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UNCLASSIFIED ARTICLES

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The story behind the East-West experts' exploration of nuclear test detection methods and their agreed conclusions, pregnant with latent purport for intelligence.

POLICING A NUCLEAR TEST BAN

Herbert Scoville, Jr.

The East-West conference on methods of detecting violations of any international agreement to suspend nuclear tests, held in Geneva from 1 July to 21 August 1958, was in effect, as might be expected, a USSR-West conference. The Western delegation, a single team with members from the United States, the United Kingdom, France, and Canada, faced four separate delegations from the USSR, Czechoslovakia, Poland, and Rumania; but the Satellite delegates only presented papers apparently prepared by the Soviets and made no substantive contribution to the discussions. The Soviets attempted to broaden the scope of the conference to include agreement to stop testing nuclear explosions, but the Western delegations succeeded in maintaining the position that the agenda was technical, not political, and that the decision on halting tests was not a matter for consideration. Nevertheless the technical discussions were colored throughout with political overtones, and several of the technical agreements reflect Soviet political concessions.

The conference agreed first on technical methods which might be useful in a detection system and on the capabilities of each of these methods for identifying explosions under different types of conditions. Both sides agreed on the use of acoustic waves, radioactive debris, seismic waves, and electromagnetic (radio) signals to detect and identify surface, atmospheric, underground, and underwater explosions. For explosions at very high altitudes (30 to 50 kilometers and above) several additional methods of detection were discussed and considered promising, but none were specifically recommended for inclusion in the system, since experience with explosions at such heights is lacking.

After reaching agreement on these basic methods the conferees agreed on the technical equipment which would be required to put them to effective use, and then consolidated them into a recommended worldwide control system for policing a nuclear test suspension, specifying in some detail its technical requirements and disposition. This recommended system includes a provision for inspection of locations in which the control network has detected possibly natural phenomena that it has not been able to distinguish from nuclear explosion effects.

The Agreements

Acoustic Waves. It was agreed that with a sufficient distribution of listening posts the acoustic wave method would be effective in measuring and locating one-kiloton explosions in the air up to an altitude of 30 or perhaps 50 kilometers. The acoustic method is not applicable to underground explosions, but under the oceans even small explosions can be detected by hydroacoustic methods to distances of 10,000 kilometers. The instruments which record these air or water pressure waves can be expected to improve in precision and sensitivity, but they will not always be able to distinguish between acoustic signals from nuclear explosions and those from some infrequent natural events such as meteor falls, volcanic eruptions, and submarine disturbances. Acoustic detection must therefore be supplemented by other methods, even to identify explosions which do not occur underground.

Radioactive Debris. It was agreed that analysis of radioactive debris is effective in identifying and locating either fission or fusion explosions, and three methods of collecting samples were recommended. Control posts 2000 to 3000 kilometers apart on the ground would detect one-kiloton explosions in the air up to 10 kilometers high by sampling fallout 5 to 20 days afterwards, but would be subject to considerable error in determining the place of explosion and to some error in determining the time. If the approximate location of a suspected explosion is known, however, an aircraft can collect samples two to five days afterwards for a close determination of time and place. Shallow underground and underwater explosions are also susceptible of detection, with less reliability, by these means. Finally, inspection teams might collect samples from suspected

sites of underground or underwater explosions, as well as surface tests, and examine them for radioactive debris.

It was recommended that ground posts and existing aircraft flights over international waters be used for routine sampling, and that when other detection data indicated a need for air samples over the territory of any nation, that nation's aircraft should carry observers from other nations in the control organization in sampling flights over predetermined routes. The debris method would become increasingly effective with prolongation of a period free of nuclear explosions and with the perfection of sampling and analysis techniques.

Seismic Waves. Seismic waves provide the only method for initial detection of nuclear explosions underground or under waters not linked hydroacoustically with the oceans; and seismic wave detection is less discriminating than other methods. It was agreed that, given a sufficient distribution of control posts and ordinary seismic stations, 90 percent or more of five-kiloton seismic disturbances would be identified and located within a radius of about five miles, but the identification of one-kiloton explosions would require unusually favorable conditions and unusually quiet seismic stations within a range of 1000 kilometers. It was noted that the range and discrimination of this method would probably be increased with improvements in apparatus and technique, but seismic disturbances not positively identified as natural earthquakes would probably still give rise to the greatest number of demands for regional inspections—perhaps as many as 100 per year, even if limited to magnitudes of five kilotons or greater.

