURE IN IRAN

The Americans became increasingly frustrated with forms of political and economic pressure designed to force the Iranian authorities to release the diplomatic hostages held in Tehran. In April 1980 a rescue mission was mounted.

1 25 April: 6 *Hercules* aircraft arrive from Qena air base in Egypt, refuel and then fly on to Desert One
2 8 navy helicopters take off from aircraft carrier *Nimitz*
3 3 helicopters caught in sandstorm; one returns to *Nimitz*, another makes forced landing in desert
4 refueling at Desert One, another helicopter develops technical fault, leaving only 5 helicopters operational; operation abandoned at 02.30 as 6 helicopters required for minimum safety margin; during refueling, accident occurs killing 8 men; at 04.00 4 remaining helicopters abandoned when forces leave Desert One by *Hercules*

◀ In the US embassy in Tehran American diplomats wait bound and blindfolded as their government explores a variety of methods to secure their release.

▼ An Iranian soldier, standing guard over the wreck of an American helicopter in Tabas desert, testifies to the failure of the rescue mission in April 1980.

news headlines world over, from kidnapping of Adolf Eichmann in 1960, to the darring assault on Entebbe in 1976 and more recently Operation Moses, which secretly brought thousands of Ethiopian Jews to the promised hand.

Less known, yet often more significant and surreptitious, are the activities of Israel's other secret service: Shin Bet, equivalent of M15 or the FBI, dedicated to fighting the state's enemies within Israel's borders and entrusted with security in the occupied territories, but failing to anticipate the Palestinian uprising. Aman or Military Intelligence, is the country's most important clandestine agency and is responsible for gathering and analysing information on the intentions of Israel's Arab neighbours but was unable to detect the onset of the Yom Kippur War. Lakam, set up to maximise Israel's scientific and technological know how, was heavily implicated in the acquisition of Israel's nuclear capacity.

The secret report published by the CIA about the world's most advance intelligence organization shows that the Israeli hold such organization.

"The document is nothing less than the official U.S. Central Intelligence Agency assessment of the Israeli service entitled "Israel: Foreign Intelligence and Security Services", published in March 1979 under the most stringent

security restrictions."[18]

The importance of the CIA assessment lies not only what it says about the Israeli services, but in the light it sheds on the US and British secret service as well, for the Israeli service were created essentially on the model of the British services and of the OSS.

What was assessed by the western intelligence officials about the Israeli intelligence organization is summed up in following words,

"Israeli Intelligence work at first hand, is a picture of an efficient system, but one which is so utterly ruthless in the pursuit of what are perceived to be immediate Israeli interests as to jeopardize much more important long term interest."[19]

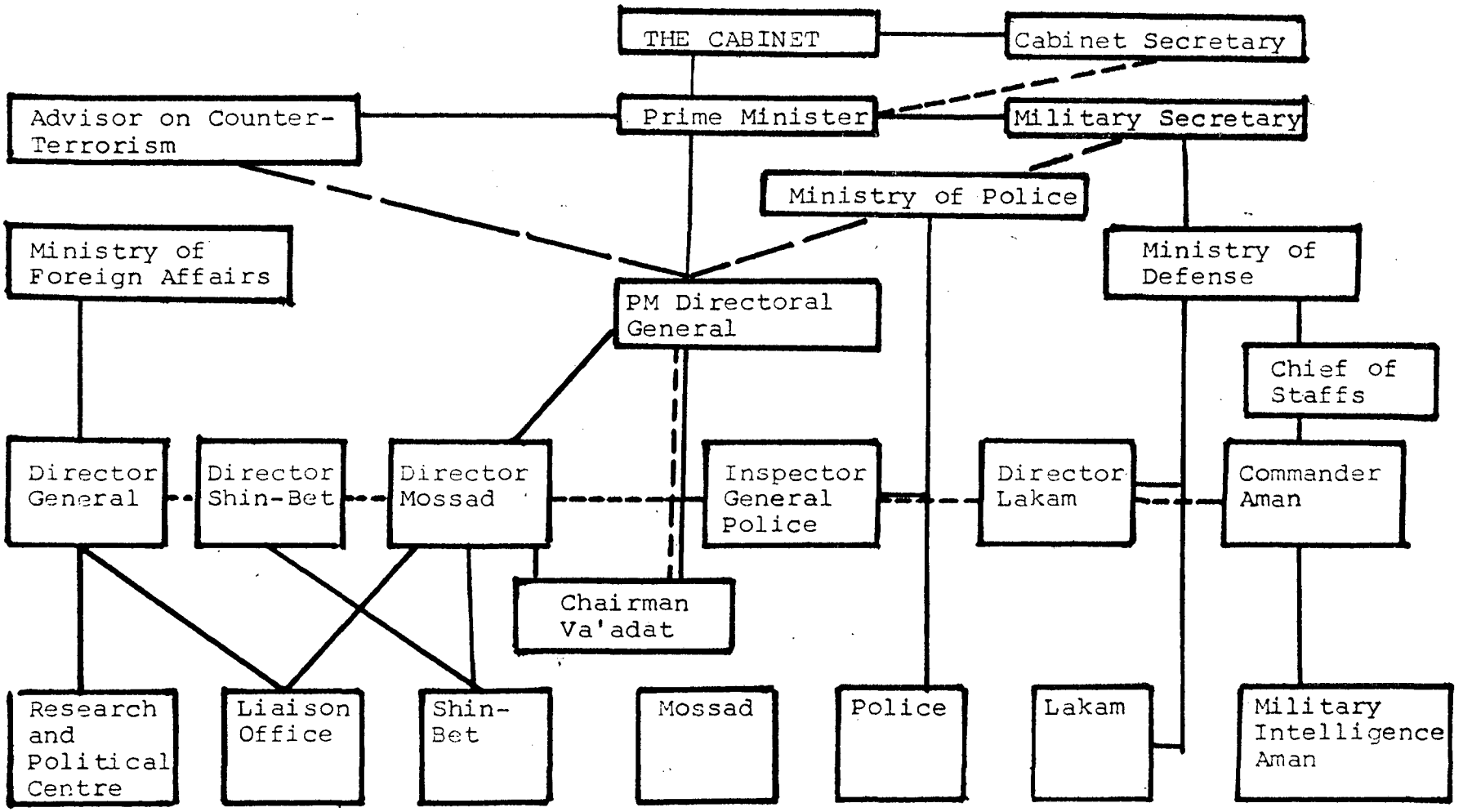
Being a small country with limited resources, Israel has to use its intelligence community to the utmost. The responsibility of Israeli intelligence is, above all, to collect data on the military capabilities of the Arab countries and their intentions to counter international and Palestinian terrorism directed against Jews, to track the activities of the superpower regarding the Middle East, to conduct secret

---

18. William V. Kennedy, The Intelligence War (Salmander, London, 1983), p.24.

19. Ibid., p.26.

STRUCTURE-ISRAELI INTELLIGENCE COMMUNITY



diplomacy in pursuit of Israel's national goal and to prevent the enemy from discovering what is occurring in Israel itself.

MOSSAD

"Out of the aims of the Political Department arose 'ha Mossad le-Modiin ule-Jafkidim Meyuhadim', 'the Institute for Intelligence and Special Tasks' - better known as the Mossad. For a short while, the new agency had other names: first 'the Central Institute for Coordination', and then 'the Central Institute for Intelligence and Security'. However the day of Shiloah's strike-breaking reorganization, April 1, 1951, is considered the Mossad's date of birth."[20]

Shiloah was appointed as first director of the Mossad. The previous model of intelligence was abolished as it was answerable to the foreign minister, like CIA under the President, and the Israel the Mossad under the Prime Minister. There was a clear difference between CIA and Mossad was the existence of operations department in their organizations. Mossad has eight sections, but four are by far the most significant:

- the Collection Department,
- the Operational Planning & Coordination Department,

---

20. Yossi Melman and Dan Raviv , The Imperfect Spies - The History of Israeli Intelligence (Sidwick & Jackson, London, 1989), p.56.

- the Research Department,
- the Department of Political Action & Liaison.

Other departments are:

- Training Department,
- Finance and Manpower Department,
- Manpower Department,
- Technology and Technical Operation.

There are 'desks' in the information-collecting and political departments, with responsibility for specific regions of the world. Mossad handles all data from abroad.

Mossad also universally acknowledged by experts as the world's finest example of HUMINT - the espionage analysts' term for human intelligence.

"In the intelligence community, Agranat recommended as investigative commissions always do, usually to little lasting effect - a structural reorganization. It insisted that a new intelligence unit be formed and tiny nucleus of the foreign ministry's Research and Political Planning Centre, which existed only on a paper, was brought to life. Its mission was not to collect intelligence[21] but to provide a further, independent assessment. It has its own office, in a separately fenced in compound within the ministry of foreign affairs in Jerusalem. This is not because it has

---

21. Ibid., p.220.

secret agents, but due to the raw intelligence material it receives from the Mossad and Aman."[22]

Agranat commission also recommended the changes included enlargement of research department of the Mossad, so as not to depend upon Aman. These sweeping changes were made due to inability of Mossad to predict the attack or war from Syria and Egyptian forces.

AMAN

Shai's 47 year old commander, Lieutenant Colonel Isser Beeri, chaired the last meeting of father of Israeli intelligence and latter Beeri announced,

"...that he would henceforth head the dominant agency in the new community, known later as Aman, What was then, 'the intelligence Department' of the army was assigned widespread functions. These ranged from collecting information on Arab armies, through censoring Israeli newspapers to maintaining security within Israeli army, and on to a bit of counterespionage."[23]

Aman has six departments, dominated by two called, collection and production. Aman is totally responsible for Jewish state military intelligence. For this Aman's structure

---

22. Ibid., p.43.

23. Ibid., p.44.

provides a practical search for the true intelligence for the interpretation of foreign counterintelligence.

Collection Department:

The Collection Department is responsible for SIGINT (signal intelligence) for human intelligence (HUMINT), running of agents and informers just over the borders, and often for plugging into telephone systems of the Arab countries to cavesdrop and record "landline" conversations. Part of the 1967 success was the quick interception the efficient distribution of Arab planning sessions, including a telephone call between Egypt's President Nasser and Jordan's King Hussein.

Aman works closely with the air force in the area of electronic warfare, known to intelligence analyst as electronic intelligence (ELINT). Radar and even more sophisticated signals are sent to disturb and deceive enemy forces.

Production Department:

The Production Department is the largest employing nearly 3,000 of the 7,000 men and women involved in Aman. They receive and analyse the information which has been collected. They are organized into 'desks', and as in the Mossad these are divided along geographical and functional lines: the western area for Egypt, Sudan and Libya; the

eastern areas for Iraq, Syria and Lebanon; a separate desk for Jordan and the Arabian peninsula; a Palestinian desk to track guerilla groups; analysts of Arab relations; and a desk for Middle East economies. Aman is also responsible for sending military attache's to the Israel's overseas embassies, for administering the military censorship of the press and for 'field security' to prevent secret from leaking.

"Begin, as Prime Minister, showed no patience or mercy towards threats from abroad. Peace with Egypt did not mean he had gone soft, as Begin proved with a bold decision in 1981, on June 4, fourteen F-16 and F-15 fighter-bombers of the Israeli air force destroyed the 'Iraqi Nuclear Reactor' in Baghdad. Militarily, it was a singularly successful operation which showed great accuracy and exceptional intelligence over an unprecedented distance from Israel."[24]

Iraqi project "Tammuz" for developing weapons from French reactor based at Baghdad. As Begin adopted new foreign policy and he ordered his intelligence staff and declared henceforth that the destruction of the larger Iraqi reactor with potential weapons producing capability, would be considered one of Israel's supreme national goals.

---

24. Ibid., p.268.

CENTRAL INTELLIGENCE AGENCY

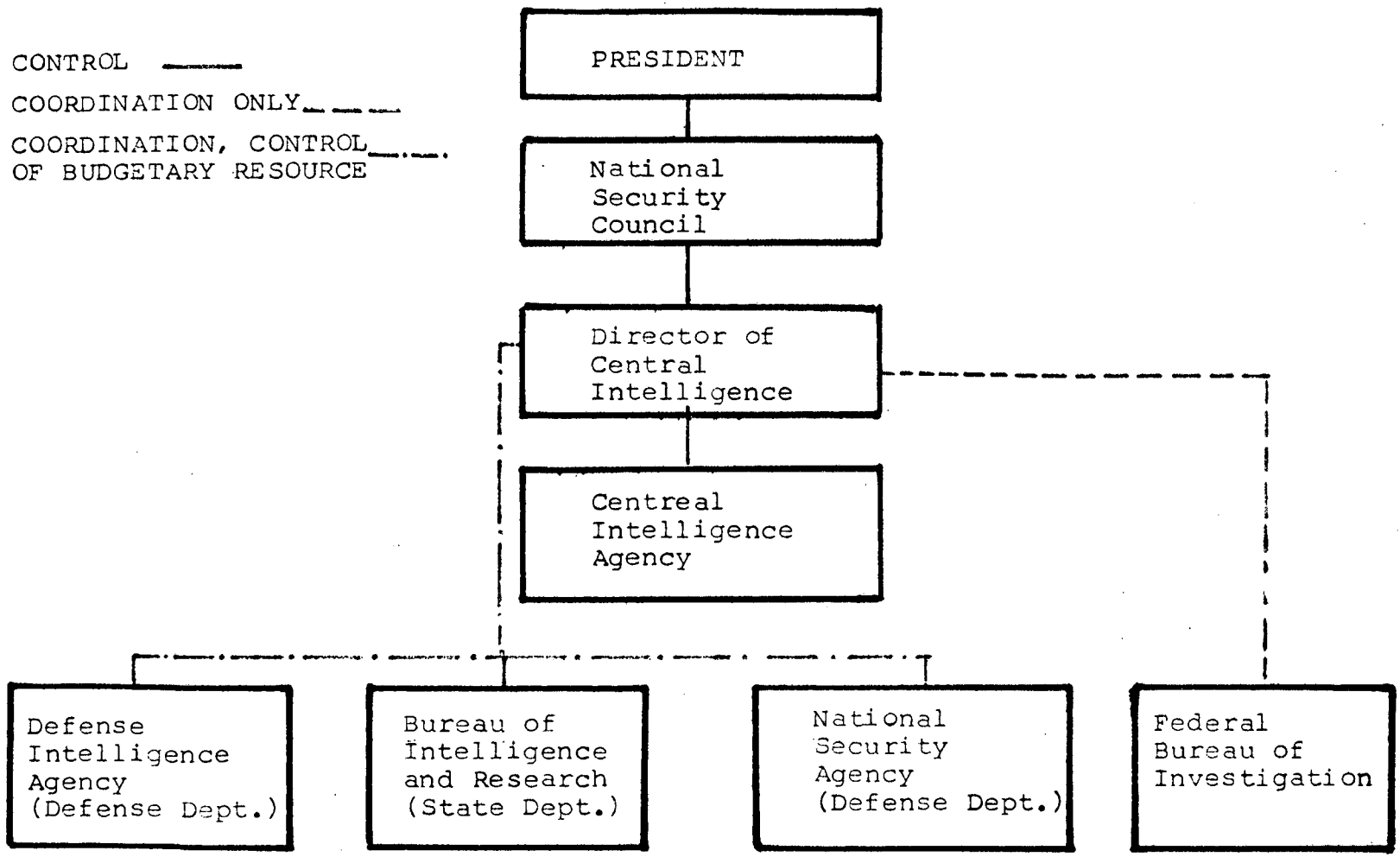
"Before the Second World War the American intelligence effort was minimal. Only a handful of people was officially employed on "intelligence work" in the State Department; that Department's main source of information was the traditional reports of information and impression gleaned from the diplomatic circuit. On U.S. entry to the war General Eisenhower noted how the chronic lack of intelligence information in the War Department was a 'shocking deficiency that impeded all constructive planning'. When in June 1941, President Roosevelt instructed colonel William J. Wonovan to draft a plan for a new intelligence service, he told him: "You will have to begin with nothing. We have no intelligence service."[25]

The Central Intelligence Agency was William Donovan's idea. The complexion, the dominant themes, the concept, and the role of the agency can all be traced to him. The fight for the bureaucratic place close to the President was a fight be started. The notion of centrally coordinating all United States intelligence activity in peacetime was his. Unlike many Europeans in the 1920s and 1930s he was not convinced that democracy was doomed. He wanted fight for democracy and had no interest in putting his chips on one of the totalitarian alternatives; he knew that American power if

---

25. Lawrence Freedment, US Intelligence And The Soviet Threat (London, 1977), p.13.

THE CIA'S PLACE IN US GOVERNMENT



released from isolation could stem the totalitarian tide and make the world safer for democracy.

The original Congressional mandate for the CIA covered true intelligence functions only. Psychological warfare and political 'covert actions' had been included in the wartime OSS structure. The place of the CIA in the US Government is shown in figure . As indicated, its creation did not supplant the intelligence and counterintelligence agencies of other US Government departments. Centralization of control did occur, however, in the priority given to the Director of Central Intelligence as the only Intelligence adviser with direct access to the President and the National Security Council also. Also the Director of Central Intelligence, at least normally, allocates the overall governmental foreign intelligence budget.

The British looked on in amazement as the American produced, first in the OSS and later in the CIA, bureaucratic grants that would be almost constantly in the news in recent years almost always as 'bad news'. A former chief of the British intelligency commented "ule never expected anything like that.

Organization

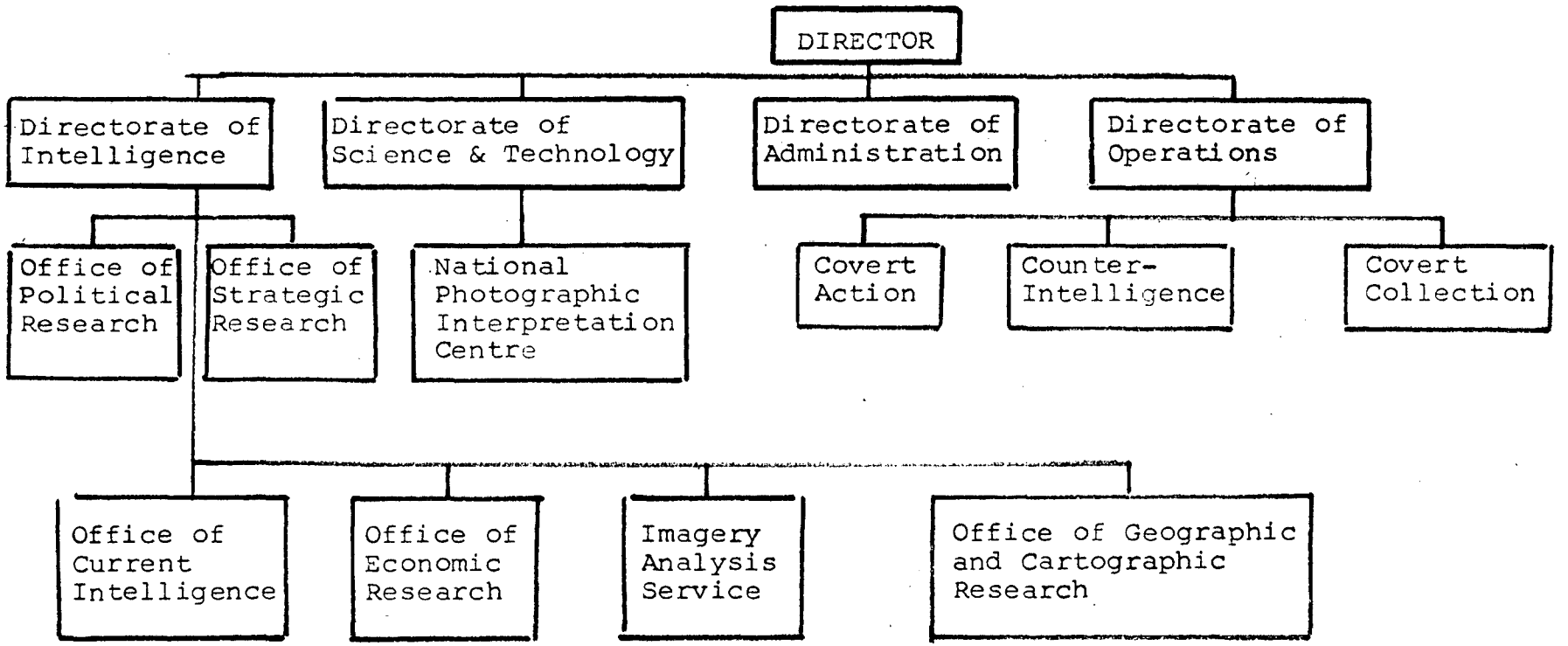
The organization of CIA is divided into four distinct parts a relatively small office of the Director and four directorates. The executive suite houses the CIA's only

two political appointees, the Director of Central Intelligence (DCI) and Deputy Director (DDCI), and their immediate staffs. Included organizationally, but not physically, in the office of the Director are two components that assists the DCI in his role as head of the U.S. intelligence community. One is small group of senior analysts, drawn from the CIA and the other agencies of the community, which prepares the "blue books", or National Intelligence Estimates. The other is the Intelligence Resources Advisory Committee a group created in 1971, which provides staff assistance to the Director in his efforts to manage and streamlines the intelligence community.

The other components of the office of the Director include those traditionally found in governmental bureaucracies: press officers, legal counsel, historical staff, congressional liaison and so on. Only two merit special note: the Historical staff and lable Secretariat. The latter was established in 1950 at the insistences of the Director General Walter Bedell Smith. Smith learned that agency communications, especially those between headquarters and court field stations and bases, were controlled by the clandestine services, he immediately demanded a change in the system. A change was made and the lable Secretariat under the Director's authority.

"Several years ago the agency began to invite retiring officers to spend an additional year or two with agency -

INTERNAL ORGANIZATION THE US-CIA



on contract, at regular pay - writing their official memoirs. The product of their effort is, of course, highly classified and tightly restricted."[26]

The Historical Staff is one of the main power generator of the CIA. It maintains the records of operations conducted by the CIA and its agent during their tenure. It also organizes old agents to make contribution for better historical data which would help them in future.

Directorate of Administration

Formerly known as 'Directorate of Support' and 'Directorate of Management and Services', now it is known as 'Directorate of Administration', is the CIA's administrative and housekeeping part. However, most of its budget and personnel is devoted to assisting the 'Directorate of Operation' in carrying out covert operations. Various forms of other supports is provided to 'Directorate of Intelligence and Directorate of Service & Technology' but the needs of these components for anything beyond routine administrative task are generally minimal. The Office of Security provides physical protection for clandestine installation at home and abroad and conducts polygraph test for all CIA employees and contract personnel.

---

26. Victor Marchetti and John D. Marks, The CIA And The Cult of Intelligence (London, 1974), p.70.

"In 1952, as the agency began its big personnel expansion, a career service programme was developed by the Directorate for Administration (DDA), which now has a staff of approximately fifty five hundred. The DDA controls the agency's internal organization and services, including the communications staff and systems."[27]

By 1953 the DDA included the CIA's audit branch, general counsel's department, the office of Security, the comptroller's department and the agency's own medical service. The two most prominent element in the Smith scheme, the Directorate of Intelligence and the Directorate of Plans, were securely supported by the Directorate of Administration, whose job it was to ensure that plans worked and that policies could be practically and legally implemented.

Directorate of Intelligence

Directorate of Intelligence is organized into two main divisions with four subdivisions. The two main divisions are 'Office of Political Research' and 'Office of Strategic Research', with four subdivisions i.e. Office of Current Intelligence, Office of Economic Research, Office of Geographic and Cartographic Research and Imagery Analysis Service. The Director Intelligence engages in two basic activities:

---

27. John Ranelagh, The Agency - The Rise And Decline of the CIA (New York, 1986), p.201.

first, the production of finished intelligence reports from the analysis of information; and second, the performance of certain services of common concern for the benefit of the whole intelligence community. Most of the Intelligence Directorate's assets are focused on political, economic and strategic military research. The agency's specialists produce both current intelligence reports and explanations on daily basis of the world's breaking events and long range analysis of trends, potential crisis areas and other matters of interest to the government's policy makers.

"...the Directorate of Intelligence and the Directorate of Science and Technology that the labourious work goes on of shifting through the vast quantity of information our world produces every day for those items that must be quickly identified, assessed and passed on to the leadership of government to guide policy or to provide early warning of danger."[28]

The Office of National Estimate (ONE) was part of the Directorate of Intelligence, a new directorate established by Bedell Smith in January 1952. Working with ONE were the Office of Research and Reports, formed in November 1950 along-

---

28. William V. Kennedy, The Intelligence War (Salmander, London, 1983), p.40.

side ONE, and the Office of Scientific Intelligence, created by Hellenkoetter in 1949. A fourth office, the Office of Current Intelligence, was created in 1951 to supply quick analysis and reports in response to fast moving events. The new directorate encompassing these offices were headed by a new deputy director for Intelligence (DDI), one of three additional deputy directorship created by Smith. Loftus Becker, a young lawyer, was the first DDI.

Max Millikan, a professor of economic from MIT, organized the Economic Research unit within the office of Research and Reports during 1951 and 1952 to analyze economic condition within the Soviet Union.

Directorate of Operations

The largest of the agency's four directorate is Directorate of Operations. It consists of three major departments i.e. covert action, counterintelligence and covert collection. The Directorate of Operations which has over 6,000 professionals and clericals. The ratio between professionals, mostly operations officers, and clericals, largely secretaries, is roughly two to one. Approximately 45 per cent of the clandestine service personnel is stationed overseas, the vast majority using official cover, i.e. posing as representatives of the State or Defence Department.

About two out of three of the people in the Directorate of Operations are engaged in general intelligence activities,

liaison, espionage and counterespionage - the remainder concentrating on various forms of covert actions.

The CIA's stations and bases around the world serves as the principal headquarters of covert activity in the country each is located. The station is usually housed in the U.S. embassy in the capital city, while bases are in other major cities or sometimes on American or foreign military bases.

"The Directorate of Operations - the clandestine side of the agency contains espionage and counterespionage agents and the covert operations, whose identities are kept secret... Inside the atmosphere reminds one far more of the Department of the Treasury or a research institute than what the imagination might conjure up for the world of James Bond. Bond's world is an unreal world and the CIA is very much in real world."[29]

Directorate of Science & Technology

"The Directorate of Science and Technology (DDS&T), created in the early 1960s to keep the air force from encroaching on the technical intelligence-collection systems developed by the agency (the U-2 and satellites, in particular),

---

29. Ranelagh John, The Agency - The Rise And Decline of the CIA (New York, 1986), p.19.

succeeded in its task and also performed a useful analytical function."[30]

Its fifteen hundred work forces are, essentially, engaged in developing new and improved collection systems and devices. DDS&T was set up in the wake of the Cuban missile crisis,

"In 1962 John McCone decided to set up a separate directorate to deal with scientific and technical intelligence matters - the Directorate of Science and Technology (referred to as "DDS&T" after the title of its head, the Deputy Director of Science and Technology). He was convinced by Bessell's U-2 and Cosmos programmes that technical collection of intelligence was one of the most important aspects of the CIA's development..."[31]

DDS&T carries out functions such as basic research and development, the operation of spy satellite and intelligence analysis in highly technical fields. In addition to these activities it also handles the bulk of the agency's electronic data processing work. While the S&T Directorate keeps abreast of and does research work in a wide variety of scientific fields, its most important successes have come

---

30. Ibid., p.24.

31. Ibid., p.490.

in developing technical espionage systems.

DEFENSE INTELLIGENCE AGENCY

The existence of independent service agencies has been justified on the grounds that they are needed for 'tactical' intelligence and to maintain an enemy 'order of battle' (ORBAT). During the 1950s the existence of separate military agencies was a major barrier to the provision of coherent and agreed military estimates. The Intelligence Advisory Committee had become an interservice debating forum, with representative of the Secretary of Defence and the Joint Chiefs of Staff, plus the three services, all pushing distinct estimate.

The overlapping collection programmes and incoherence in estimate created pressure for reforms. At the instigation of the Bureau of the Budget a study got under way in 1960. It was undertaken by a special inter agency task force, operating under the DCI with the CIA's Inspector General Lyman-kerkpatrick, in the chair.

In the line with the centralising trend that had begun with the Defense Reorganization Act of 1958, and which was to be accelerated during the Kennedy Administration, the report 'made many recommendation directed towards streamlining the military intelligence system in order to modernize it. Acting along the lines set out in the 1960 report, McNamara formed the Defense Intelligence Agency (DIA) in October 1961.

"The US Army, Navy, Air Force and Marines Corps retained intelligence staffs directly related to combat operations, but relinquished many functions to the Defense Intelligence Agency (DIA) in 1961. DIA operates the military attache system. It duplicates much of the military analysis conducted by CIA. Although DIA cannot present its analyses direct to the National Security Council, the Secretary of Defense can, if he chooses, present DIA estimate that differ from those of the CIA."[32]

At the CIA and the State Department there was some ambivalence over the DIA. On the whole, the trend it represented was favoured. The multiplicity of military estimates, and the open competition between them, handmade life difficult for the non-military agencies.

Two powerful and well financed agencies such as DIA and CIA will become rivals and competitors. Some of this could be heatlhy; too much of it could be both expensive and dangerous.[33]

The extent of the rivalry between CIA and DIA is indicated by the fact that over 28 years after the event, both agencies are still supplying newsmen with rival claims over whose photo interpreter 'found' the Soviet missiles in

---

32. William V. Kennedy, The Intelligence War (Salmander, London, 1983), p.39.

33. Allen Dulles, The Craft of Intelligence (Weidenfeld & Nicolson, London, 1964), p.52.

Cuba that resulted in the celebrated Cuban missile crisis.

In 1970 the Fitzbugh Panel report on defence organisation commented:

While the DIA was established primarily to consider the intelligence activities at Washington level, each Military Department currently has a larger intelligence staff than it had before the creation of DIA. Each departmental staff is still engaged in activities clearly assigned to DIA. The Military Departments justify these activities on the basis that DIA does not have the capability to provide the intelligence they need. It is paradoxical that DIA cannot develop a capability to perform its assigned functions while the Military Departments, which provide a large proportion of DIA personnel, maintain the required capability to produce intelligence estimates - or more properly threat assessments - which are crucial to decisions on weapons system research and development. DIA has been charged with responsibility but has never been able to discharge it.

"...intelligence to please is a phenomenon common to all intelligence service as a doctrine of intelligence, it appears in more pronounced form in the Defence Intelligence Agency (DIA) than in the CIA. Within the CIA, noticeable difference can be found among the various directorates."[34]

---

34. Lawrence Freedman, U.S. Intelligence And The Soviet Strategic Threat (Macmillan, London, 1977), p.23.

CHAPTER III

INTELLIGENCE AND THE WAR

INTELLIGENCE AND LAND WARFARE

During Falkland War 1982, tactical intelligence played a major role in the ultimate success achieved by the British Commander. As pointed out by Maj. General Edward Fursdon, Defence Correspondent of the Daily Telegraph.

"The unqualified success of many small SAS intelligence gathering patrols deployed in the Falkland campaign could probably well count as one of the major factors which led to victory... They operated both on in the offensive mode - to provoke the Argentinians to give away information - and in the passive one of reporting from close proximity observation... One very important lesson of the outcome is to appreciate the sheer quantity of detailed intelligence such highly trained well positioned teams can generate. But ... the view point of any one small SAS patrols is inevitably narrow and only part of the whole picture. The highlights for perhaps the first time something relevant in the South Atlantic as much as in NATO Europe. This is the modern need for sufficient qualified staff dedicated to co-ordination, processing, and interpreting quickly enough the volume of tactically detailed and updated battlefield intelligence provided by both the SAS patrol and wider intelligence sources."[1]

---

1. William K. Kennedy, The Intelligence War (Salmander, London, 1983), p.146.

Sun Tzu also emphasised on the 'foreknowledge' to conquer the threat or surprise attacked by enemy's force. Adequate tactical intelligence permits the Commander to equalize enemy advantages to offset superior number of forces and weapons, or unfavourable unfavourable terrain. Inadequate intelligence usually presages defeat.

It is must for every Commander to have knowledge of the three basic of tactical intelligence: strength, capability, and desposition of enemy forces.

Strategic and tactical intelligence is required for modern battlefield. There is clear distinction between these twos. Strategic intelligence is used principally by decision makers and policy designer at higher national levels. Strategic intelligence is concerned with the information about political and economic aspects of other countries defence forces, and also about their defense capability as well as industrial, scientific and technological matter. The main thrust of strategic intelligence is usually directed towards determining the 'intention' of the adversary.

On other hand tactical intelligence operates for gaining information about military capabilities, their weapons, ammunitions, deployment of force and their internal defence structure. The basic underlying premise for all tactical intelligence is that every military organization,

friendly or enemy and without regard to size, level or location has a mission responsive to the command of some higher headquarter. The higher headquarter then has responsibility to provide subordinate commands not only with the mission and direction, but with the resources needed to accomplish the mission. Military organizations of battalion size and at higher level today thus have staff elements dedicated to tactical intelligence.

BATTLEFIELD REQUIREMENTS:

For commander, information about battlefield is very vital for planning or taking decision about future course of battle. Commander interests engulfed by various elements such as, topography of area, weather and physical characteristics, deployment of troops and other resources.

The information is obtainted through:

Electro-Magnetic Intelligence,

Imagery Intelligence,

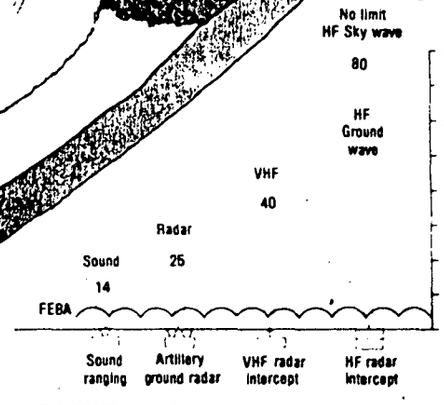
Human Intelligence.

The need of tactical intelligence varies by scope and command. It is also clear to us that battle fought were itself varies from each other, this includes the short war or involving battalion level war and large wars which involve large force in it. An expansion of the factors of time and space as they impact upon the operations.

SOVIET LAND INTELLIGENCE

The diorama displays the variety of information-gathering means available to a ground-force commander on the modern battlefield, using the Soviet Army as an example. The tactical setting is that the Soviet force is advancing from right to left, and forward elements only have crossed the river. Both strategic and tactical intelligence is gained from satellite surveillance (1) and high altitude aircraft recce (2). These are complemented by fixed-wing aircraft (3) and helicopters (4). On the ground itself deep recce is carried out by foot patrols (5), scout cars (6) and, in a reversion to former methods, motor-cycles (7). A particularly important task is the recce of river-crossing sites, here being carried out by BMP units (8) and, further forward, by frogmen (9). A major source of battlefield information is the front-line soldier using the "Mark 1 Eyeball"—both infantry (10) and the artillery in their observation posts (11). An invaluable source of information is prisoners-of-war (represented by a downed airman) (12). The location of artillery and mortars can be achieved acoustically using a sound-ranging base (13) or electronically using radar (14). Fixed-wing aircraft, helicopters and drones are located using air defence radars (15), aided by visual observation. Because of its line-of-sight properties VHF radio intercept must be done from a position well forward (16), but HF intercept can be done from much further back (17). HF radio direction-finding (18) requires several stations, but only one is shown here. A new trend is to use helicopters for radio intercept, especially of VHF and UHF links (19). Finally, high altitude aircraft are also used for electronic intercept (20), the Tu-126 having especially comprehensive electronic support measures (ESM).

SOVIET BATTLEFIELD ELECTRONIC SURVEILLANCE



Electronic surveillance is just as vital to the Soviet Army as air or ground recce, and they have extensive electronic warfare (EW) and electronic support measure (ESM) resources. Special intercept units are moved up as close to the FLOT as possible and have the ability to intercept enemy transmissions at the ranges shown here. All ranges would, of course, be greatly extended if airborne intercept platforms are used.

"It is wise to keep in mind that the distinction between land battle, in the classic sense, and other military experience in recent times such as in Malaya, Algeria and Vietnam. This is not to imply that these experiences are totally irrelevant or that they did not involve danger or violence, but rather that they are more peripheral to this exposition."[2]

The land battle is, in fact, the sum total of battles fought at the various echelons of command all 'obeying the dramatic unifies of time place and action." Since difference in intelligence requirements and the perceptions of the commander are dictated by the battle role of the command, it is helpful to examine the aspects of the land battle in more detail before proceeding to the means by which modern commanders are able to obtain and employ tactical intelligence.

Intelligence is data which has been processed: that is it has been confirmed or validated, integrated with other relevant data, compared or analyzed and interpreted as to significance. Information for combat or tactical use on the other hand is raw data not delayed in processing which can tell a commander immediately where the enemy is and what he is doing.

---

2. William V. Kennedy, The Intelligence War: Intelligence And the War On Land (Salmander, London, 1983), p.149.

The tactical information was provided to commander which allows him to bring immediate fire on the targets or to take immediate defensive positions against coming attack. Tactical intelligence could be used in the planning and conducting of future land operations.

AREA OF INFLUENCE/INTEREST:

The battlefield must be visualized in term of areas. Commander wants to exert his influence on a particular area and there is another area which needs immediate action from commander as to safeguard it from enemy force actions which can jeopardize the future operations.

Quite simply, it is the 'areas of influence' and 'areas of interest' that prescribe the information and intelligence requirements of a commander.

Today all military staff have an intelligence element. At the battalion and brigade levels, the intelligence staff element are concerned mainly with tactical information and intelligence obtained from higher or adjacent headquarters as well as from organic units.

At the higher echelons, however, the intelligence staff are larger more specialized and are involved in virtually all phases of the intelligence process such as collection, integration, collation, analysis, interpretation and dissemination to users.

Intelligence requirements and staff element responsibilities in all contemporary military force have more basic similarities than differences.

The two major military organization in the world today are the forces of North Atlantic Treaty Organization and the forces of Warsaw pact. While many other nations including neutral and non-aligned nations, possess military structure of varying capabilities, upon close examination it will frequently formed that these forces often equipped from one or the other (in some cases both) of the major alliance, resemble those of one or other major powers, in some degree, in the way in which tactical intelligence is used.

In Iran-Iraq war and other military confrontation it was found that warfighting countries uses all intelligence equipments that are assembled and used by NATO and Warsaw Pact.

Surveillance:

To react in an effective and timely way about the concentrations of mechanized force of enemy is the surveillance. What is required is easily remembered from the mnemonie aid known to every good non-commissioned officer: DRIL

Detect: Is there some activity there?

Recognize: What is it? A tank? An infantry Unit?

Identify: It is an enemy tank, frindly troop.