Radio Signals. The radio signal caused by gamma radiation from an explosion on or above the earth's surface provides a detection means of great range and accuracy, but there is difficulty at ranges greater than 1000 kilometers in distinguishing it from the electromagnetic emissions of lightning flashes. The conference made reference also to a possibility that the radio signal might be deliberately altered or eliminated through shielding the explosion against gamma emissions. It recommended further research to improve discrimination and develop automatic equipment for this purpose.

High-Altitude Explosions. The detection of explosions at an altitude of 30 to 50 kilometers and above was discussed on

a theoretical basis, but no recommendations were made. Three methods were considered. The registration by earth satellite instruments of gamma radiation and neutrons would detect nuclear explosions hundreds of thousands of kilometers from the earth, but there are difficulties in the possibility of shielding the explosion and in uncertainties about background cosmic radiation. Light from the explosion itself and the luminescence of affected upper layers of the atmosphere would be revealing, but would not be observable from the ground in cloudy weather. Such an explosion would also create a measurable increase in the ionization of the upper atmosphere, but an unknown number of natural phenomena might produce similar effects. The detection of explosions millions of kilometers from the earth was not discussed.

The Control Network. The conference set up recommended specifications for acoustic, hydroacoustic, seismic, and electromagnetic detection equipment, and for apparatus to collect samples of radioactive debris both on the ground and in aircraft. It recommended that all ground posts of the control net be equipped for all methods of detection, except that hydroacoustic equipment would be needed only on islands and ocean shores and in ships. Ships could also collect debris samples and might use the radio and aeroacoustic methods with reduced effectiveness, but could not use the seismic method.

The number of control posts required was determined largely on the basis of the needs of the seismic method, since the discrimination of underground explosions presents the greatest problems. 160 to 170 land-based posts were recommended, 60 of them on islands, along with about 10 ships. The posts should be as close together as 1000 kilometers in seismic areas, but could be diffused to distances of about 1700 kilometers in aseismic continental areas and of 2000 to 3500 kilometers in aseismic ocean areas. It was suggested that each post might require a personnel complement of about 30 specialists plus supporting staff.

It was agreed that this system would effectively discourage violations of a nuclear test suspension: it would provide good probability of detecting and identifying all explosions down to one kiloton except those set off underground. It would detect underground one-kiloton explosions but would be able to dis-

tinguish only a small percentage of them from earthquakes. Without on-site inspection, in fact, it would be impossible to positively identify deep underground nuclear explosions even of high yields, since they could always be claimed to have been earthquakes. If, however, the ten percent or less of five-kiloton disturbances not identified as earthquakes and a number of lesser events taken at random were subject to site inspection, a violator could not feel secure against exposure no mattter what precautions he took.

The identification by inspection of deep underground nuclear explosions would still be very difficult. All the radioactive debris would remain confined in a small volume deep underground, and surface evidence might be very difficult to obtain. An inspection team would have to survey the suspect area indicated by the seismic signals for signs betraying the conduct of a test—recently used mine shafts or tunnels, excavations, logistic support for tests, or instrumentation. This task would of course be easier in completely deserted areas than in inhabited ones where signs of human activity would not be so suspicious. Finally, when suspicion of a concealed explosion was very high and the location closely determined, it might be necessary to drill many hundred feet for a sample of the radioactive material in order to prove a violation.

The Soviet Attitude

These agreements were not achieved in smooth harmony, in spite of an increasingly evident Soviet desire to avoid split conclusions. Just before the opening of the conference there was question whether the Soviets would even attend; but when the seriousness of the Western delegation was evidenced by the arrival of its members at Geneva, the Soviets also came and the conference began as scheduled. Then the first two days were spent in political maneuvers, with the Soviets attempting to force the Western side to agree in advance that if the conference were a success nuclear testing should cease. The USSR's strong propaganda position resulting from its unilateral announcement of test suspension while the United States was engaged in an extensive series of tests made it difficult to keep the Western insistence on a purely technical conference from appearing too negative: Soviet propaganda

could have exploited a breakdown of the conference in the initial stages and its published proceedings to considerable advantage. Finally, in the face of Western firmness, the Soviets requested a day's delay, obviously to obtain instructions, and then acceded to the Western position. Thereafter the discussions were almost entirely technical in nature, though shaped in some respects to take account of political factors.

In general, the Soviets attempted to make detection appear easy, while the Western delegates pointed out the practical difficulties in detecting and identifying nuclear explosions. Discrimination of natural events from possible explosions was usually simplified by the Eastern group. The U.S. representatives generally relied on the statistical use of experimental data, while the Soviets drew upon simplified theories. On one occasion, Semenov, a Soviet Nobel prize winner, amused the Western scientists by saying that the experimental evidence must have been faulty since it conflicted with his theories.

Specific evidence of Soviet desire for agreement developed toward the end of the discussion of the first of the methods for detecting nuclear explosions, that using acoustic waves. The Soviets had presented theoretical data optimizing the ranges at which explosions could be detected by this method and had proposed draft conclusions citing these ranges. Overnight three Western scientists prepared a statistical analysis, using data from more than 200 experimental observations of nuclear tests, which demonstrated that under practical conditions the ranges would be very much shorter than those given by the Soviets. The West proposed conclusions citing these short ranges. After considerable discussion of the validity of the analyses and their conclusions, the Soviets accepted the Western draft with only minor modifications. This accommodation was the first real indication that they were prepared to accept scientific facts at variance with their position in order to reach agreed conclusions.

A Major Concession

A more important demonstration of Soviet desire for agreement occurred in the discussions which followed on the use of radioactive debris for detecting and identifying nuclear explosions. Outstanding success in collecting good early debris samples by aircraft and difficulties experienced in obtaining

reliable samples by ground collection techniques had led the West to propose the use of aircraft in addition to ground sampling. The Eastern delegations, on the other hand, strongly held that ground sampling was adequate and reliable, and that the use of aircraft was unnecessary, unduly complicated, and expensive. This position was obviously based on Soviet political sensitivity to the use of aircraft for intelligence purposes. Discussion on the relative merits of the two methods was protracted. Although the Western delegation pressed for data to support the reliability of the ground detection system, the Soviets never succeeded in substantiating their unsound technical position. Private attempts were made to reassure them that our emphasis on aircraft was not based on desire for unrestricted overflight but rather on sound technical grounds, but they remained extremely chary of the inclusion of any mention of aircraft as an important element of the system.

The Soviets delayed agreement to any conclusions on this subject for several weeks, apparently awaiting instructions from home, and the conference proceeded to other subjects. Finally, however, they again acceded, agreeing to the inclusion of aircraft sampling as a basic element of the system and even to the provision that overflight of national territory might occasionally be required. Such overflights, to be sure, would be made by the aircraft of the nation involved, but they would have observers from other nations on board. This first major political concession was strong proof that if the Western delegation presented a sound technical position and held to it, the desire for agreement would lead the Soviets to give way.

In the discussions on the use of seismic waves for detecting explosions, the Soviets again tended to theorize and to simplify the problem, particularly with respect to discriminating between the seismic signals from explosions and those from earthquakes. In this case, the Soviet attitude may have been due largely to lack of scientific experience in such discrimination. The presentation of the U.S. data on the Ranier underground test in September 1957 was convincing to them and won their gradual recognition of the difficulties involved. After the differences in scientific views had been ironed out, agreement was reached on the seismic method without the raising of any major political problems. The Eastern delega-

tions accepted the Western conclusions which stipulated that, in order to identify 90 percent of the earthquakes and eliminate them as possible nuclear explosions, at least five stations should be so disposed with respect to any seismic disturbance as to obtain a strong signal capable of determining the direction of the first motion. This agreement later became a major factor in the discussions on the over-all detection system and the number of control posts required.

Next came discussions on the electromagnetic method, where the problem of discrimination between radio signals from explosions and those from lightning flashes was a dominant factor. The Soviets presented strong theoretical arguments for reliable discrimination with the use of machine methods, but no specific data to support their theory. In this discussion, however, they appeared to be in a stronger technical position relative to the West than in any of the others.

Technical Disagreements

A major difference of opinion developed at this time, and continued almost to the end of the conference, on the possibility of shielding out gamma radiation and thereby eliminating the electromagnetic signal from nuclear explosions. In the course of the discussion one of the U.S. scientists referred to success in shielding out the electromagnetic signals in a shallow underground explosion. When quizzed by the Soviets on how much earth was above the explosion the scientist had to admit the explosion occurred 75 feet underground. This amused the Soviets to no end; and although later experimental data were presented to demonstrate that even explosions on a tower could be shielded, they never fully accepted the feasibility of shielding, and tended to ridicule the Western position. Unfortunately the final record of the conference does not completely clarify the technical facts on this subject. This was a good example of how care must be used in selecting evidence to present at a meeting of this sort.