Locate: The activity is at Map Reference xxxx

Surveillance operation is conducted by the ground units. The principal area for the application of advanced technology, therefore, is to extend ability or improve it of the ground observer to make his line of sight observations. For surveillance purpose many of equipments are in use, these are, Radar, thermal imaging, remotely piloted vehicles (RPVs) and Unattended ground Sensors (UGS).

Radar:

Radar systems today can recognize some individual targets and are, overall, an excellent means for detecting targets. Many of the most advanced system require the addition of a laser range finder to measure distances, however and current production models do not measure speed. Radar systems also have disadvantage in that they are not passive systems as they emit an electronic signal and are thus vulnerable to ECM.

Thermal Imaging:

Thermal imaging systems instead of having a light-sensitive image projected, use a pattern of heat sensors which can 'see' small difference in temperature. The operator is thus looking at a heat picture or graphic representation of heat reflections. These systems can be used as

surveillance devices since most military target emit heat. Thermal imaging can see through rain, smoke and fog to some degree and can produce an image adequate for identification. However these systems are also vulnerable to ECM and can be "spoofed" with decoys or blinded by false signals.

Image Intensification:

These systems are used to take an image from a telescopic device and magnify not only the size of the image but also its intensity. Such system can intensify a very dimly illuminated object by 40,000 times or more. An intensified image can reveal lights on the battlefield particularly white lights at great distance and can see objects illuminated only by starlight and can detect infrared devices from extreme distances.

Remotely Piloted Vehicles (RPVs):

RVPs are able to provide the ground commander with the ability to conduct the surveillance above line of sight. Israeli used these RVPs successfully in the wars against Arabs. Countries are now placing considerable emphasis on their development, production and deployment.

The latest RVPs are designed to fly in hostile territories and locate target, allow for the adjustment of artillery fire from remote distance and designate targets using lasers. RVPs can also perform reconnaissance task, damage

CHART: INTELLIGENCE ASSET AVAILABILITY

Intelligence System	Generals		Colonels		
	Corps	Division	Brigade	Battalion	Captains Companies
National Strategic System	●				
USAF/USN System	●	●			
Tactical System					
Electromagnetic					
Sigint { Comint	●	●	●		
Sigint { Elint	●	●	●	●	●
Remote Sensors (REMS)		●	●	●	●
Ground Surveillance Radar (GRS)		●	●		
Weapons Locating Radars		●	●		
Imagery					
Photo	●	●			
Infra Red (IR)	●	●			
Side-Looking Aircraft Radar	●	●			
Humint					
Reconnaissance Units	●	●		●	
Troops				●	●
Interrogation of POWs (IPW)	●	●	●		

Note: This Chart illustrates the echelons at which these assets are normally assigned, attached or in direct support

Source: The Intelligence War, p.152.

assessment and other missions. Some models will be equipped with small television or forward looking infra red right vision sensors.

Unattended Ground Sensors (UGS):

To obtain information from beyond their own line of sight capability, without risking their troops on reconnaisance missions, by using unattended ground sensors (UGS). These devices are sesmic, thermal magnetic or acoustic. At present mostly thermal and seismic devices are in field use. UGS were widely used by the American forces in Vietnam where it was learned that they produced mixed results including that some of the devices could be misled or reported all ground tremors.

But it is now possible to produce devices which can discriminate between signals and reports only those with military significance.

NAVAL WARFARE:

It is worth reiterating that the Earth's surface is predominantly oceanic, the ratio of land to sea being 1:2.43 or 29.2:70.8 per cent. Unlike the land the ocean forms a continuous belt around the Earth with a total volume of some 1.3×10^{27} cuyd (1 bn cu km). This is a most important factor in the intelligence battle at sea, because the ocean still largely unexplored and many aspects of their properties

RULING THE WAVES

Whatever disagreements there may be about other aspects of the military balance, there is no doubt that the United States Navy is the most powerful in the world. The Soviet Union has been catching up by moving from a coastal to an ocean-going navy and particularly by expanding its submarine force. However, the Americans retain a qualitative edge, and under the Reagan administration have embarked on a massive shipbuilding program intended to raise the inventory from just under 500 to well over 600 ships.

This diagram illustrates the range of weapons associated with the US 2nd Fleet which is deployed in the Atlantic. It carries weapons that enable it to attack targets on land as well as at sea, in the air and under water as well as on the surface. With seven aircraft carriers, 105 escort ships, 77 nuclear submarines and 720 combat aircraft this is the most powerful naval force on patrol anywhere in the world.

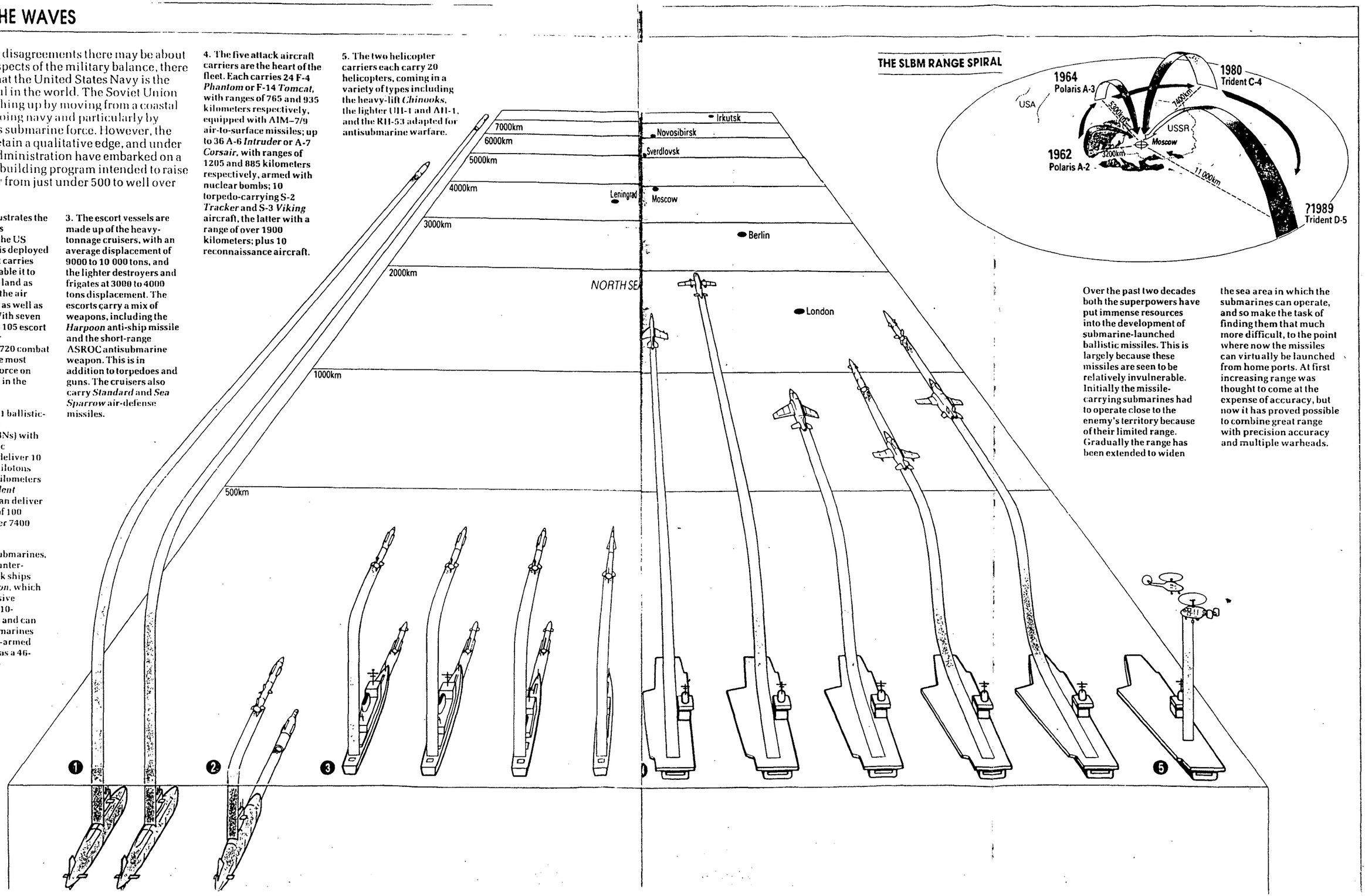
1. The fleet has 31 ballistic-missile-carrying submarines (SSBNs) with *Poseidon* ballistic missiles, able to deliver 10 warheads of 50 kilotons each over 4600 kilometers and the new *Trident* missiles which can deliver eight warheads of 100 kilotons each over 7400 kilometers.

2. Its 46 attack submarines, also known as hunter-killers, can attack ships with *Sub-Harpoon*, which has a high explosive warhead and a 110-kilometer range, and can attack other submarines with the nuclear-armed *Subroc*, which has a 46-kilometer range.

3. The escort vessels are made up of the heavy-tonnage cruisers, with an average displacement of 9000 to 10 000 tons, and the lighter destroyers and frigates at 3000 to 4000 tons displacement. The escorts carry a mix of weapons, including the *Harpoon* anti-ship missile and the short-range ASROC antisubmarine weapon. This is in addition to torpedoes and guns. The cruisers also carry *Standard* and *Sea Sparrow* air-defense missiles.

4. The five attack aircraft carriers are the heart of the fleet. Each carries 24 F-4 *Phantom* or F-14 *Tomcat*, with ranges of 765 and 935 kilometers respectively, equipped with AIM–7/9 air-to-surface missiles; up to 36 A-6 *Intruder* or A-7 *Corsair*, with ranges of 1205 and 885 kilometers respectively, armed with nuclear bombs; 10 torpedo-carrying S-2 *Tracker* and S-3 *Viking* aircraft, the latter with a range of over 1900 kilometers; plus 10 reconnaissance aircraft.

5. The two helicopter carriers each carry 20 helicopters, coming in a variety of types including the heavy-lift *Chinooks*, the lighter UH-1 and AH-1, and the RH-53 adapted for antisubmarine warfare.



THE SLBM RANGE SPIRAL

Over the past two decades both the superpowers have put immense resources into the development of submarine-launched ballistic missiles. This is largely because these missiles are seen to be relatively invulnerable. Initially the missile-carrying submarines had to operate close to the enemy's territory because of their limited range. Gradually the range has been extended to widen the sea area in which the submarines can operate, and so make the task of finding them that much more difficult, to the point where now the missiles can virtually be launched from home ports. At first increasing range was thought to come at the expense of accuracy, but now it has proved possible to combine great range with precision accuracy and multiple warheads.

and behaviour are even now only imperfectly understood.

"The 1980s and 1990s are likely to be among the most exciting years ever in naval technology, as a whole years ever in naval technology, as whole series of radical developments and perhaps some major breakthroughs look set to revolutionize the many aspect of naval warfare.... South Atlantic War of 1982 between the United Kingdom and Argentina, where a modern surface fleet deployed... but the Royal Naval Task Force was heavily attacked and many important lessons were learned, which are being eagerly examined by all the world's navies."[3]

There have been many advances in naval tactics, weapons and systems, and in command, control and intelligence system methods since the last major fleet actions in 1944-45. Admiral Gorshkov, the commander-in-chief of the Soviet Navy, wrote in the 1976 edition of the 'Soviet Military Encyclopaedia' that a third priority had been added to the Navy's previous two missions of strategic and counterforce tasks. This third priority, that of the interdiction of enemy sea communication means that the Soviet Navy has now been formally tasked with getting out into the open ocean and fighting a traditional maritime war.

---

3. Richard S. Friedman, Bill Gumston and others, Advance Technology Warfare (Salmander, London, 1985), p.162.

The naval intelligence problem will be that of ensuring that the knowledge about where the other fleet is, its number, capabilities, condition and deployment and what it may be planning to do next.

Naval intelligence is gathered from a variety of sources, some covert but most overt and obvious. Espionage plays its part although it is scarcely surprising that the details are not known.

Every warship of every navy has, as one of its primary functions, the task of gathering intelligence by watching other navies exercise, monitoring radio or radar transmission or simply observing oceanographic conditions.

Throughout the World War II aircrafts were used to locate, identify and track enemy ships using visual means first, but subsequently extending their range by use of airborne radar. A major breakthrough has come recently with the use of surveillance devices mounted in space shuttle and satellites, which with a combination of photographic and radar sensors can locate any surface vessel at any time, limited only so far is known by exceptionally severe terrestrial weather.

Satellite Surveillance:

Surveillance is a relatively regular monitoring activity. Photographic surveillance satellites use optical,

infra red and possibly radar techniques to obtain detailed pictures of areas of interest.

"The strength and locations of force can be determined with considerable precision and weapons under construction or testing can be observed in remarkable detail. The resolution of satellite is so fine that for instance the size of an aircraft engine's air intake can be measured."[4]

In ocean surveillance the USSR appears at first sight to have lead over the USA, but the fact is that satellite offers the Soviets the only practicable way of overcoming their chronic lack of overseas bases.

After the cosmos 954 disaster the Soviet ocean surveillance programme underwent a reorientation; no satellite were launched in 1978, but two non-nuclear types were launched in April 1979 which were described at the time by US Secretary of Defence Harold Brown as being capable of targeting US Navy ships at sea.

Probably the best known spy satellite in the American inventory is Big Bird. This can perform both wide area surveillance and "close look" high resolution reconnaissance with multi-spectral scanners. Big Bird satellites are placed into low altitude, sun-synchronous orbits so that they pass over their targets at the same time each day.

---

4. Ibid., p.76.

"In 1971 KH9 satellite, dubbed Big Bird because of its 30,000 pound Greyhound-bus size, developed firm far wide areas images on board and beamed the pictures to Earth as TV signals... Despite Big Bird sophistication, however, its limitation frustrated intelligence personnel. The amount of film and the number of peds the satellite carried limited the number of high resolution close up photo they could obtain. Also poor weather and logistical problems often delayed intelligence for weeks."[5]

One of the interesting aspects of the Soviet Space programme is that they launch satellites to cover specific crises and they can position exactly where they can need them to give best result. As in the case of Falkland War 1982.

The US Navy's Transit system is designed to provide position fixes for FBMSs accurate to 0.1 nm (160m). Its successor, Naustar Global Positioning System which is accurate to 33 ft (10 m) if the full 24 satellite network is deployed.

Satellites have uptil now been used to gather information by various sensors then pass it either by physically

---

5. William E. Burrows, "Space Spies", Popular Science, New York, March (1990), p.62.

Fleet Ballistic Missile Submarine (FBMSs).

or electronically to a land based centre for interpretation analysis and dissemination. The need for up-to-the-minute information at sea is now so urgent, however, that systems are being developed whereby satellites will pass their information in real time by digital down links direct to ship at sea.

In view of current Gulf crises the importance of satellite surveillance over Iraq and Persian Gulf had sharply risen to monitor United Nations sanction and Iraqi troop movements in this area.

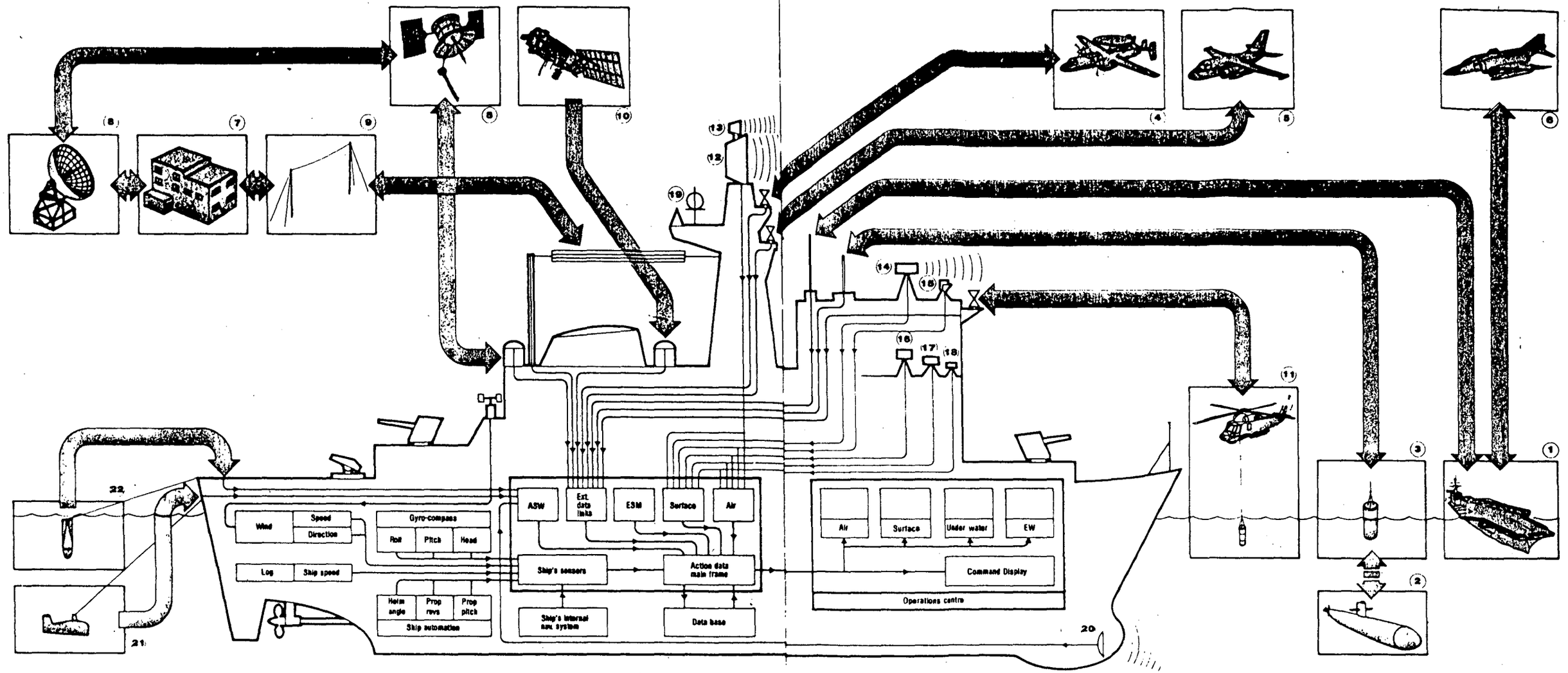
"Indeed the day is fast approaching where a task force commander could have satellite under his control as an integral part of his sensors and information gathering systems. Thus AEW aircrafts might become irrelevant if they can be replaced by equally reliable, but even more capable, surveillance and early warning satellites."[6]

INTELLIGENCE AND ELECTRONIC WARFARE:

"Modern weapon systems are designed to apply the appropriate level of destructive force with the maximum efficiency in time and space. The armed forces which employ them themselves depend upon a web of electronic systems to

---

6. William V. Kennedy, op. cit. (1983), p.176.



A SURFACE WARSHIP'S INTELLIGENCE SYSTEMS

Modern warships are designed to operate as part of a task group, deployed according to the commander's assessment of the threat. Here a ship is operating as part of such a group and the inputs which enable the captain to build up an overall intelligence picture are shown. The aircraft carrier (1) is passing information to all ships in the group, which, in turn, pass their "take" back to the flagship. Most task groups will have at least one submarine in company (2), although it is not easy to communicate to surface ships, and is being done here by a radio buoy (3) transmitting a message on a cassette recorder.