Since neither side gave any indication of experience in detecting tests at altitudes greater than 30 kilometers—this was before the U.S. ORANGE and TEAK shots at Johnson Island—high-altitude detection was discussed largely on a theoretical basis. Both sides presented material on the possibility of using gamma and neutron radiation, ionization phenomena,

and optical methods. The Soviets pressed very strongly for the use of sputniks equipped with gamma and neutron detectors, while the Western delegation urged equal consideration of the use of ionization phenomena.

The most violent session of the entire conference occurred during an informal meeting arranged to iron out the final wording of the conclusions on these methods. This meeting, which had been intended to last for only a few minutes, started at ten o'clock on a Saturday morning, broke up for lunch at four PM, and finally continued until after eight in the evening, with both sides refusing to make any concessions. The Soviets exhibited great sensitivity to the Western proposal to use radio techniques, either passive radiotelescopes or active systems, probably out of fear of their intelligence potential. No agreement was reached that day, and over the weekend the Western delegation decided not to press further for its views. Instead it agreed that the conclusions would give some preference to satellite detection over ionospheric phenomena, but would specifically recommend neither for the detection system because of the lack of experimental data. When the chairman of the Western delegation made this concession at the opening of the following session, Fedorov, chairman of the Soviet delegation, was taken aback. He said plaintively that the Soviets had spent all day Sunday preparing technical papers to refute the Western position. He was almost unhappy that the West had conceded since it prevented his delegation from presenting these studies. Furthermore, in consequence of their wasted effort, the Soviets were unprepared to proceed to the next item on the agenda.

Discussions on the equipment to be used by the detection system were almost entirely technical in nature and involved no serious disagreements. The Soviets now for the first time raised the possibility of using ships as platforms for detection stations in ocean areas where suitable land masses were not available. The usefulness of ships for acoustic and electromagnetic detection was seriously questioned by the West, and in an informal session it was agreed that use of these methods on shipboard would not be included in the conference conclusions. When these conclusions were taken up for ratification, Fedorov apparently had not been briefed that this item had been eliminated from the text, and the conclusions were rati-

fied without further discussion. Later, just after Fedorov had unjustly chastised the Western delegation for not adhering to previously agreed conclusions on some other matter, the subject of shipboard detection again arose and Fedorov referred to these methods as an essential ingredient of the system. When it was called to his attention that he had just previously agreed to their elimination, he was considerably embarrassed.

The final text of the conclusions restored a qualified mention of the aeroacoustic and electromagnetic methods on shipboard. On land, it was agreed, all four basic systems—acoustic, seismic, electromagnetic and radioactive debris collection—would be used at every station. This collocation, found difficult by the West, was strongly endorsed by the Soviets and is very likely their practice.

More Political Concessions

The major problem of the conference was the integration of these various methods into a worldwide system capable of detecting tests under all possible conditions. At Soviet insistence, the discussion on all the basic methods had been keyed to small-yield test explosions, down to one kiloton, despite Western desires to include consideration of systems reliable only for higher yields. In designing the over-all system, therefore, the conference initially used the one-kiloton yield as a basic parameter.

The detection and identification of underground explosions was the dominant factor in determining the number and disposition of the control posts. The initial Western attempt at designing a system came up with about 650 stations for one-kiloton worldwide control, as against 100 proposed by the Soviets. The Soviet proposal was obviously inadequate for discriminating between one-kiloton underground explosions and earthquakes of equivalent energy, since five of the 100 stations would never obtain clear signals of first motions from such an event. The Eastern delegation then proposed the use of existing seismic stations as a supplement to the detection system, but the ease with which seismic records could be falsified and the signals from an explosion made to resemble those of an earthquake rendered this solution impractical.

At this point, the Western delegation suggested that a system be designed with capabilities of good discrimination for yields of five kilotons and greater, and the Eastern delegations accepted this approach. By Western criteria such a system required 160 to 170 stations, while in the Soviet design it would have 130. Not unexpectedly, the Soviets agreed to the Western figures just prior to the conclusion of the conference. This acceptance of a system which would involve between 15 and 20 control posts in the USSR, each manned by 30 or more persons, constituted a second major Soviet political concession at the conference.