Further information is passed from any friendly aircraft in range: AEW (4), ASW (5), or recce (6). Data is also passed from the home base (7) by satellite (8) or high frequency radio (9). Further inputs come from sensor-equipped satellites (10). The ship's own sensors start with the helicopter (11) with an on-board data processing capability. Airspace surveillance is conducted by a large radar (12) usually a mounted at the highest point of the ship's structure and incorporating IFF (13). Surface surveillance is conducted by radar (14), visually (15), and by infrared (16), image intensifier (17) and thermal imaging optronic devices (18). A whole range of devices conduct Electronic Support Measures (ESM) (19) which involves monitoring the electromagnetic spectrum, classifying enemy transmissions and taking the appropriate countermeasures. The ship's ASW sensors include bow-mounted sonar (20) and a variable-depth sonar (21). The temperature gradient is analysed by an expendable bathythermograph (22). All these inputs are integrated, processed, compared with the data-base, and then displayed in the operations centre. Operators can also select which information they want displayed on their screens, even that on another operator's screen. All this amounts to a major management problem, especially when fire control systems are added in as well.

carry out vitally important tasks of command, control, communication and intelligence to do the same thing. They use radio to transmit orders and to receive intelligence at all levels of command. Radar, infra red and laser systems are used for surveillance, target acquisition and designation, and weapon guidance. Consequently the side that can deny its opponent full use of the electro-magnetic spectrum, while protecting its own electronic systems from interference, will have gained a potentially decisive advantage. This is why electronic warfare (EW) - and electronic countermeasures (ECM) which strikes at the electronic nervous system of the enemy armed forces - have become two of the most complex and fast-changing branches of military technology."[7]

The origin of electronic warfare (EW) can be traced back to Crimean War in 1885, as electronic telegraph was first used for totally military function. The counter-measures applied by Britisher by using 'plastic' insulations for their broken pipestems. Electronic warfare during American. Civil War (1860-1865), the Franco Prussian War (1870-1871) and the Boer War (1899-1902) consisted mainly efforts to intercept or interrupt enemy telegraph transmissions.

---

7. Christy Campbell (ed.), Understanding Military Technology (Hamlyn Pub. Group, Middlesex, UK, 1985), p.54.

During Russo-Japanese War (1905), were Russian forces tried to 'jam' or interfere with Japanese fleet signal communication. By the time of World War I, British, American, French forces were able to use signal transmitted by Germans for direction finding and target location.

The significance of EW during World War II would be difficult to over-emphasize. As Winston-Churchill commented in his war memoirs:

> "This was a secret war, whose battles were lost or won unknown to the public and only with difficulty comprehended, even now, to those outside the small high scientific circle concerned. Unless British sciences had proven superior to German, and unless its strange, sinister resources had been effectively brought to bear in the struggle for survival. We might have been defeated and destroyed."[8]

By this Churchill indicated the need for early research and development in field of EW to gain superiority over the others.

Electronic Counter-Countermeasures:

"...ECM is the employment of active jamming or deception techniques against enemy electronic systems, while electronic counter-countermeasures (ECCM) are the means

---

8. William V. Kennedy, op. cit. (1983), p.120.

used to counteract jamming."[9]

Electronic Warfare is essentially a conflict between devices which attack and devices which protect from attacks. A step in development of ESM and ECM designs or equipments creates responses from ECCM designer.

Countermeasures and counter-countermeasure developments are of course intimately interrelated, in that knowledge of ECM devices is extremely helpful if not essential, to the development of effective ECCM techniques. Since intelligence information is necessarily incomplete at best, it is necessary to design information equipment and associated ECCM 'fixes' on the basis of minimum suceptibility to the types of ECM most likely to be encountered.

Anti-Intercept Measures:

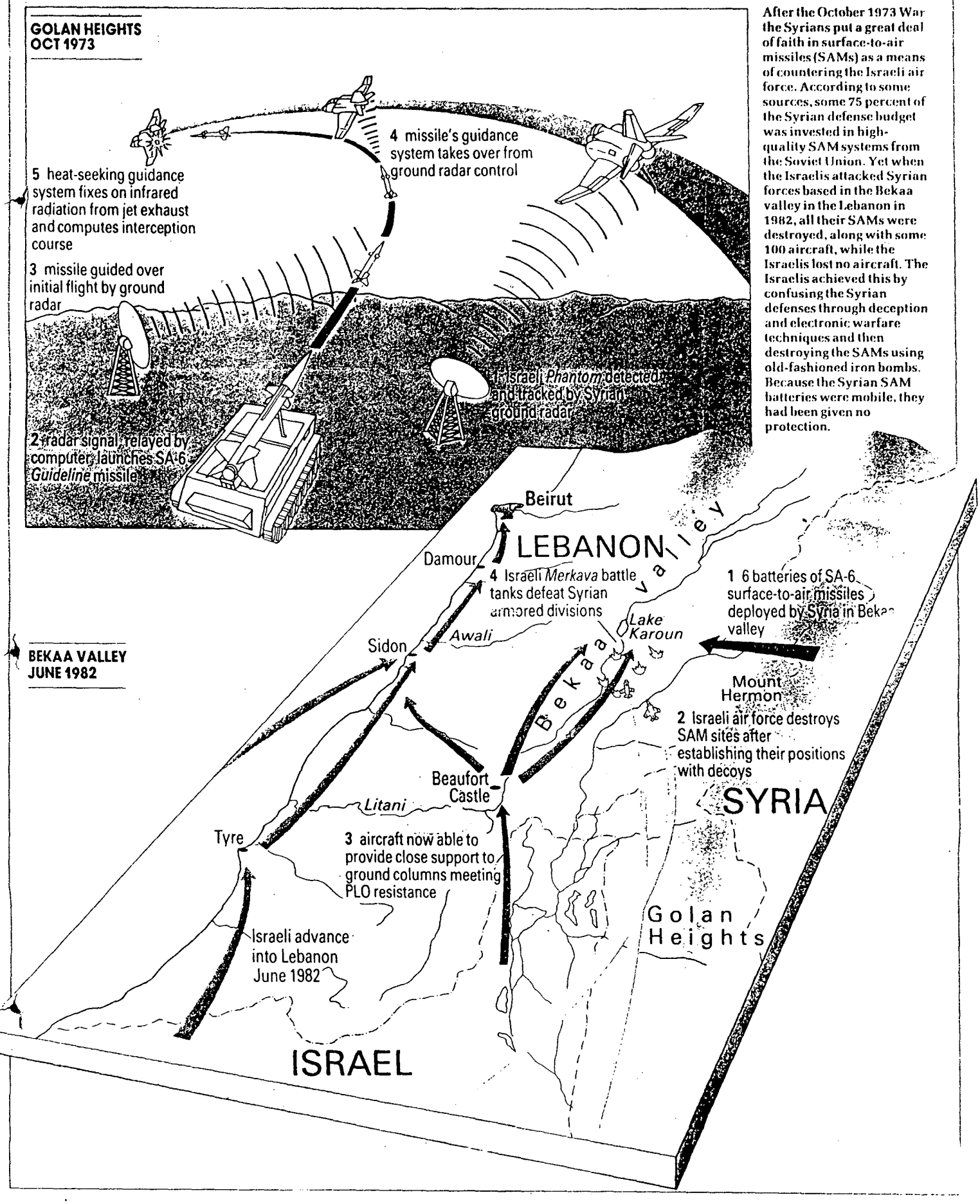
The basic anti-intercept measures are not to transmit; no transmission from any communication system as it is to be intercepted by other or jammed.

"...the practice of radio silence and EMCON (emission-control) is now a part of the modern methods of command and control. Judgements of when, and to what extent to use it is influenced by tactical situations at the time and it can often be difficult to assess whether radio silence would

---

9. Christy Campbell (ed.), op. cit., (1985), p.56.

DEFENSE AND COUNTERDEFENSE



After the October 1973 War the Syrians put a great deal of faith in surface-to-air missiles (SAMs) as a means of countering the Israeli air force. According to some sources, some 75 percent of the Syrian defense budget was invested in high-quality SAM systems from the Soviet Union. Yet when the Israelis attacked Syrian forces based in the Bekaa valley in the Lebanon in 1982, all their SAMs were destroyed, along with some 100 aircraft, while the Israelis lost no aircraft. The Israelis achieved this by confusing the Syrian defenses through deception and electronic warfare techniques and then destroying the SAMs using old-fashioned iron bombs. Because the Syrian SAM batteries were mobile, they had been given no protection.

bring a net advantage or disadvantage."[10]

This disadvantage can be reduced by providing informations from satellites. The information about navigation position and target identification by satellites without using radars to avoid detection and to counter ECM.

Anti Jamming Measures:

The prime measures to avoid jamming is frequency agility in which the radio frequency of the transmission is not stable but is caused to hop in a random fashion over a frequency band. This forces the jammer to spread his power over the band and so reduced the strength of jamming at any single frequency.

Anti-Decoy Measures:

Decoys rather than false electronic targets, are by far the most potent form of ECM in providing protection to ships through reducing the lethality of missiles. It is very important to produce anti-decoy techniques in the missile designs for its lethality. Modern missiles use many sensors, such as radar and infra red, and a great deal of data processing to identify the target.

---

10. D.G. Kiely, Naval Electronic Warfare (Brasseys, London, 1988), vol.5, p.78.

Anti Radar Measures:

Various methods are now in use for anti-radar measures such as:

- Anti Radar Missiles (ARM)
- Stealth
- Radar Absorbent Material (RAM).

Anti Radar Missile (ARM):

This missile is designed to recognize and lock on to signal of radar, by homing systems. In doing it is passive, i.e., the homing head does not transmit and it cannot therefore be detected and identified by any ESM equipments. ARM is not vulnerable to the normal radar or infra-red decoy using such measures as chaff, electronic signals and flares.

Defence against ARM is very vital for any defensive measures. This is suggested that the airborne radar would be effective against such threats.

Radar Absorbent Material (RAM):

In recent times, attention is paid on anti-radar measures to secure aircrafts, armoured vehicles, tanks and other mobile equipments immune from radar.

Many techniques and materials have been developed in this field. Carbon fiber material is most common for example carbon thin filaments is used to absorb the electromagnetic waves. This material is strong as steel and it carbon based

moleculer tends to absorb microwave energy as food does in microwave owen.

STEALTH is made up of Fibaloy, glass fibers embedded in plastic to avoid radar detections. Amother method very well known is radar absorbent paints as it was first used by Germany in World War II. SR71 is painted with a radar-abalative paint, as it does not absorb the radiation but it helps in conduct of surface structure, to cool down hot spot and other places which provide detection to the radar.

"About a year ago a researcher named Robert R. Brige of Syracuse University in New York announced the discovery of new class of radar absorbing material called refinyl-schiff base salts... and could absorb 80 per cent of the radar energy striking them."[11]

Electronic Warfare Support Measures:

Electronic Warfare Support Measures (ESM) can be defined as,

"ESM is used as a tactical system to locate enemy transmissions and is a alternative to visual or radar surveillance and target acquisition."[12]

---

11. Steven Ashley and C.P. Gilmore,"Finally STEALTH!", Popular Science (NY), (July, 1988), p.50.

12. Christy Campbell (ed.), op. cit. (1985), p.71.

ESM is the use of passive monitoring equipment to detect and identify enemy forces or threats. ESM is a action taken to search for intercept, locate, record and analyze radiated electromagnetic energy for the purpose of exploiting such radiation in support of military operations. The application of ESM are numerous on land, sea and air. In anti-submarine warfare Nimrod MR MK2 or P-3 Orion, aircraft, fitted with ESM receivers and processors can pick up the radar or radio transmission of an enemy submarine. ESM equipment can be used in much the same way by air defence forces. The generation of AEW (airborne early warning) aircrafts - the RAF's Nimrod AEW MK3 and USAF and NATO E-3 sontry can detect hostile radar emission at ranges where their own self-generated radar coverage would be infeective.

In naval warfare ESM system includes high frequency direction finding (HF/DF) with its distinctive aerials at top of the destroyer or frigates. HF/DF equipment can be used to inercept radio transmission and take bearing on them to locate the transmitter.

"ESM systems can thus be used defensively to alert a warship when it is about to come under attack and to provide the basic information necessary to initiate electronic countermeasures. Its offensive measures are passive surveillance and target acquisition."[13]

---

13. Ibid., p.87.

It was a naval campaign that gave rise to the first ESM system, the search electronics of the USN's Privateer patrol bomber, which entered service since 1945. Current airborne naval ESM systems are usually to be found in ship-board helicopters and land based patrol types. Typical of the former are the British Racal MIR-2, carried by the Royal Navy's Lynx and Sea king, and the Elettronica ELT-Colibri, mounted in Italian Navy AB-2125 and the helicopter of several other navies.

Techniques for rapid and accurate measurements of radar signals characteristics have been developed to a considerable degree of sophistication, together with software aided methods of comparing these characteristics with a library of known radar parameters.

Analysis of the structure and content of communications signals can also yield valuable informations for command and control, while methods used for this are rather more varied.

"The rise of the radar guided surface to air missiles in the late 1990s created a need for systems to warn strike crew of imminent missile attack. At the same time the ever growing importance of the shipborne radars to the naval operations created a pressing need for passive detection

systems that could locate hostile shipping by means of its electromagnetic emissions without revealing the presence of the watehir. The first requirement gave rise to the radar warning systems (RWS) the second to the electronic support measures (ESM)."[14]

Electronic Countermeasures - ECM:

The objectives to be achieved from the Electronic Countermeasure is described as to disrupt surveillance and communication so that an enemy is unable to make the best, or sometimes even any, use of his electronic information gathering sensors such as surveillance radar or from the radio communication equipments which serve his command and control requirements.

The other objectives include is to reduce the lethality of weapons which depend upon electronics for aiming, guidance and homing.

"The problem concerned with when, where and how to generate this electronic interference and on other hand, the action to be taken to counter its detrimental effects are of fundamental importance to electronic warfare."[15]

---

14. Martin Streetly, Airborne Electronic Warfare: History, Techniques and Tactics (Jane's, London, 1988), p.177.

15. Robert J. Schlesinger, Principles of Electronic Warfare (Peninsula Pub., California, 1961), p.1.

In modern army, navy and airforce all depend upon electronic devices for offensive and defensive purpose. These devices are more vulnerable as well as effective in battlefields. The measures used by nations to disrupt the transmission and communications of enemy as to make their movements ineffective and to make surprise attack. Many techniques are now in use and described as follows.

Radar Noise Jamming:

A transmission at the frequency of a radar modulated by noise has the well known effects of saturating the radar receiver and causing its display to be covered by continuous noisy paint which obscures targets the radar would otherwise see. Certainly a surveillance radar is disrupted and confused in its operation by this action, but its loss is not total as the jamming at least establishes the presence of a hostile ship or aircraft. More seriously, the jamming signal can act as a homing beacon for missiles, and most missiles have a home-on-jam capability.

Infra-Red Jamming:

The infra-red jamming is intended to be mounted externally on the aircraft and helicopters and operates by radiating modulated energy from an IR source.

This jamming helps aircrafts and others to misguide the heat seeking missiles. The output from the jammers is modulated mechanically by means of shutters. This output

signal enters the missile seeker head, impairing its ability to attack the target.

Communications Jamming:

Communication is very vital for function of C^3 (command control communication) it helps the attacker to gain intelligence and other informations about the location of targets and further movements.

Jamming is used with noise-modulated signals is quite different in its significance and potential. The message content of the enemy signal can be totally obscured and a definite advantage gained without incurring any potential risk to the jamming aircraft, ship or mobile C^3 or the base.

Electronic False Target:

It is not possible and more vulnerable to employ simple continuous noise jamming against a surveillance radar, with the main attendant risk of providing a home-on-jamming capability for missile. It is possible to confuse the radar operator, who is trying to select a target for his missile, with a great number of false target around main target. These targets can be generated electronically and injected into radar through its sidelobes as well as its main lobe. The appearance of these false targets on radar display can be very realistic and the operator is certain to be confused to some extent.

Communications & Data Processing:

Communication and computer technology are combining to give military commander more flexiblity in command and control. The increasing use of signal intelligence (SIGINT) and Electronic Warfare (EW) techniques has focused major problem to the communication and computers. Latest generation military radio equipments make use of the latest solid state microelectronic technology. Most have provision for the use of encryption and decryption equipments to ensure good communication security (COMSEC) while other rely on frequency hopping to avoid detection and jamming.

Effective and timely intelligence-gathering in mobile warfare makes massive demands on computing power. To process the information gathered and to provide sufficient and effective data about any military aspect of enemy, or the previous experience with combination of new, give more knowledge about planning.

Computer security is most important for protection of data. New techniques and conventional computers are highly insecure. Any computer expert can intrude data and get more classified information with ease or just erase the data from data bank.

AIR WAREFARE:

Air warfare has passed through many changes in its relatively short history with major swing in emphasis taking

place almost every decade. The cause in many cases has been developing technology. New systems and new concepts have tended to render the last generation's weapons and tactical ineffective before they have matured and the challenge to the designer is to anticipate the inevitable counter-development and, if possible, to outrun it.

The development of military aircraft between now and the year 2000 will have to address a number of important changes in the threat. New micro-electronic techniques are already increasing the capability which can be built into mobile and affordable missile systems.

The combat aircraft will not be rendered obsolete. Its unparalleled mobility remains untouched and it is mobility which make it possible for a relatively small number of system to be effectively used over a vast area. Current and future plans point the way to survival for future combat aircraft.

Historically the first aerial warfare mission war reconnaissance. From the Battle of Fleurus 1794, observers carried aloft in ballons, dirigible, aeroplanes and helicopter have played an increasingly important role in deciding the outcome of land and sea battle."[16]

---

16. Richard S. Friedman, Bill Gumston and others, op. cit., (1985), p.92.

Tactical Intelligence is one of the most important components of modern conflict and involves elements in the air and on ground in an integrated role unique in potential value and usefulness.

Tactical intelligence can be divided into reconnaissance and information gathering segments. A significant part of the air intelligence operation was gathering information about known installation and searching for derivatives of predictable lines of development, but much of the air intelligence battle during World War II involved the active search for new unexpected weapons systems or facilities indicative of new scientific and technical developments, such as the aerial photography of Germany's rocket research facility at Peenemude from May 1942.

"With no experience in air reconnaissance, observers frequently made stupendous misinterpretations making cloud shadows for warms of infantry or tarpathus for tarpaulin covers: ...New tasks evolved too, including artillery ranging, which made direct air to ground communication vital. Messages dropped in cans, flags waved from rear cockpit sighting lamp flashing coded signals and pyrotechnic charges let off from the air were all tried with various degree of success before the wireless transmitter and receivers were introduced early in 1915."[17]

---

17. William V. Kennedy, op. cit. (1983), p.122.

As the great battles of 1914-1918 war progressed, aerial armadas were sent up at critical periods of the attacks to shield the swarms of reconnaissance aircraft going about their essential duty.

CHAPTER IV

INTELLIGENCE PROCESS TECHNOLOGY AND APPLICATION

Modern warfare is an interlocking system of actions - political, economic, psychological, military that aims at the overthrow of the established authority in a country and its replacement of another regime.

- Colonel Roger Trinquiez:
Modern Warfare, 1964.

It is one of the dangerous characteristics of the sort of information supplied by secret agents that it becomes rare and less explicit as the peril increases and the need for information becomes greater.

- Alexis de Tocqueville 1805-1859

A great war leaves a country with three armies - an army of cripples, an army of mourner and an army of thieves.

- German Proverb.

Before a war military science seems a real science like astronomy, but after a war it seems like astrology.

- Rebecca West 1892.