Since at present it is not always technically possible to identify a nuclear explosion by seismic means alone, inspection of the site of an unidentified event suspected of being a nuclear explosion is necessary in order to prove or disprove the occurrence of a concealed nuclear test. The 160–170 control post system would leave unidentified some 20 to 100 events per year of energies equivalent to five-kiloton yields or greater, and it is clear that inspection would be required in such cases. Furthermore, if the system is to have any capability for yields of less than five kilotons, inspection of suspected sites of lower-yield tests on a random basis would be required as a deterrent to violations at this level. The Soviets early in the conference referred to the need for inspecting sites of suspected nuclear explosions but consistently deferred the inclusion of statements to this effect in any of the agreed conclusions. Finally, however, in the conclusions on the control system, they agreed to such inspection. This acceptance of the principle of inspection was the third and perhaps most important political concession made by the Soviets in order to achieve an agreed report.

Soviet Intentions

Before the conference, many members of the U.S. delegation believed that the Soviets were attempting to establish a situation in which they could continue weapons development by means of concealed tests and at the same time inhibit nuclear testing in the West. The conference yielded no evidence to support this thesis; in fact it had led all Western representatives with whom the subject was discussed to change their views. The Soviets fought strenuously on many points and

attempted to minimize the difficulties inherent in establishing an adequate test detection system, but these efforts appeared aimed entirely at avoiding politically sensitive arrangements such as large numbers of observers, overflight, and free access to locations within the Soviet Union. On all of these points, they ended up by making major concessions.

Furthermore, the Soviets strongly pressed for a high-sensitivity system, one capable of reliably detecting explosions as low as one kiloton. Had their objective been to design a system susceptible of evasion, they would have given much readier acceptance to the Western proposal to consider higher-yield systems. In view of all these considerations, I believe that the USSR has no present intention of carrying out a concealed nuclear test in the event of a moratorium, and that it would openly abrogate such an agreement before risking being caught in a violation. Moreover, if the principle of inspection is adequately safeguarded in political discussions and in the terms of a suspension treaty, the system as designed is adequate to deter any nation from conducting a concealed nuclear test, at least with a yield greater than one kiloton. Without on-site inspections such a system would not be capable of preventing deep underground nuclear tests of even moderate yields.

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U.S. intelligence has organized to support the economic cold war and about some of the methodological problems it has encountered.

THE ASSESSMENT OF COMMUNIST ECONOMIC PENETRATION

Edward L. Allen

What the Soviets call "peaceful competition" with the West, particularly Sino-Soviet Bloc trade and development aid to underdeveloped countries, has presented a new challenge to the West and, from our own professional viewpoint, imposed new tasks upon economic intelligence. The increases in Bloc trade have been spectacular. Since 1954, Soviet trade with underdeveloped countries is up 500 per cent; total Soviet trade with the West is up 100 per cent. Further, the Bloc last year got 36 per cent of Egypt's trade, 33 per cent of Iceland's, 40 per cent of Afghanistan's, and nearly 25 per cent of Yugoslavia's. It succeeded in getting a substantial share of the trade of Syria, Burma, Iran, Turkey and Ceylon.

U.S. Organization for Cold War Economic Intelligence

It became clear to us three years ago that the USSR and other members of the Bloc had embarked upon a long-run program of economic penetration. At that time, we revamped our internal organization to provide the essential intelligence support to government policy-makers. As the Bloc program grew and the magnitude of the threat became clearer, we extended our list of consumers far beyond the executive branch of the government. It was important to keep not only Congress informed, but also influential business groups and the public in general. The Soviet economic challenge, in the words of our Director, Mr. Allen Dulles, had become the most serious challenge our country has faced in peacetime.

The pattern of coordinated reporting is now well established. Since February 1956, a working group under the Economic Intelligence Committee has turned out a detailed report every

two weeks. This working group is composed of representatives of the Department of State, CIA, the International Cooperation Administration, the military services, and the Departments of the Treasury, Commerce and Agriculture. Additionally, there is an analytical summary every six months, and a special quarterly report to the President's Council on Foreign Economic Policy. The full organizational structure supporting this intelligence effort is illustrated in the chart on page 22.

This organizational arrangement provides a mechanism for combining the political, military and economic facets of Soviet penetration activities. Although there is no rigid division of labor between agencies, there are obvious areas of primacy of interest. The Department of State, for example, bears the primary responsibility for political analysis, while the Department of Defense prepares all estimates on illicit trading in Bloc arms.

On a broader basis, an annual National Intelligence Estimate is produced which covers not only the magnitude, impact and intensity of Bloc penetration activities, but also relates these activities to the capabilities, motivations and internal policies of the Soviets.

Characteristics of Bloc Aid Programs

We have found a number of common characteristics in the Bloc aid programs for underdeveloped nations. First of all, a composite prescription is applied on an integrated basis—a line of credit, technical assistance and training, and in most cases a commitment to long-term trade. The provision for payment by means of its own commodities has great appeal to an underdeveloped nation, particularly one which is having difficulty in marketing exportable products at adequate prices.

Secondly, the Soviet program is almost entirely a credit program. Interest rates are low—2 or 2½ per cent. Repayment usually begins after the project is completed. Amortization is usually prorated over a 12-year period. Our Western interest rates are higher, but our repayment terms are often much longer, running from 30 to 40 years.

Third, the Soviet program usually covers only the foreign exchange costs of a project, leaving the balance to be financed from internal resources. Western development loans have

assisted through various devices with some of the internal financial requirements.

Fourth, Bloc economic credits are usually related to industrial development. They are granted for sugar mills, cement plants, and textile mills rather than for sanitation, sewage, or housing development.

Fifth, these industrial programs are aimed at increasing the public or socialized sector of the economy, rather than the private or free enterprise sector. Thus the Russian-built Indian steel mill at Bhilai is a government-owned plant, whereas the American-built plant at Jamshedpur is a privately owned expansion of Tata.

Finally, the aid-and-trade deals are independent of military pacts. Non-Communist underdeveloped countries receive Bloc military and economic assistance without entanglement in a Bloc military alliance. This practice disarms many; it lends at least surface credence to the Soviet line that "there is nobody here but us peace-loving Russians" as the military and economic technicians pour in.

Sources of Information on Bloc Economic Aid

We have encountered rather formidable difficulties in estimating closely the magnitude of Bloc economic assistance to underdeveloped countries. It is true that considerable information is usually available from open sources regarding the amounts of non-military assistance which Bloc countries *promise* to deliver. Soviet agreements, in particular, are widely publicized, especially when large lines of credit are extended: it has been trumpeted to the world that Afghanistan received a $100 millions credit and Egypt a $175 millions credit from the USSR. More important for our purposes, the actual texts of many of the major agreements have been officially released.

Even when no value figures are announced, information available through attaché reports usually permits us to estimate the approximate total cost and the foreign exchange component of an economic assistance agreement. Reports obtained through overt or covert channels from Western industrial firms who have commercial contacts in underdeveloped countries can also provide such data. The cost of the petroleum refinery Czechoslovakia is building in Syria, for example,

was estimated in part on the basis of information obtained from a Western corporation whose bid on the project was rejected.

We are thus confident that our estimates on promised economic assistance are fairly accurate. We believe we are within 5 per cent of the correct total figure and no more than 10 per cent in error for individual countries.

The confidence we have in our estimates of Bloc *performance* on assistance agreements is considerably less, and so far we have published estimates of only the *minimum* amount of assistance actually provided. Such estimates are of some value, but they are an inadequate basis for answering several pressing questions. In particular, they do not enable us to determine the amount of indebtedness or the rate of loan amortization of a country receiving credits from the Bloc.

The major difficulty in assessing the implementation of Bloc assistance agreements is finding sources of raw information. It is exceptional for officials in underdeveloped countries to be candid in discussing Soviet projects with U.S. attachés. Debt statements and ministerial reports of recipient countries are occasionally helpful. But in general we must rely on delivery or shipping notices and clandestine reports on construction progress. Clandestine reports are also our most valuable source on the numbers, competence, and activities of Bloc technicians assigned to aid projects. We feel the need for much more information on what success the Soviets are having in getting accepted as the representatives of peace and progress and the real champion of underdeveloped countries.

Special Problems with Bloc Arms Deals

Estimating the value of military assistance encounters considerably greater difficulties than estimating non-military assistance. The publicity attending the signature of an economic assistance agreement is notably absent in the case of military agreements. The military estimates must be based mostly on descriptions of individual shipments or other observations contained in many discrete military attaché and clandestine reports. The resulting estimates of units of equipment are converted to value terms by applying Bloc prices to the items in question, if they are known. In some instances we have had to use the U.S. prices for comparable items in

order to arrive at a value estimate. We consequently believe that although our estimates in terms of equipment units are reasonably accurate, those in terms of value may be in error by 25 per cent or more.