"Human beings are constituent elements of the international system, and the global environment is the source of life in all its form. To obtain resources, people develop technology (knowledge and skill), which enables them to obtain new resources and apply old resources to new purposes."[1]

To have greater intelligence resources for gathering useful intelligence, more sophisticated technology is applied for this task. With the development of new technologies to give better communication, transport and other facilities had developed concept of command, control, communication and intelligence (C^3I) for successful military operations.

By the use of various new techniques like satellites, radars, aircrafts and others, has improved the intelligence machine ability and capabilities. Use of diverse information sources such as Human Intelligence (HUMINT), COMINT, PHOTINT, IMINT, RADINT, SIGINT and ELINT gave boost to strategic planners to think about future strategy and tactics as well as about option and resources available to them.

ALLIES:

"The grand treaties of alliances should be considered as no more than founding charters, ...a fully developed

---

1. Manus I. Midlazsky (ed.), The Handbook of War Studies (Unwin Hyman, London, 1989), p.291.

alliance is a tough fabric, woven from a warp and weft of multinational and nation-to-nation treaties. Bilateral defence agreements are treaties concluded between pairs of nations within alliance. There are documents providing for the exchange of equipment, technology and military intelligence."[2]

State would not be able to safeguard all their vital interests without overstretching their capabilities. In reality there are limits to what a single country can do, and throughout history many governments have found that they can provide themselves with adequate security only with the help of allies.

The two superpowers, United States and the Soviet Union possess the full array of modern collection of capabilities of intelligence gathering. Even with those nations who do not have proper collection capabilities, shared the intelligence data provided by the producer nations. There must be a sharing of information and finished intelligence among nations and among agencies within nations. The sharing of intelligence can be divided into two categories:

1. Formal sharing,
2. Informal sharing.

---

2. Hugh Fazingdon, Strategic Geography - NATO, the Warsaw Pact and the Superpower (London, 1989), p.11.

The formal sharing of information within each nation is product of how well or how poorly the government is organized and, in the military sphere, the extent which the armed services are able to overcome inherent rivalries and jealousies.

Informal sharing of informations springs from friendship between diplomats or military attaches, from mutually profitable working relationship between intelligence agencies of different countries and from agreements approaching the nature of a secret treaty. One of the example of informal sharing was occurred during Islamic Revolution in Iran. Captured publications from U.S. embassy in Tehran, gave full detail about Israeli secret services - Mossad and Shin Beth, and their relationship with Turky, Ghana, Spain, Japan, Korea and various African countries. It also showed Israel as member of the "kilowatt" group "an organization which is concerned with Arab terrorism and is comprised of West Germany, Belgium, Italy, the United Kingdom, Luxemburg, Netherlands, Switzerland, Denmark, France, Canada, Ireland, Sweden and Norway."

Israel and United States, both operating closely particularly is the middle east region. Israel's successful operations against terrorism, raid on Entebbe and on Iraqi nuclear reactor really pushed Mossad up against its counterpart CIA. Now CIA depends on Mossad for their intelligence

network.

Israeli support to militiamen in Lebanon with intelligence about Arab World movements and in exchange they get early warning of Palestinian or Syrian moves that endanger the Israel.

By some fashion or other, formal or informal, all nations must somehow gain access to the worldwide intelligence available only from the United States or the Soviet Union. The most obvious way of accomplishing this would seem to be through direct alliance.

The principal feature of the Soviet intelligence system is tight compartmentation, which led to blockade of intelligence flow and restricting information only to the top level of officers. In comparison to USA and its allies, they allow free flow of intelligence in their governmental structure, and very few information is put under 'classified'.

Pakistan and India both heavily rely on USA and the Soviet Union respectively for their intelligence needs. With arrangement of secret pacts and treaties about the exchange of military and other information, both nations want to dominate each other in strategic field.

Anglo-American exchange of intelligence has proved very fertile, United Kingdom during Falkland War, gets every information about Argentinian movements from the United States.

ARTIFICIAL INTELLIGENCE:

"Throughout its history, the Army has been manpower-intensive in most of its systems. The combination of demographic changes (fewer youngmen), changed battlefield scenarios and advanced technologies in improved robotics, computers and artificial intelligence (AI) suggests both a need and an opportunity to multiply the effectiveness of Army Personnel. Not only can these technologies reduce manpower requirements, they can replace personnel in hazardous areas, multiply combat power, improve efficiency and augment capabilities."[3]

Increasing sophistications of the Soviet-Warsaw pacts forces with introduction of various new systems allows the field of 'Artificial Intelligence' (AI) more complex and significant. Many reasons showed the path of increasing use of AI in the battlefield.

Today's armies are no exceptions. A classic example of using a technological breakthrough to gain a tactical advantage was the development and subsequent use of the atomic bomb during World War II. Possessing these weapons gave the United States a decisive tactical and strategid edge.

---

3. Ricky Lynch and Michael R. McGee, "Military Application of Artificial Intelligence And Robotics", Military Review, December (1986), p.50.

According to Larry Geisel, President of Intelligent Technology Group Inc. and leading export in the field, defined AI as follows,

"AI is the science and engineering of making machines perform intelligently. If the machine performs a task using certain software and tends to perform it with performance levels of a human you would say that the machine was performing intelligently and that is exactly what AI is attempting to do..."[4]

In other words, AI is the part of computer sciences concerned with designing systems that exhibit the characteristics we associate with intelligence in human behaviour.

Today's battlefield required vast amount of informations about planning and decision making. The rapid deployment of forces against enemy to hold key points.

"...pressure to operate with shorterned decision-making timeliness. Because the enemy very mobile battlefield planners and commanders must be equally adept at rapidly recognizing, reacting to, and committed resources."[5]

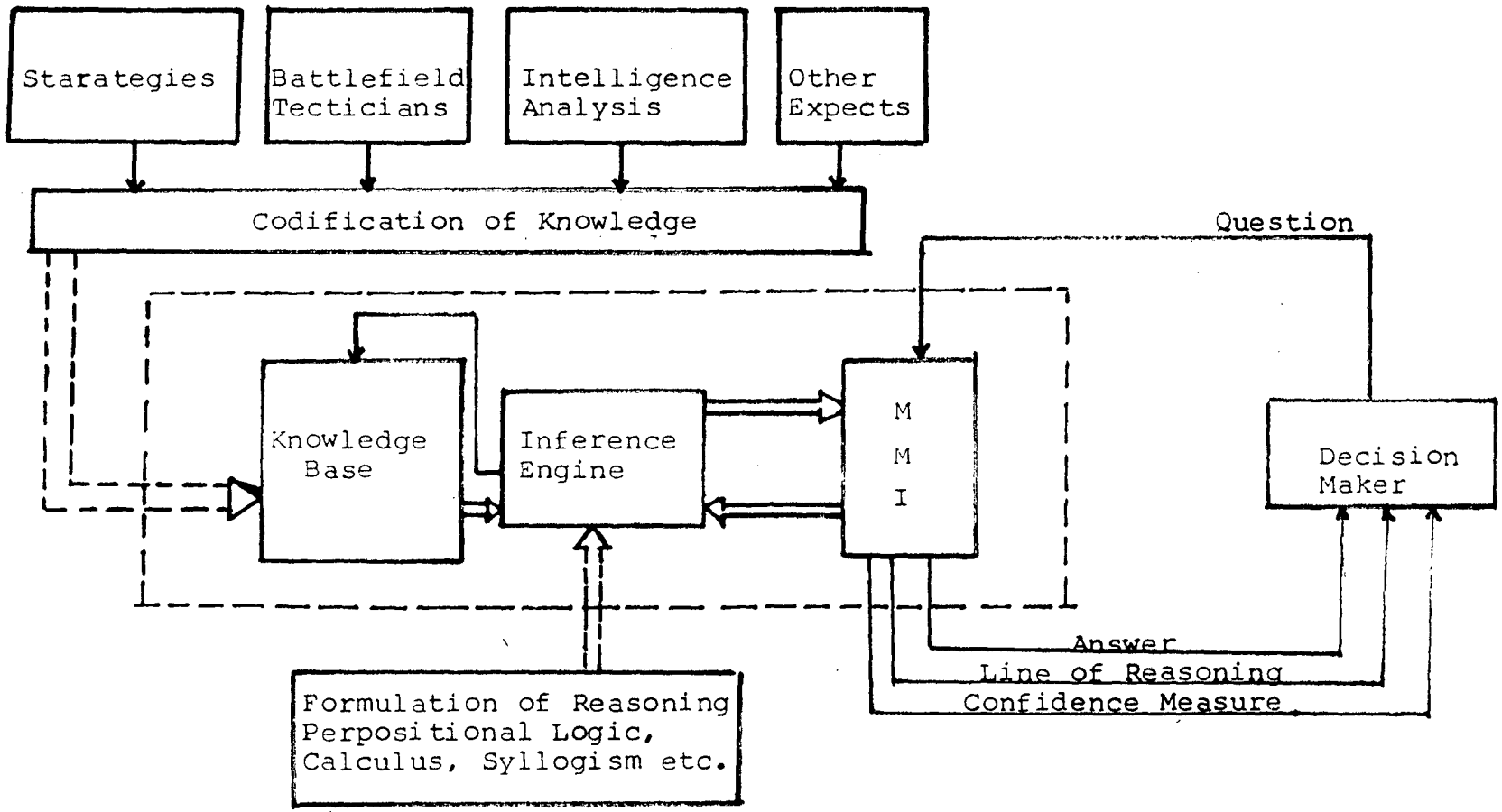
More sophisticated ground and airborne sensors and systems that are well capable to collect and process huge

---

4. Mark Gerencser and Ron Smetik, "Artificial Intelligence On the Battlefield", Military Technology, June(1984)p.86.

5. Ibid., p.86.

EXPERT SYSTEM



amount of informations based on Imagery intelligence (IMINT), electronic Intelligence (ELINT), signal intelligence (SIGINT) and human intelligent (HUMINT). Commander's need is processed intelligence to take critical decisions.

Technical complexity of today's weapons systems adds another dimension to the effective use of AI.

AI is a broad and variously defined term. An AI system, however, will have certain characteristics. It will make decisions based on patterns of data, and on partial data. It will be capable of responding in a certain way to a pattern of data that resembles another previously learned pattern.

"The impact of AI on the military scene is also impossible to assess with any pretension to accuracy, but to look at the way in which current technology is being used or could be used in few years, is to gain some idea of the degree to which military technology is becoming intertwined with the technology of information."[6]

There are many facets of AI including speech recognition, robot manipulation, pattern recognition, natural language, interfaces and expert systems.

---

6. Christy Campbell (ed.), Understanding Military Technology: Computers - the new Military Force (Bill Sweetman, Hamlyn Middlesex, 1985), p.13.

An expert system is any system has been fed the knowledge a human expert on a particular subject and can then use that knowledge to reason as the expert himself would. This expert could involve virtually anything from flying an aircraft to scheduling factory productions.

AI ON BATTLEFIELD:

"Intelligence may be defined as the ability to learn, understand and reason. It is the application and use of knowledge. In this context AI is manipulation of knowledge through reasoning techniques using a computer."[7]

Implementation of AI can take place within weapon subsystem as an integral feature of an entire weapon system or as a support function to a command and control system.

Tactical planning and execution in which AI is used to support fighter penetration planning to rapidly evaluate route alternatives relating variables such as threat location, threat envelopes, terrain, aircraft airspeed and altitude, stores maintenance, weapon systems or delivery requirements and mutual support and timing. During mission execution, artificial intelligence would continue to function in dynamic support of the pilot decisions process by updating

---

7. Mark Grerencser and Ron Smetek, op. cit. (June 1984), p.89.

his plans and providing operational recommendation based on actual system status and data from internal and external sensors.

Advances in computer technology have brought artificial intelligence to the verge of operational reality. Extensive research and development within the military community is continuing to stimulate the needed advancements of the state of the art in artificial intelligence.

AI can also perform system diagnostics and self-maintenance in which function of weapon system such as a tank or fighter aircrafts to automatically recognize actual or pending subsystem malfunctions. This would give a better control over machines to perform harder task with ease.

"The widespread introduction of autonomous robots on the fold of combat will probably occur within the next 20-50 years. Upcoming generations of military officers will be as thoroughly schooled in the application of artificial intelligence and robots as they are trained to become proficient pilots or tank or ship commander."[8]

Artificial Intelligence is also in use within C^3I structure for offensive air or ground operations, and to work out logistics, force availability, location, threat and other factors in order to support, expedite or recommend

---

8. Steven M. Shaker and Alan R. Wise, War Without Men - Robots on the Future - Battlefield (Pergamon, Brassey's, 1988), p.11.

alternatives in the decision process of a commander for his direction and use of combat force.

COUNTER INTELLIGENCE:

Counter-intelligence is the protection of the intelligence machine. This includes active measures, such as deceiving the enemy and the use of the disinformation. The passive measures are mainly matter of security.

"Protection of one's own activities from sabotage, espionage and other forms of penetration requires counter-intelligence. Passive measures may entail no more than preventive precautions against possible harm. Active counter-intelligence involves more determined actions detect, complicate and disrupt the operations of spies, terrorists, and other agents seeking to bring harm."[9]

Committee to study Intelligence, investigations revealed a series of nearly unrestrained activities designed to "disrupt" and "neutralize" private citizens perceived as dangerous enemies largely because they belonged to a racial minority or opposed the undeclared war in Vietnam. Operation chaos against dissident; warrantless wiretaps and surreptitious entries against unsuspecting American citizens; interception

---

9. Alfred C. Maurer, Marion D. Tunstall and James M. Keagle (eds.), Intelligence Policy and Process (London, 1985), p.78.

of telephone calls and telegrams; opening of first class mail, and the approval of and participation by the CIA, FBI. National Security Agency and Defense Intelligence Agency in presidential assistant Tom Charles Houston's plan directed against those expressing opposition to the Vietnam War

Since it is essentially a negative activity, counter-intelligence seldom produces information that is of value to the central intelligence gathering activity. Placed under the same administrative roof as the intelligence gathering agencies, the counterintelligence staff becomes a competitor for funds.

The nature of communist system, by which only Communist governments and Communist law are considered to have legitimacy, the Soviet Union and its associated governments have been much bolder in intermixing intelligence-gathering and counterintelligence operations.

ELECTRONIC INTELLIGENCE GATHERING:

"Despite the increasing complexity of warfare in the 20th century, the three prerequisites of success remain the same; good logistical back up, clear and unambiguous lines of command and communication, and accurate and timely intelligence on the enemy's intention and capabilities."[10]

---

10. Martin Streetly, "Airborne Electronic Warfare", Jane's (1988), p.120.

Electronic intelligence gathering makes its contribution to ultimate victory by gathering vital information about enemy's manoeuvres in the battlefield.

Modern weapon systems are designed to apply the appropriate level of destructive force with the maximum efficiency in time and space. Armed forces which employ them themselves depend upon a web of electronic systems to carry out the vitally important tasks of command, control, communication and intelligence to do the same thing.

Electronic warfare can be subdivided into several broad categories. ELINT is the gathering of information on an enemy's electronic systems as an essentially preliminary to planning an ECM campaign against adversaries. ELINT is the primary building block of electronic warfare, providing the ground rules without which the game cannot be played.

Systems usually used in ELINT gathering monitors hostile activity, recording radar and radio emissions for later classification and analysis by computers.

An important consideration is the ELINT 'platform' the vehicles that carries the sensors to the appropriate scene of action. Platforms range from airliners, via container's truks to 'trawlers'. In a shooting war the Elint mission becomes more problematic during the Israeli invasion of southern Lebanon in 1982 for example drone aircrafts were sent over likely SAM sites to draw their

fire so that EW Aircrafts at stand off range could glean the vital signatures of the ground intercept and the SAM's terminal guidance radars.

Signal intelligence (SIGINT), Electronic Intelligence (ELINT) and Communication intelligence (COMINT) are actively preticed by every armed forces.

Communication intelligence is defined as the technical and intelligence information derived from foreign communications by other than the intended recipient. This is done by intercepting the communications or signal traffic transmitted by radio and other related means.

Electronic Intelligence (ELINT) concentrate on the non-communications transmission from various systems. ELINT defined as technical intelligence information derived from foreign, non-communication electromagnetic radiations emanating from other than nuclear detonation or radioactive sources.

Together, these two types of informations are usually known as SIGINT (Signal Intelligence).

ESPIONAGE & COUNTER-ESPIONAGE:

Espionage-spying has been aspect of human affairs since society began. Protection of international law were given to the espionage in the name of diplomacy. The military attache system by which uniformed representatives of the

foreign military establishment are permitted to 'spy' openly in the countries in which they are stationed.

Levels of espionage are different and it can be easily divided into three levels, i.e., 1. Diplomacy, 2. Quasi-Official, 3. The Spy.

Diplomacy:

Espionage activities through social events, visits by scientific and cultural delegations, travel by military attaches, study of host nations newspapers, books, periodicals.

Quasi-Official:

Voluntary and involuntary reporting by businessmen, tourists, journalists and other travellers to home-country intelligence agencies. Recruitment of bonafide journalists, scholars, missionaries etc. as continuing part time intelligence sources.

The Spy:

Illegal insertion of agents to pose as bonafide citizens of the "target" country. Recruitment of foreign nationals to betray secrets of their home country. Encouragement of military and civilian government employees to defect openly with valuable information.

"...Intelligence as factual information consists of old-fashioned espionage, the stuff of spy-thriller fiction.

In this area, experience shows that even though the "take" from a good espionage operation can sometimes be crucial, relatively little information is yielded through espionage and only rarely is it decisively important. The reasons are obvious: First, the placement and maintenance of agents in spots where they can gather decisive information are extraordinary delicate and difficult tasks; second, communication with agents after they are in place without exposing them is an intricate and time consuming process."[11]

Espionage has had some successes associated with order of battle information on mass troop movements through occupied territory inhabited by "freudless" or with technological developments. A good example of espionage concerning with order of battle information in World War I was the network of agents the British organized in Belgium to report on German military coming and goings. The casualty rate among the agents was horrendous, but the network did provide timely information back to England through the Netherlands.

Until World War I considerable discretion was exercised to prevent espionage from interfering with accepted diplomatic activity. The deterioration of all social relationships

---

11. Alfred C. Maurer, Morison D. Tunstall and others (eds.), Intelligence Policy & Process (London, 1985), p.20.

occurred as a consequence of that conflict - in particular, the ideological assault on the established social and international order by the Bolshevik government in Russia, led to a much more blatant usurpation of diplomatic privilege.

CIA Espionage Operations:

As compared to vast KGB espionage system, the U.S. espionage network is overshadowed. In CIA terminology the 'operations' is defined as used of covert actions for subversion of foreign governments, attempts on the lines of foreign leaders, the planting of rumours and whole unsavoury lexicon of "dirty tricks" that have come to be associated in recent years as "intelligence" functions.

"Covert actions" effectively dominated the CIA during mid-1970s. CIA's Directorate of Operations, which is totally concerned with the "clandestine services".

"In short the CIA was to be just what the name implies, an intelligence agency only, 'covert action' was introduced, according to the Senate investigators, by decree of the National Security Council without reference to Congress, much less to the public, "we do not believe" said Lawrence Houston, former Counsel of the CIA, "that there was any thought in the minds of Congress that CIA - would take positive action for subversion and sabotage."[12]

---

12. William V. Kennedy, The Intelligence War (London, 1983), p.69.

Clandestine activities had overtaken intelligence analysis as the CIA's primary mission. This was clearly envisaged by the percentage of budget which is 52% of total budget directed towards Directorate of Operations. Special emphasis was placed upon covert action as main activity of the agency.