The most troublesome consequence of our uncertainty about value estimates is inability to determine with precision the financial indebtedness to the Bloc of those countries receiving Bloc military assistance. A reliable determination of the amount of cotton Egypt, for example, is shipping each year in repayment for the arms it has received from the Bloc would be significant intelligence. But especially in the case of Egypt, the inaccuracy of our evaluations is compounded by the fact that some of the arms delivered have been obsolete and therefore sold at a discount, and some of them apparently have been given without charge. Moreover, some small portion of the arms shipped to Egypt and Syria have been sent on to be used in other areas, and we are not certain who ultimately will pay for these.

Sources of Information on Trade

Collection of data on Bloc external trade is considerably simplified by the fact that most non-Communist countries issue periodic reports on the value and pattern of their foreign commerce and we therefore do not have to depend on Communist sources. Statements issued by Bloc countries, as well as information obtained through clandestine collection, provide means of cross-checking sources. When there are discrepancies between estimates made on the basis of official non-Communist compilations and the statements of Bloc countries, we do not automatically assume that the Communists are lying.

An early estimate of Soviet shipments of machinery and transport equipment to underdeveloped countries in 1956, for example, showed only about 20 per cent of the amount claimed by the USSR. This discrepancy, we ultimately concluded, probably resulted from inaccurate item classification in the recipient countries. Underdeveloped countries often have untidy or inexact customs procedures. Even when a standard classification system is used, customs officials are frequently lax in establishing proper criteria to be used by their oper-

ating personnel. Indian practices are particularly annoying in this respect. In their official reports of commodity imports, items accounting for as much as two-thirds of the value of imports from the USSR have been listed in the unspecified "all other" category. Since among the underdeveloped countries India is a major Bloc customer, the errors in India's commodity reporting may have a considerable effect on our estimates of total Bloc trade.

Other underdeveloped countries have similar bad habits. Most of them publish trade data in a very leisurely fashion. None is up to date in releasing statistics on commodities. No country includes shipments of military items in its reports. There is also the usual problem of re-exports involving third nations, compounded in the Soviet case by the employment of brokers and trading fronts for sensitive transactions. Finally, countries which have multiple exchange rates, such as Egypt and Argentina, present particular difficulties when we attempt to evaluate their trade in terms of dollars.

New Tasks for Intelligence

There is a need for detailed performance information, beyond the question of volume and money value, on Bloc development aid programs. Part of the Western effort in underdeveloped nations is devoted to highlighting for these newly emerging countries the dangers of dealing with the Bloc, to pointing out the advantages of dealing with the West wherever possible. So we not only need to report that country x received a cement plant from the Bloc at a certain price, but also to report the plant's reliability, relative efficiency, and the quality of its product.

And it is not enough for intelligence to measure current trends and performance in Bloc trade and aid. We have, in addition, the important task of anticipating future Soviet moves, of pointing out where economic, military or political problem areas are developing which could present the Bloc with opportunities for exploiting weaknesses. This must be done early in the game if Western policy-makers are to have an opportunity to move in first or to capitalize on some action of the Bloc.

Both in the anticipation of future Bloc moves and in the detailed analysis of Bloc development aid performance to date, I believe that we in the intelligence field need to do a lot more work.