As would be expected, the organization of what espionage capability the US does possess abroad would reflect the obsession with "covert action" that dominates budget staff and policy making in the "home office". The CIA counterpart to the KGB Rezident in embassies abroad is called a "station chief".

President Reagan was unable to build a concensus for most of his campaign promises about intelligence activities. On December 4, 1981, the president released his new executive order in its final form. This was Executive Order No.12333, which broadened authority for intelligence to collect data about certain Americans in this country and overseas.

In field of the "clandestine activities" CIA operates with its two main powerful directorates i.e. Directorate of Operation & Directorate of Intelligence. Federal Bureau of Investigation (FBI) also support CIA in matters of defection of any KGB agent to America. It also operates non-communist

activities with close cooperation of UK, France intelligence agencies.

COUNTER-ESPIONAGE:

Counter-espionage involves all measures taken to prevent disclosure of information. As such it is part of the overal subject of "counter-intelligence". The most effective of all counter-espionage measures are those passive measures which avoid drawing the attention of would-be intruder to sensitive areas, documents and persons. Guards, fences, safes, vaults, coloured papers marking sensitive document, all attract attention saying, in effect to the intruder. "Here it is,see if you can get it."

Active or offensive measures of counter-espionage, involves the seeking out of the would-be intruder and physical barring or removing such agents from protected areas, places and persons. The conversion of a spy into a "double agent" and the "feeding" of false information to a known spy also constitute 'active' measures.

AGENTS:

"History is replete with lessons that measures the importance of intelligence for special operations. Whether you study the use of Trojan House, or the failure of rescue operations at the San Tay prisoner of war camp in North Vietnam or the attempt to rescue the U.S. hostages from

Iran, intelligence makes the difference between success and failure."[13]

Intelligence is critical to any type of operation, any operation whether it is special operation or conventional operation, without intelligence it will. Intelligence is fundamentally a service required by those who have to make decisions and because there is nearly always some difficulty in acquiring other people's secrets, inherent in it is an element of doubt. The report of a spy may be full of apparently concrete facts. Is the spy himself entirely reliable? If spies had been trusted, the Russian armies would not have been taken by surprise when the Germans invaded in 1941, and there might have been no American disaster in Pearl Harbor.

Hannibal led his Carthaginian task force over the Alps in 218 B.C., he began systematically to collect information on every aspect of the invasion he was planning. His informants were people of the Gaulish tribes living in the area of future operations, and he briefed them carefully to provide him with detailed account of the terrain, climate and fertility of the country, not only on the approach to the Alps but in the mountains and beyond them, in the

---

13. Don E. Gordon, The Need for HUMINT, SIGNAL, Vol.44, no.2, p.87.

plain of the River Po. He wanted to know the number of tribes, the strength of each of them, their capacity for war and, in particular, their attitude to Rome. He knew he could not fight in Italy without their help. By the time he came down into the Italian plans from the Col de la Traversette he had learned a great deal about enemy. Hannibal was one of the great generals in military history and, like all great generals, attached supreme importance to good intelligence.

Adequate tactical intelligence permits the commander to equalize enemy advantages, to offset superior numbers of forces and weapons or unfavourable terrain. Inadequate intelligence usually presages defeat. Despite the marvels of technology the land intelligence battle still depends largely on special advance forces using their eyes and ears in daring reconnaisance.

Human intelligence (HUMINT) includes all other types of collection, such as reports from reconnaissance elements, information from captured prisoners, documents and equipment. The Soviets always rely on HUMINT with the help of their large network of KGB agent around the world.

"Lt. Gen. Daniel O. Graham, former Chief of the US Defense Intelligence Agency has argued for greater emphasis on HUMINT as a mean of identifying Soviet 'intentions'."[14]

---

14. William V. Kennedy, op. cit., (London, 1983), p.197.

Special operation requires special intelligence. Collection is mostly from human intelligence (HUMINT), and it is exceptionally detailed. Human intelligence focuses on the "how an enemy operates, whether the enemy is a terrorist, a drug trafficker, a guerilla, a political extremist or the staff of an enemy's rear headquarter, learning the "how" is essential because understanding that factor is more critical to developing special operations tactics for conventional operation.

HUMINT is considered as the prime source of intelligence. The information collected by a informer or from prisoner of war (POW) give clear picture about enemy position, intention, firepower and about other capability. In worsen situation where the communication fails and no alternative is available except the one is HUMINT on which every commander relies for his future actions.

IMAGERY INTELLIGENCE (IMINT):

Of considerably greater current importance in intelligence gathering is imagery intelligence. This type of intelligence provides whole picture about target movement and location in all weather and time.

The greater emphasis is placed on electro-optical systems employing electronic night vision devices and infra-red or thermal imaging devices. By using these techniques developed for television, modern electronic

image enhancement equipment is able to transmit television pictures or photographic images under light conditions which are too poor for human eyes. The electronic equipment can use even the feeble illumination from stars, amplified by electronic circuits in a similar way to the amplification of music from a transcription, and display a scene in almost the same detail as if it were in sunlight. Low light television (LLTV) is used in reconnaissance aircraft, RPVs and drones to detect enemy movements and equipment seeking to use darkness for camouflage.

"IR was used in intelligence quite early as mean of detecting camouflaged objects ... it was discovered that IR photographic equipments easily penetrated the camouflage because it could discriminate between natural vegetation and artificial or painted camouflaged."[15]

There are five basic conventional photo imagery used in IMINT. These are - Vertical, oblique, panoramic photo-imagery, stereo photography and Infra-red imagery.

Vertical Photography:

Vertical photography furnishes coverage of a subject from directly overhead. The reason behind vertical photography is scale, which remain constant and accurate in this type of photography.

---

15. Ibid., p.94.

Oblique:

Oblique photography is used to take photograph from a certain angle to produce image according to strategic and tactical need. It also proved useful if the target is covered with clouds.

Panoramic:

Panoramic photo-imagery is useful because as the name implies it can be obtained by the use of special 'panoramic' cameras which can cover a wide area in one pass over a target area.

Stereo:

Stereo photography gives three dimensional image of the target area which enable interpretor analysis of terrain and well organized study of particular target, as well as identification of individual items of equipment.

Infra-red Imagery:

"The early history of electronic warfare indicates that many of the lessons learned remain as valid today as when they first became apparent. However, the principal lesson has always been that any weakness in new electronic technology can be expected to be exploited quickly by some countermeasures."[16]

---

16. Ibid., p.94.

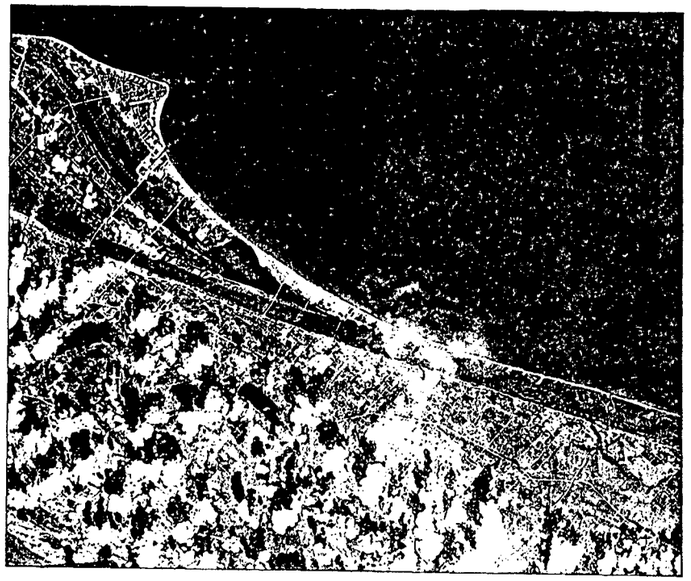
Infra-red imagery permits detection of thermal or heat, waves emanating from the terrain and objects. Present days IR sensors can distinguish minute difference between objects and are able to reveal attempts at camouflage. Modern IR systems can detect objects, permit their identification by their IR signature electronically, and allow instantaneous observation or photography. The latest IR equipped aircraft cannot only photograph objects on the ground, but can also allow the operator to view the target area while simultaneously transmitting the imagery to the ground based terminals for immediate use.

Sidelooking Airborne Radar (SLAR):

This is the mostly used imagery sensor in microwave remote sensing. The antenna system generates a far-beam such that the beam is narrow along the aircraft track and fairly wide across the aircraft path. The antenna situated such that it looks to one side of the aircraft path. The image is produced by the motion of aircraft.

The transmitter generates very narrow pulls of microwave energy and transmit through the antenna. Owing to the special radiation pattern of the antenna the transmitted signal while traversing in the space is incident on the various object across the path of the platform sequentially and the returns from these objects reach the receiver system with the corresponding time delays. The received signal

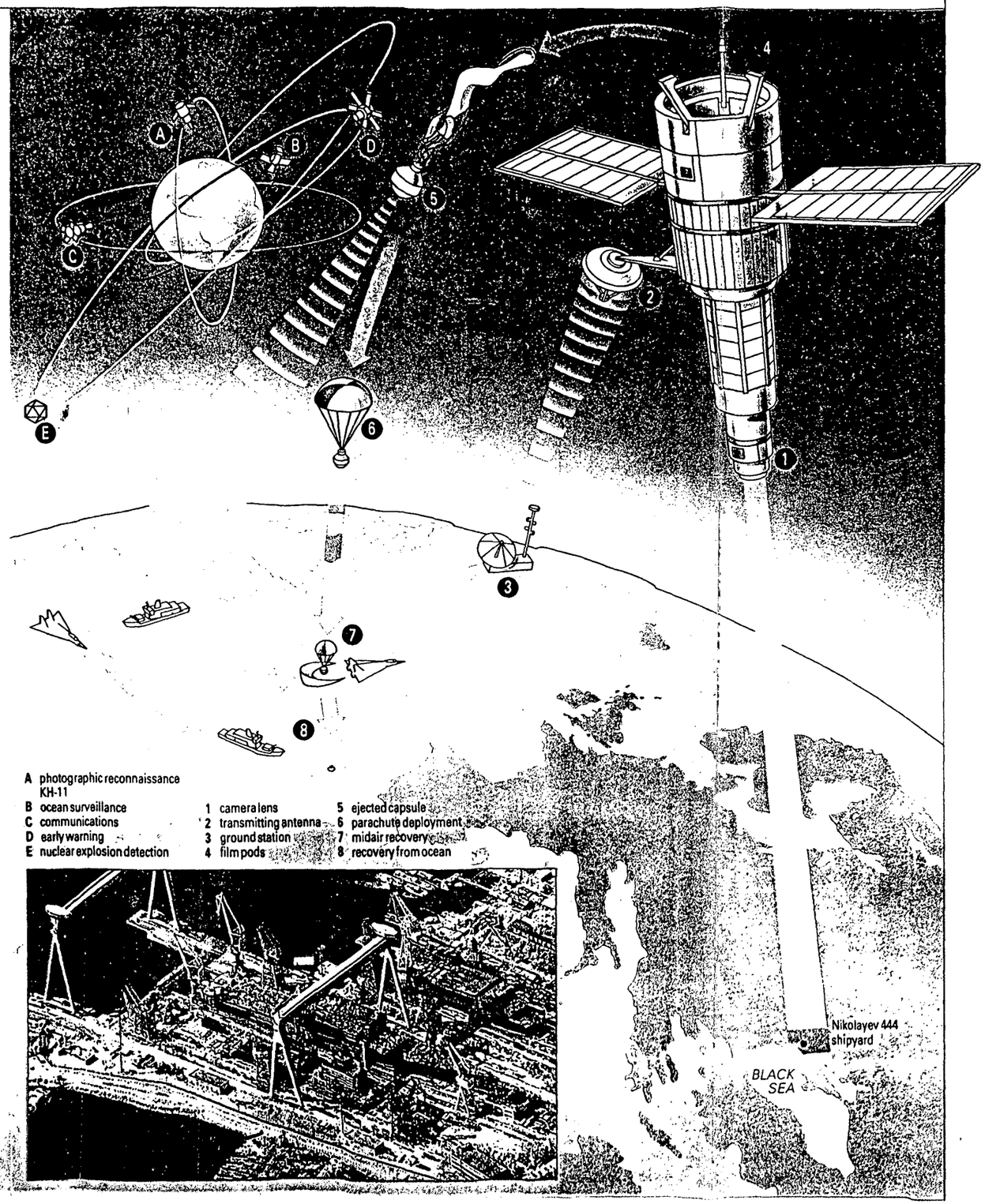
SPIES IN THE SKY



Photography from space is available from commercial satellites (LANDSAT), and pictures are also taken on manned space flights. This view of the Kennedy Space Center was taken by *Skylab 4*.

Satellites provide steady surveillance of military activities anywhere that is of interest. At any sign of crisis – in the Middle East, south Atlantic or Indian subcontinent – both superpowers will direct satellites to pass overhead to keep themselves fully informed. A new American satellite, the KH-11, is able to send back instantaneous images. Overhead reconnaissance is used to check on the disposition of the other's forces. During the late 1950s there was a great scare in the United States that the Soviet Union was surging ahead in missile production. When the first reconnaissance satellites began to bring back hard information in the early 1960s, it soon became clear that it was the Soviet Union that was lagging behind. The resolutions that can now be achieved reveal quite intricate details. "Image enhancement" can highlight otherwise submerged detail by compensating for distortions or intensifying particular features. "Optical subtraction" can ensure that new features, such as the start of a missile site, are rapidly detected by electronically comparing new photographs with others of the same scene taken earlier. However, it remains the case that satellite photography can still be defeated by night and cloud cover.

It is only the superpowers that have this sort of intelligence available to them, although a few other countries are beginning to develop a limited satellite reconnaissance capability. The sort of intelligence provided by these satellites is one of the most prized gifts that they can hand over to an ally or a client engaged in a conflict, and they do so sparingly. Otherwise most countries engaged in warfare still have to make do with less sophisticated maps and intelligence information on the nature and disposition of the forces arrayed before them.



A photographic reconnaissance KH-11
B ocean surveillance
C communications
D early warning
E nuclear explosion detection

1 camera lens
2 transmitting antenna
3 ground station
4 film pods

5 ejected capsule
6 parachute deployment
7 midair recovery
8 recovery from ocean

A rare published example of the quality of US satellite technology. This computer-enhanced photograph, taken by a military satellite in July 1984, shows a nuclear aircraft carrier under construction in the dry docks at the Soviet Nikolayev 444 shipyard on the Black Sea.

after amplification can be made to intensify modulate the beam of a CRT. Such intensity modulated beam patterns can then be recorded as a roll photographic film which is moved in synchronism with the motion of the platform. Otherwise the received signal can also be processed and electronically recorded on a suitable medium such as magnetic tapes, which can later be used to generate images.

Photo Intelligence:

Forty years after the development of photography, the first effort was made in imagery intelligence. The first recorded aerial photograph was taken in October 1860 in United States. It was taken from a tethered balloon over South Boston. This was done during Civil War, both Union and the Confedera y sent observers aloft in hot air balloons, however the observers used telescopes, not cameras, for intelligence gathering.

In those days the aerial photography was cumbersome; light sensitive emulsions on glass plates needed to be used and developed quickly, requiring rapid launching and recovery of the balloons. Some other forms of early photo intelligence devices were used to gain images of particular field. The development of kite camera, which was flown aloft by a kite and was triggered by drawstring. Once the photographic image was exposed, the camera slid down the line for recovery

and plate development. Some other early aerial reconnaissance method includes miniaturized cameras attached to carry pigeons.

The camera was mounted on aircrafts, during World War I, to meet the urgent demand for both map making and enemy activity surveillance. With evolution of fighter aircraft the need to control air space for countering air reconnaissance and to engage other fighter aircraft, near felt with much importance.

After the war, with advances in cameras design and photographic techniques, as well as with the emerging discipline of photographic interpretation, aerial reconnaissance became recognized as an essential elements of war fighting. Germans photographed the entire western front every two weeks, taking up to 4,000 aerial photographs a day.

Photographic plates were replaced by rolled transparent film magazines, after this colour films were invented strip cameras were developed and electronic flash techniques were devised. In the 1930s, the art of covert aerial reconnaissance was established, first in Germany and then in England. Col. Theodore Rowehl, a German World War I reconnaissance pilot, flew covert reconnaissance missions in a twin engine Hemkel. The mission was advertised as the air route survey in preparation for proposed Lufthansa airlines route expansions. With a pair of hidden 29-inch cameras Col. Rowehl mapped militarily significant areas in Russia and England.

In 1938, British began covert reconnaissance with twin engine lockheed 12A aircraft which was registered to and flown by Australian businessman Fredrick Cotton. This plane was equipped with two hidden cameras below the pessenger cabin. Using this system Cotton flew over the important military places in Germany, providing British intelligence with a mosail of German military preparedness and status.

Frederick Cotton made various suggestions about the structure of reconnaissance plane, his suggestion played major role in designing the reconnaissance plane for war operations.

"He wanted a single seat, small aircraft with no armament or radio to allow room for extra fuel. It would be specially painted to reduce visibility and would rely on speed, climb and ceiling to avoid destruction. His requirements set the tone for successful World War II reconnaissance aircraft."[17]

The search of ultimate "high ground" from which to gather definite information about enemy and friendly forces. The requirement of military intelligence for nations security, seeks data from the advantageous platforms of orbiting satellites. Space reconnaissance establishes finite gates

---

17. Roger K. Engel, "Imagery Intelligence for U.S. Military Forces," Signal, Sept. (1986), p.56.

of credibility during international tension, effectively ensuring that potential enemy's troop or ship movements cannot be kept secret.

Space surveillance and intelligence gathering requires a sophisticated infrastructure qualitatively superior to that possessed by the most defence organisations around the world.

"...The British forces engaged in the Falkland fighting of 1982 would have found it much tougher going without an access to US space based fleet communications and reconnaissance system."[18]

Satellites such as navigation, communication, surveillance and early warning satellites will be designed for permanence and thus be put into 'geostationary' orbits at an altitude above the equator and at a velocity where the period of orbit will watch the earth's rotation. Photo reconnaissance satellites in contrast might be placed into low earth orbit lasting a matter of days reaching their porigee (the lowest point of the orbit) over the areas of maximum interest for a close look.

The military significance of space shuttle has develops, its capacity of payload 30,000 kg. into a 1,100 km. orbit and ability to replace the system with capture of rival satellites and disabling the system.

---

18. Christy Campbell (ed.), Understanding Military Technology (London, 1985), p.141.

The first operational US photo reconnaissance satellites was Tiros 1 in April 1960 and the first Soviet was Cosmos 4 two year later.

With the development of higher resolutions and more effectively data processing, remote sensing systems will provide increasingly effective images of the Earth. Currently there are two operational commercial remote sensing satellite systems: Landsat and SPOT.

Landsat 5 and SPOT have the following characteristics:

. Orbit: Landsat has a sun-synchronous, near polar orbit 705 kilometres from Earth. A complete orbit cycle takes 16 days SPOT has a circular, sun synchronous, near polar orbit 832 kilometres from Earth with a 26 day cycle.

. Resolution: Landsat has seven spectral band TM with 30 metre colour resolution and a four spectral band MSS with 80 metre colour resolution. SPOT has a three spectral band scanner with 20 metre colour resolution and a panchromatic sensor with 10 metre black and white resolution. Because of its orbit, SPOT can observe a point seven different times when the satellites is located at the equator and 11 times when located at 45 degrees latitude.

. Sensors: Landsat has a "whiskbroom" scanner in which several short live arrays of sensors cut across the scan. SPOT has a 'pushbroom' system in which several long arrays

of sensors move along the scan.

. Unique features: Because Landsat has been in operation for several years. EOSAT has filed more than one million scenes in its archives to compare images over the long term. SPOT can create three dimensional images with its stereoscopic capabilities.

Advances in remote sensing and space surveillance has made a direct impact on photo intelligence and in near future this impact is going to be great thrust for better intelligence purposes.

"The need for strategic photographic reconnaissance to support future wartime needs clearly still exists. However the development of the Airland Battle doctrine and the need to support power projection and third world peace keeping mission have created the requirements for a new, more responsive and demanding approaches to tactical surveillance and reconnaissance."[19]

Reconnaissance:

"Surveillance was historically the first role of military flying machines, and it dates from the balloons which the French employed at the battle of Flerus in 1794.

---

19. Roger K. Engel, op. cit. (1986), p.56.

Many modern aircrafts have been adapted for the reconnaissance role, in addition to specially designed high-altitude spy-planes like the American SR-71 and TR-1. Thus the reconnaissance version of the Soviet Bison bomber wings its lonely way over the oceans of the world, while the pilots of the American RF-4 Phantoms train for their desparate dash over the battle lines on the Central Front."[20]

With so many obstacles in the way of passing intelligence reports and human agents through enemy lines, intelligence agencies had for long looked longingly at the air as means of bypassing them. It was until the Siege of Paris by Germans in 1870 that the hot air balloon was used for taking military messages over enemy lines as well as for artillery spotting.

With the advent of the patrol engine and the heavier than air machine, however, a new source of intelligence known as air photo reconnaissance or PR came into beign during the First World War. Not only was the aeroplanes, fitted with a camera, able to take hitherto unavailable and upto date pictures of enemy position and defensive work.

"...With no experience in air reconnaissance observes frequently made stupendous misinterpretative, mistaking

---

20. Hugh Faringdon, Strategic Geography - NATO, the Warsaw and the Superpowers (London, 1989), p.35.

cloud shadows for swarms of infantry or tar patches for tarpaulin covers! But by the end of 1914 both sides of the Western Front came to accept the aircraft as the prime method of obtaining intelligence about the enemy, visual sightings being aided by photography, which was also used for mapping."[21]

The overhead means of surveillance first became available in the 1950s, on a strategic scale, with the development of the U-2 (U = 'utility') aircraft. For the first it became possible to photograph huge sectors of an entire continental size country. High altitude spacecrafts placed for Intelligence but did not replace entirely the coverage provided by the U-2 and a later reconnaissance aircraft, the SR71. Recovery of film continued to impose a significant limitation with the satellite.

Now 'real time' satellite photography is becoming available by the use of electronic scanner that translate film image instantaneously to telemetry and relay this information through companion communications satellites for immediate production of photography at ground stations.

Landsat:

General Electric Company's Landsat D programme for US National Aeronautics and Space Aviation (NASA) the most

---

21. William V. Kenney, op. cit. (London, 1983), pp.120-22.

advance commercial system for surveillance and reconnaissance. It gathers its information by analysis of radiometric bands monitored by its sensors, rather than from optical photography alone.

Earlier Landsat systems were limited to a ground of just over 262 feet. Landsat D provides a resolution of about 98 feet, at least as good as the earliest military surveillance systems. Landsat is able to supply photographs "assembled" from telemetry within 48 hours or less of transmission from the satellite. Electronic enhancement could sharpen images for better interpretations. New satellites systems like key hole - KH-9, KH-11 etc. and "Big Bird" launched by NASA also provides better intelligence.

KEYHOLE SATELLITES:

Spaceborne espionage started in the summer of 1960, when the CIA began photographing the Soviet Union, with its Descovere satellites. New types of picture taking satellites flew under a programme code-named 'keyhole'. The 1971 KH-9 satellite, dubbed Big Bird because of its 30,000 pound Greyhound bus size, developed film far wide area images on board and beamed the pictures to Earth as T.V. signal.

"All that changed in 1976 when the first KH-11, code named Kennan, began operating from a special orbit

that keeps the sun at a constant angle with respect to objects on Earth."[22]

KH-11 helps detect movement and the size of objects. KH-11 was an important advance in espionage because it could provide detailed high quality images almost as an event was occurring. During August 1989, space shuttle astronauts orbited an improved KH-41 in the series.

New improved KH-11 satellites are equipped with solid-state imaging sensor it uses, a charge-coupled device (CCD). A postage stamp size CCD ship available in early 1980s for scientific space telescopes with an array of 800 by 800 elements.

The elaborate array of surveillance and reconnaissance and intrusion devices has spawned almost equally complex array of countermeasures designed to protect a nation from space surveillance and reconnaissance. Single most important counter-intelligence devices coming into operation is the space shuttle. With its apparent ability to intercept, examine and capture the satellites of foreign power. It also operates as an anti-satellite and anti-reconnaissance interceptor.

---

22. William E. Burrows, "Space Spies", Popular Science, March (1990), p.62.

advance commercial system for surveillance and reconnaissance. It gathers its information by analysis of radiometric bands monitored by its sensors, rather than from optical photography alone.

Earlier Landsat systems were limited to a ground of just over 262 feet. Landsat D provides a resolution of about 98 feet, at least as good as the earliest military surveillance systems. Landsat is able to supply photographs "assembled" from telemetry within 48 hours or less of transmission from the satellite. Electronic enhancement could sharpen images for better interpretations. New satellites systems like key hole - KH-9, KH-11 etc. and "Big Bird" launched by NASA also provides better intelligence.

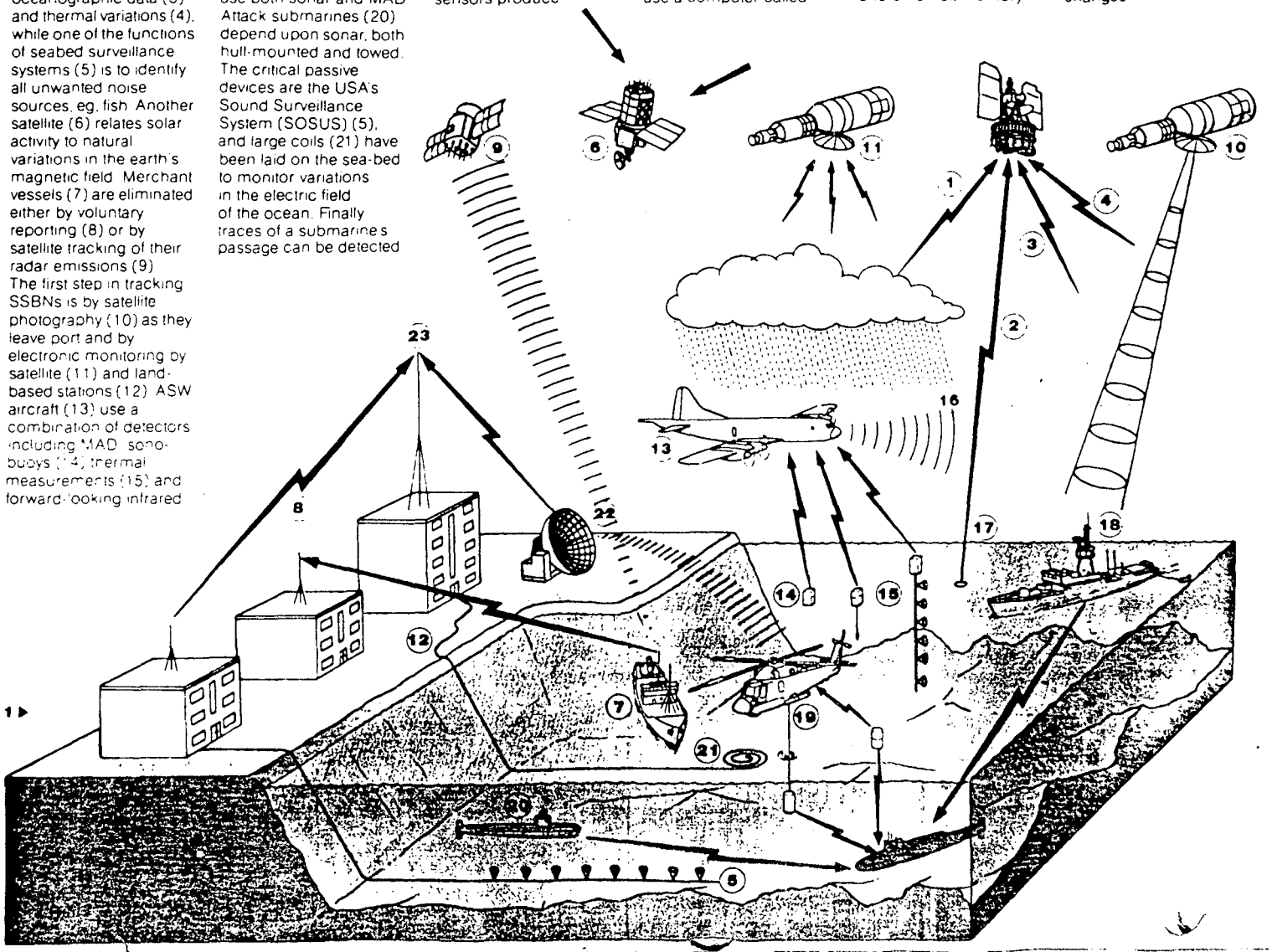
KEYHOLE SATELLITES:

Spaceborne espionage started in the summer of 1960, when the CIA began photographing the Soviet Union, with its Descovere satellites. New types of picture taking satellites flew under a programme code-named 'keyhole'. The 1971 KH-9 satellite, dubbed Big Bird because of its 30,000 pound Greyhound bus size, developed film far wide area images on board and beamed the pictures to Earth as T.V. signal.

"All that changed in 1976 when the first KH-11, code named Kennan, began operating from a special orbit

Intelligence and the war at sea

1 As water is a complex medium it is first necessary to establish existing conditions. Satellites monitor weather (1), seastate (2), oceanographic data (3) and thermal variations (4), while one of the functions of seabed surveillance systems (5) is to identify all unwanted noise sources, eg, fish. Another satellite (6) relates solar activity to natural variations in the earth's magnetic field. Merchant vessels (7) are eliminated either by voluntary reporting (8) or by satellite tracking of their radar emissions (9). The first step in tracking SSBNs is by satellite photography (10) as they leave port and by electronic monitoring by satellite (11) and land-based stations (12). ASW aircraft (13) use a combination of detectors including MAD, sono-buoys (14), thermal measurements (15) and forward-looking infrared (16). Rapidly Deployed Surveillance System (17) is air-delivered. Surface ships (18) depend mainly on sonar, while ship-based helicopters (19) use both sonar and MAD. Attack submarines (20) depend upon sonar, both hull-mounted and towed. The critical passive devices are the USA's Sound Surveillance System (SOSUS) (5), and large coils (21) have been laid on the sea-bed to monitor variations in the electric field of the ocean. Finally traces of a submarine's passage can be detected at considerable distances by Over-The-Horizon (Backscatter) radar (22), aircraft-mounted FLIR (16) and satellite. All these sensors produce such a vast volume of raw data that it must be fed into a computer for analysis (23). The Americans, for example, use a computer called Illiac-4 for real-time collation and analysis of array-gathered information, this uses 64 normal computers in parallel with a one-billion bit memory. The purpose of all this in war is clear, but the ASW battle in peace is equally vital to establish deployment norms and to monitor changes.



SENSORS:

Modern electronic technology during the past forty years has produced numerous intrusion detection devices used in various commercial and government institutions, by which it is possible for surreptitious entry to be monitored at a distance.

The first major deployment of 'Remote Sensors (REMS) was by US forces in 1967 in Vietnam in the so called "McNamara lines". A variety of sensors were used to provide indication of infiltration by enemy forces and supply transport from North Vietnam.

This use of REMs hinted for future development of sensing devices for defense purposes. To cover gaps in ground, where the ground troop cannot be deployed and for longer-range intelligence collection purpose. REMs use felt necessary. REMs can also be employed for offensive purpose, seismic REMs can detect enemy movements and can give advance warning of troop location. During 1969, US marines used this devices as reconnaissance tool in An Hoa-Basin (Vietnam).

Today, NATO force commanders have a wide variety of REMs at their disposal. Modern REMs are categorised according to the means of detection they employ and the methods of emplacement which is used. The four means of

detection are: Electromagnetic, Magnetic, Acoustic and Seismic.

Seismic Detection

Seismic detection based upon detecting infrations carried through the ground, caused by anything from rainfall to earthquakes. Present day sensors can detect an individual moving at distance upto 100 feet and vehicles upto 1,000 feet and skilled operators can distinguish between types of vehicles or numbers of individuals.

Acoustic Sensors

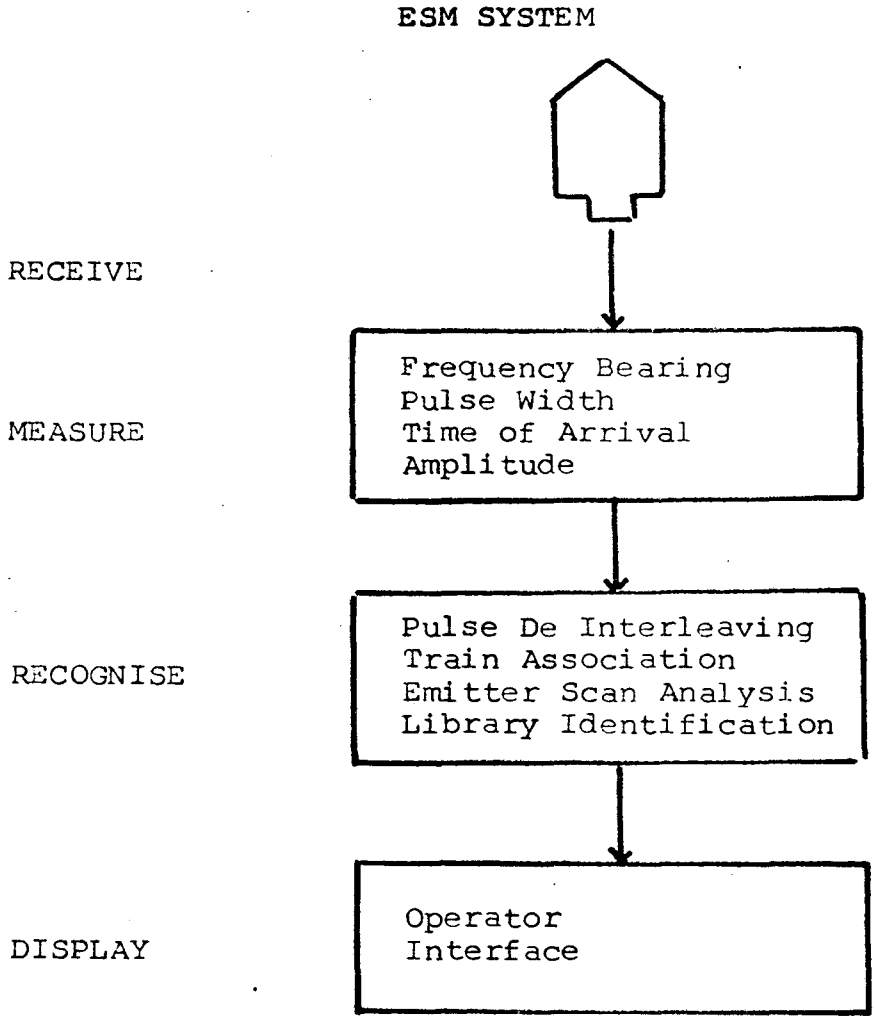
This sensor operates in a same manner as sensitive microphones and their range is about the same as the human ear. Normally, acoustic sensors activated after an indication from a seismic sensor.

Magnetic Sensors

Magnetic sensors operate by detecting movement of some ferrous metal up to about 13 feet for personnel or about 82 feet for vehicles. Magnetic sensors are also used in confirming the seismic data.

Electromagnetic Sensors

These sensors are used to detect intrusion, which occurred in electromagnetic field. These sensors are placed in battlefield to detect movements of troops and vehicles.



KEY FUNCTIONS OF A RADAR ESM SYSTEM

Source: D.G. Kiely,"Naval Electronic Warfare", Brassey's Def. Pub., Vol.5 (1988), Fig.3.2, p.22.

The indication of movement can be confirmed by the other devices.

Ground Surveillance Radar (GSR)

In battlefield, it is not possible for every where to put all surveillance devices under this condition the "Ground Surveillance Radar" is to be employed for detection of targets. GSR assets are able to provide combat information as well as target locations, but can also provide security by early warning of enemy movements.

NATO forces employing the Radar Set AN/PPS-5A, can detect moving vehicles to a distance about 11,000 yards (10,000 m) and moving personnel to just over 6,000 m. Soviet Warsaw Pact unit employs GS-12, which can detect moving vehicle to about 13,125 yards (12,000 m) and moving personnel to around 3,828 yards (3,500 m).

The Vindicon Television Camera

An alternative and more attractive system for use on orbital platforms is the VTC. It gives the operation reliable and stable image data but it is not useful for first generation of the data.

The Photographic Camera

Electromagnetic energy emitted by the object of earth's surface can be detected by the sensors and the

image can be formed. Pancromatic aerial photography has for long been the principal sensing technique. Multilens cameras are being used with four to ninelens for separate spectoral information.

CONCLUSION

"Intelligence as knowledge implies an interpretation and analysis of factual information and future prediction, including whether or not a particular policy is likely to accomplish the goal for which it is intended. High policy usually hinges on intelligence as knowledge. An example is U.S. policy towards Vietnam. In the Kennedy and Johnson administrations, two different views of the nature of the struggle in Vietnam were debated."[1]

Only a few years ago it could be said that collection of information was the major problem confronting governments. A massive technical revolution in information gathering means has brought about drastic changes in that situation. Today analysis of the ocean of information available is by far the most difficult problem with which the users of intelligence must contend.

There has been a continual pattern of change in the requirements of military intelligence. The trend has been towards an extension forwards, and to the flanks of the geographical areas of interest both of army commander in the field for tactical intelligence and of the army high command for strategic intelligence. This extension has resulted from the continual increase in the range and power of destruction of military weapons and from the increase of

---

1. Alfred C. Maures, M.D. Tunstall and J.M. Keagle (eds.), Intelligence Policy & Process - Roger Hillsman - International Environment, the State & Intelligence (Westview Press, London, 1985), p.21.

mobility of army.

The extension of the range and breadth of interest of the military has had the effect of impinging upon the interest of the other armed services and of foreign offices, with the result that intelligence has increasingly been collatech evaluated and disseminated by a single combined organization in each country. The trend originated in the second World War for better intelligence requirements for future operations and success. The increased requirements for future operations and success. The increased requirements for strategic intelligence - naval, military, air, political, scientific, technical, economic, communications, industrial and geographical meant that the only economical way of dealing with these requirements of individual armed services was by means of a single fully integrated defence intelligence staff.

Now methods and techniques evolved for collection, collation and dissemination of intelligence; and to keep pace with the requirements of intelligence, the intelligence staff has grown in numbers.

"The rate of change has itself been accelerating, particularly since the end of the 19th century; where one man with a quill pen could cope with the collation of military intelligence of all kinds on one or more countries in 1900, we now have large staffs served by banks of computers

to process the vast amount of paper emanating from sophisticated collection methods...."[2]

It is better to spend more on intelligence in peace time rather than on armed forces and defence so as to get more information about the developments in hostile nations. Intelligence Organisation is a must for any country which wants to maintain a lead in the field of strategy and tactics.

Since the invention of the guided missile in all its tactical and strategic variations, in combination with the nuclear warheads. It is estimated that no more than a few minute's notice of a nuclear missile attack will be available to any country in any future nuclear war. This means that nuclear force must be permanently on the alert. Thus the need for an efficient military intelligence machine in peacetime has become paramount.

The requirements for military intelligence in the future are likely to grow, not only will it have to cover a greatly extended range of increasingly sophisticated weapons and equipment but it will also have to cover the possibility of local and global conflicts, conventional and nuclear war. Keeping track of terrorist and other subversive organizations will be an additional

---

2. Peter Gudgin, Military Intelligence (Arms & Armour, London, 1989), p.132.

At the tactical level, the commander in the field will still need his own eyes and ears; but due to greater range and destructi e power of enemy weapons and great mobility of enemy forces this function has acquired greater urgency than in the past.

In future, much greater reliance is to be placed up on covert technical methods of collection of intelligence than upon covert HUMINT. Technical methods are generally inherently more reliable and the intelligence they provide is also more quantifiable. Moreover, many problems associated with human agents are thereby eliminated. With the accelerated pace of developments in electronics, more sophisticated means of 'eavesdropping' on the plans and communication of potentially hostile countries will follow rapidly upon one another, keeping ahead of means of countering them.

"All intelligence information concerns either the intensions or the capabilities of the adversary. Although this sounds simple enough, actual sorting, evaluation, and corroboration of information is an extremely intricate and time consuming process. An error of judgement in one phase may set off a chain reaction of errors causing potentially serious analytical distortions."[3]

---

3. Alfred C. Maures, M.D. Tunstall and J.M. Keagle (eds.), Intelligence Policy & Process, Michael-I Handel - strategic surprise: The politics of Intelligence & the Management of Uncertainty (Westview Press, 1985), p.248.

The main disadvantage of technical means of intelligence collection is their cost, which is infinitely more than that of their human equivalents; in addition, once they are in place alteration or modification is virtually impossible, as is repair if they go wrong. The disadvantage that ensures the perpetuation of human espionage agent, however, is the lack of judgement of the computer, the microphone and the camera; this lack can be rectified at the collation and analysis stages, but only if these are carried out by human agents rather than by computers. This is not to say that computers do not, and will not increasingly, have a part to play, both in the collation and dissemination of intelligence; the electronic dissemination of intelligence analyses from the desk of the analysts to that of the policy makers could, in certain circumstances, be both a time saver and a means of reducing paper and thus increasing security, particularly if the system incorporated a 'talk back' facility.

Certainly the C^3 systems of military headquarters in the field are making increasing use of computers to provide upto date information, including intelligence information to the commander and his staff; the latter represent the human element in the loop in this instance, providing the judgement lacking in the computers and the rests of the C^3 systems.

It is probable that the future will see further increase in the quantity and quality of intelligence, collected from technical sources in peace time. This is because of to improvements in sensors, control system and communications, as well as an increase both in number, capacity and speed of operation of computers which will be used for both the analysis of raw intelligence and the dissemination of processed intelligence.

It is also probable that HUMINT, at least in the form of covert agent reporting, will represent an ever decreasing proportion of the total military intelligence 'take' compared to covert Intelligence from technical sources as SIGINT, COMINT and IMINT. The bulk of peacetime military intelligence, however, will continue to stem from overt sources such as the International Press, defence periodicals, radio-broadcasts, television, manufacturers' brochures and foreign government publications.

The Soviet Union kept their geographical feature unknown to the world by prohibiting the drawing of accurate maps since 1930s. This internal distortion of maps to an end when the Soviet landscape was photographed by the UZs and other US satellites.

In a rare interview with the Soviet newspapers Pravada in September 1988, the head of the KGB declared that

despite 'detente', the cold war between the Eastern and Western Intelligence agencies continued. He also claimed that in the preceding thirty months, the KGB had trapped some twenty spies, including KGB officers working as double agents. In addition, he mentioned the finding of several large US nuclear-powered devices near the Soviet submarines cables in the seas of Okhostk, full of listening equipments for trapping the telephones and other messages carried out by cables. No doubt such efforts by both sides will continue for the foreseable future.

In the event of war, the picture will be different, it will depend upon the army's engagement. Whether the army is involved in local conflicts or an all out nuclear war, in both cases, however, overt Intelligence will represent a majority of the military Intelligence input and it will be in the covert remainder that the difference from peace-time will be most apparent.

During the Falklands War, the United States provided satellite reconnaissance informations about Argentinian army, navy and air force movements, to the United Kingdom.

Much Intelligence would come, as before, from the interrogation and the documents of PWs (Prisoners of War), from captured orders, maps and other documents and from captured equipments. The all weather capabilities of intelligence equipments will be improved by future sensors

developments such as the sideways looking laser radar, and the means of disseminating the information so gained will be also enhancedby future communications and computer developments based on optical and digital techniques. The major technological breakthrough in reconnaissance technique is use of satellites, situated at certain positions or orbiting in known orbits. To counter this many new devices have been invented like anti-satellites, missiles, radars, killer satellites and other electronic jamming means.

The concept, 'Electronic Warfare' has changed the whole scenario about future war. This includes Electronic Intelligent (ELINT), Electronic Counter Measures (ECM), Electronic Counter-Counter Measures (ECCM) to distort adversaries command, control, communication and intelligence (C^3I).

Continuous requirement of intelligence both tactical and strategic in time of war might involve old and new methods respectively. In nuclear war, the Electro Magnetic Pulse (EMP) could damage the whole electronic irrintry, nuclear radiation can also have deleterious effects upon optical equipment; anti-satellites missiles, sensors, lasers and the proposed Strategic Defence Initiative (SDI) make satellites highly vulnerable in the future. Again the importance of HUMINT emerges to gain intelligence.

With the growing importance surprise attack, arms control, crisis monitoring, combat operations and so on, military intelligence, with all the complex tool at its disposal, has a bright future.

BIBLIOGRAPHY

Books:

Agee, Philip, On the Run (London: Bloomsbury Publishing, 1887).

Barnaby, Frank, The Automated Battlefield (London: Sidgwick & Jackson, 1986).

Barron, John, KGB - The Secret Works of Soviet Agent (London: Hodder and Stoughton, 1974).

_____, KGB Today - The Hidden Hand (London: Hodder & Stoughton, 1983).

Barnaby, Frank and Dunsedby, Peter Nicholas (eds.), Future War - Armed Conflict in the Next Decade (London: Michael Joseph, 1984).

Campbell, Christy (ed.), Understanding Military Technology (Middlesex: Hamlyn Pub. Group, 1985).

Chandler, Lt. Col. Stedman and Robb, Col. Robert W., Front-line Intelligence (Washington: Infantry Journal Press, 1946).

Corson, William R. and Crowby, Robert T., The New KGB - Engine of Soviet Power (New York: William Marrow & Co. Inc., 1985).

Deacon, Richard, The Israeli Secret Service (London: Hamesh Hamilton, 1977).

_____, A History of the Japanese Secret Service (London: Frederick Muller Ltd., 1982).

Dickson, Paul, The Electronic Battlefield (London: Marion Boyars, 1976).

Dartford, Mark, Military Technology - The Scientific Super-Machines of Modern Warfare (Marshall Cavendish Ltd., 1985).

Davidson, Col. Philip B. and Glass, Col. Robert R., Intelligence Is For Commanders (Harrisburg, Pennsylvania: Mil Service Pub. Co., 1952).

Dvornik, Francis, Origins of Intelligence Service (New Jersey: Rutgers University Press, 1974).

Eisenberg, Dennis and Uri Dan, Eli Landan, The MOSSAD. Israel's Secret Intelligence Service (Corgi Books, 1978).

Fitzgibbon, Constantine, Secret Intelligence in the Twentieth Century (London: Hart Davis Macgibbon, 1976).

Friedman, Col. Richard S.; Gunston, Bill; Hobbs, David; Miller, Lt. Col. David; Richardson, Dong and Wolmer, Max, An Illustrated Examination of Advanced Technology Warfare: A detailed study of the Weapon and Techniques for Warfare Today and into 21st Century (London: Salmander Book, 1985).

Foss, David Miller Christopher F., Modern Land Combat (London: Salmander Book, 1987).

Griffith, Samuel B. (Trans.), Suntzu The Art of War (London: Oxford Univ. Press, 1971).

Gordon, Don E., Electronic Warfare - Elements of strategy and Multiplier of Combat power (Pergamon Press, 1981).

Gudgin, Peter, Military Intelligence: The British Story MI? (London: Arms & Armour, 1989).

Haswell, Jock, Spies and Spymaster - A Concise history of Intelligence (London: Thames & Hudson, 1977).

Heymont, Lt. Col. Irving, Combat Intelligence In Modern Warfare (Harrisburg, Pennsylvania: Mil-Service Division, The Stockpole Co., 1960).

Jacobsen, Carl G. (ed.), The Uncertain Course. New Weapons, Strategies and Mind Sets (SIPRI, Oxford Univ. Press, 1987).

Jasani, Bhupinder and Sakata, Toshibomi (eds.), Satellites For Arms Control and Crisis Monitoring (SIPRI, 1987).

Kennedy, Col. William V., The Intelligence War: Penetrating the Secret World of Today's Advanced Technology Conflict (London: Salmander Books, 1983).

Knightley, Philip, Philby - KGB Masterspy - The Life and Views of The KGB Masterspy (London: Andre Deutsch, 1988).

Obe, R.G. Lee, Introduction to Battlefield Weapons Systems & Technology (Oxford: Brassey's Pub. Ltd.).

Maurer, Alfred C. and Tunstall, Marion D. (eds.), Intelligence - Policy and Process (London: Westview Press, 1985).

Maas, Peter, Manhunt (London: Harrap, 1986).

Marchetti, Victor and Marks, John D., The CIA and the Cult of Intelligence (London: Jonathan Cape, 1974).

Malik, Brig. S.K., The Quranic Concept of War (New Delhi: Himalayan Books, 1986).

Melman, Yossi and Raviv, Dan, The Imperfect Spies - The History of Israeli Intelligence (London: Sidwick & Jackson, 1989).

Morris, D.J., Communication for Command and Control System (Pergamon Press, 1983).

Newman, Bernard, The World of Espionage (London: Souvenir Press, 1962).

Perkins, Maj. Gen. K., Weapons and Warfare - Conventional Weapons and their roles in battle (Brassey's Defence Publishers, 1987).

Pincher, Chapman, The Secret Offensive - Active Measures; A Saga of Deception, Disinformation, Subversion, Terrorism, Sabotage and Assassination (London: Sidgwick & Jackson, 1985).

Price, Alfred, Instruments of Darkness - The History of Electronic Warfare (London: Macdonald & Jane's, 1978).

Ranelagh, John, The Agency - The Rise and Decline of the CIA - From Wild Bill Dononan to William Casey (New York: Simon & Schuster, 1986).

Rich, Elaine, Artificial Intelligence (McGraw Hill Book Co., 1986).

Richardson, Dong, An Illustrated Guide to the Techniques and Equipment of 'Electronic Warfare' (London: Salamander Book, 1985).

Rodgers, Al; Fowler, I.B.R.; Garland-Collins, T.K.; Gould, J.A.; James, D.A.; and Roper, W., Surveillance & Target Acquisition Systems Brassey's Weapons Systems & Technology, Vol.VII (UK: Royal Mil College of Sc. Shrivenham, 1983).

Schlesinger, Robert J., Principles of Electronic Warfare (California: Peninsula Publishing, 1961).

Shaker, Steven M. and Wise, Alan R., War Without Men - Robots on the Future Battlefield (Pergamon: Brassey's, 1988).

Smith, Russell Jack, The Unknown CIA - My Three Decades with Agency - Russell Jack Smith (Former Deputy Director for Intelligence, Central Intelligence Agency), (Pergamon: Brassey's, 1989).

Streetly, M., Airborne Electronic Warfare - History, Technigues and Tactics (London: Jane's Pub. Co., 1988).

Roym, Stanley, World War II: Photo Intelligence (Sidgwick & Jackson, 1981).

Strong, Maj. Gen. Sir Kenneth KBE.CB, Intelligence at the Top - The Recollections of an Intelligence Officer (London: A Giniger Book, 1968).

Suvorov, Victor, Soviet Military Intelligence (London: Hamish Hamilton, 1984).

Taylor, John W.R. and Mondey, David, Spies in the Sky (London: Ian Allen, 1972).

Tuck, Jay, High Tech Espionage. How the KGB Smuggles NATO's Strategic Secrets to Moscow (London: Sidgwick & Jackson, 1986).

Ward, J.W.D. and Turner, G.N., Military Data Processing & Microcomputers Brassey's Battlefield Weapons Systems & Technology, Vol.IX (UK: Royal Mil. College of Science Shrivenham, 1982).

Way, Peter, Codes and Ciphers (London: Aldus Books, 1977).

Willcox, A.M.; Slade, M.G. and Ramsdale, P.A., Brassey's Battlefield Weapons System & Technology Series, Vol.VI, Command, Control & Communication (C3) (Brassey's Defence Publishers, 1983).

Wise, David, The Spy Who got Away - The inside Story of CIA Agent Who Betrayed his country (London: Collins, 1988).

Yost, Graham, Spy Tech (London: Harrap, 1985).

Becket, Henry S.A., The Dictionary of Espionage Spookspeak into English (New York: Stein & Day Pub., 1986).

Hastings, Max (ed.), The Oxford Book of Military Anecdotes (Oxford: Oxford University Press, 1985).

Heinl, Robert Debs Jr., Dictionary of Military & Naval Quotations (Naval Institute Press, 1985).

Hooton, E.R. and Munson, Kenneth (eds.), Jane's Battlefield Surveillance 1989-90 (Jane's Defence Data, 1989-90).

Lawrence, Freedman, Atlas of Global Strategy war and Peace in the Nuclear Age (London: Macmillan, 1985).

Luttwak, Edward, A Dictionary of Modern War (Allen Lane: The Penguin Press, 1971).

Quick, John, Dictionary of Weapons & Military Terms (McGraw Hill Book Co., 1973).

Articles:

Aarom, M.G.H., "The Objectives of Army Intelligence", Armor (New York, N.Y.), Vol.8-9, No.8, Sept.-Oct. 1976, p.22.

Areangelis, Adm. Mario de, "The Case for Soft C^3 Counter-measures", Military Technology (Bonn), Vol.VIII, No.2, p.82.

Baldwin, H.W., "The Future of Intelligence", IDSA Strategic Digest (London), Vol.4, No.4, p.36.

Babcock, James H. and Oleson, Peter C., "Intelligence Concerns for the 1990s", Signal (Fairfax), Vol.43, No.10, p.147.

Boyes, Dr. Jon L., "The Future Influence of C3 Technologies", Signal (Fairfax), Vol.42, No.10, p.113.

Jen L., Dr. Boyes, "Intelligence Sharing and Nuclear Conflict", Signal (Fairfax), Vol.41, No.1, p.46.

Burrows, William E., "Space Spies", Popular Science (New York), Vol.236, No.3, pp.61-65.

Boxhall, Maj. P.G., "Arab Generalship from Mohammed the Prophet to Ibn Saud, the Lord of Arabia", Army Qutly (London), Vol.7, p.27.

Chanakya Tech. Correspondent, "C3 Warfare", Chanakya Annual (Allahabad), 1979, pp.101-16.

Das, Maj. Gautam, "Intelligence Needs on Today's Battlefield", Combat J. & Journal Mhou, Vol.12, No.2, Aug. 1985, p.57.

Feidman, Norman, "Sentries in the Sky", Military Technology (Bonn), Vol.VII, No.6, 1984, p.120.

Flore, Romano, "An Introduction to Electronic Intelligence", Military Technology (Bonn), Vol.XII, No.5, May 1988, p.112.

Frankel, Michael S., "In Pursuit of Survivable C3", Signal (Fairfax), Vol.42, No.10, 1988, p.157.

Geisenheyner, Stephan, "HUMINT, IMINT & SIGINT: The three Conversations of Intelligence Gathering", Armada Int., Vol.12, No.6. 1988-89.

Gerencser, Mark and Smetek, Rom, "Artificial Intelligence: Technology & Application", Military Technology (Bonn), Vol.IX, No.6, 1985, p.67.

Gibbs, Col. C.W., "Gathering and Distribution of Battlefield Information", Army (Australia), Vol.2, Feb.1960. p.68.

Howard, Maj. W.L., "Technical Intelligence", Infantry (Melbourne), Vol.71, No.3, May-June 1981, p.17.

Jerath, Maj. Gen. P.C., "Battlefield Surveillance Policy", Combat Journal Mhow, Vol.13, No.1, April 1986, p.75.

John, "Surveillance & Reconnaissance For Air Land Battles", Military Technology (Bonn), 1985.

Jundt, Charles H., "C3 Requirements for Today's Battlefield", Military Technology (Bonn), Vol.IX, No.6, 1985, p.43.

Latham, Donald C., "C3I Acquisition Strategies", Military Technology (Bonn), Vol.XI, No.5, 1987, p.18.

Latimer, Thomas K., "U.S. Intelligence & The Congress", Strategic Review (Summer) (London), Vol.VII, No.3, 1979, p.47.

Lynch, Capt. Ricky and McGee, Capt. M.R., "Mil. Application of Artificial Intelligence and Robotus", Military Review (Bonn), Vol.12, Dec. 1986, p.6.

Mallorie, Air Vice Marshall P.R. CB AFC, "Electronic Warfare, Command Control Communicattons and Intelligence" in Maj. Gen. K. Perkins (ed.), Weapons & Warfare Conventional Weapons and their Role in Battle (London: Brassey's Def. Pub., 1987), pp.231-72.

McMillan, Karl, "Electronic Intelligence", Chanakya Defence Annual (Allahabad), Annual 1970-71, p.42.

Parry, Don, "Electronic Warfare on the Modern Battlefield: A brief look at the ESM, ECM and ECLM Techniques", Armada Int. (Australia), Vol.12, No.4, Aug.-Sept. p.28.

Piotzowski, Gen. John L., USAF, "Mil. Development in Space", RUSI & Brassey's Defence Year Book, 1989 (London: Brassey's Defence Publishers, 1989), p.263.

Sareen, Maj. Virendra, "System Approach to Intelligence System Analysis and Resources Management", Combat Journal (Mhow), Vol.13, No.2, pp.61-8.

Rose, Maj. K.H., "Why Artificial Intelligence Won't Work", Military Review, Vol.12, Dec. 1986, p.31.

Smith, Lt. Col. Charles F., "Command Control & Communication Countermeasures (C^3CM)", Military Review, Vol.IX, 1983, pp.45-6.

Thomas, Maj. C.W., "Combat Intelligence for the Deep Attack", Military Review, April 1983.

Thurbon, Michael, "Electronic Warfare", RUSI & Brassey's Defence Yearbook (London: Brassey's Defence Pub., 1983), p.185.

Weinberger, C., "Importance of Conventional Defence", Jane's Def. Weekly (London), Jan. 10, 1987, p.13.

Williamson, John, "Multiple Uses of Electronic Warfare", Jane's Defence Weekly Survey (London), 4 July 1987, p.31.

Wickham, Gen. John A.,"C3I as a Force Multiplier", Signal (Fairfax), Vol.42, No.8, 1988, p.21.

Wagner, Gen. Louis C. Jr., "Modernizing the Army's C3I", Signal (Fairfax), Vol.43, No.1, 1989, p.29.