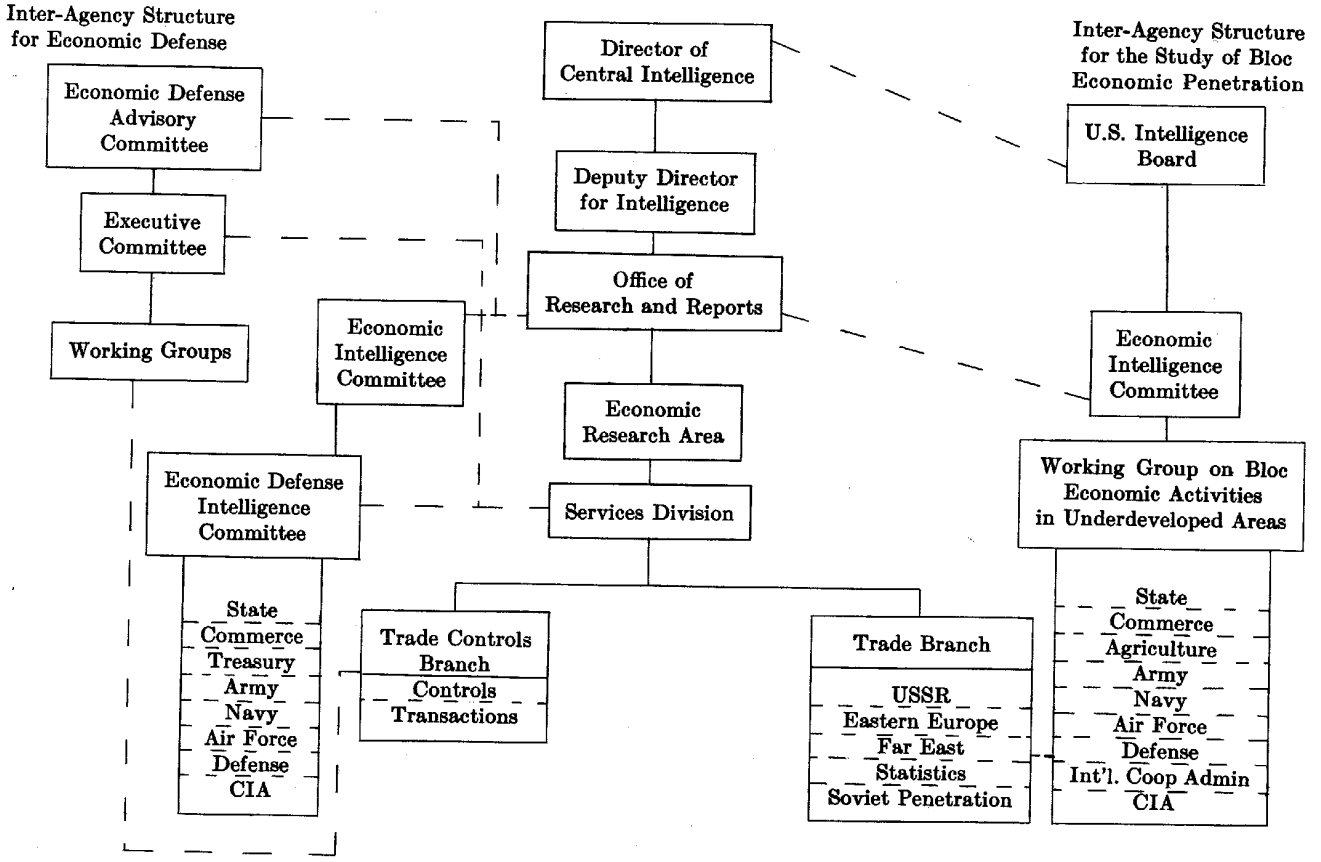
Strategic Trade Controls

The other side of the economic cold war coin is the strategic trade control program. We in CIA play a major role in providing the interagency committee structure of the U.S. Government with intelligence support for the development and enforcement of international and U.S. security export controls against the Sino-Soviet Bloc. This intelligence support consists primarily in estimating the significance of certain Western commodities, technology, and services to the war potential of the Bloc.

U.S. unilateral controls, as you are aware, are broader than the international ones, and require separate administration. There are therefore two major interagency committees involved in the control of strategic exports, one dealing with problems of multilateral export controls and their enforcement and the other with those of unilateral export controls. The CIA participates in an advisory capacity at each level of these committees up through the National Security Council, as indicated by the dashed lines in the appended chart.

Reports on Bloc exports and imports are often useful in pointing to economic strengths or weaknesses in the Bloc, but one can easily exaggerate an apparent economic strength or weakness by relying solely on commodity trade data. The USSR, in particular, has sometimes exported machinery and equipment known to be in domestic short supply (rolling mills and agricultural machinery, for instance) when such exports have been judged to be of net Soviet advantage. Similarly, in reviewing Soviet purchases from underdeveloped nations, it is prudent not to seize on every import of foodstuffs or industrial raw materials as proof of economic weakness in respect to that commodity.

Commodity studies of Bloc foreign trade will rarely reveal anything more than specific short-term soft spots in the production pattern. This type of information is useful for trade control purposes, but it is inadequate as an indicator of the



overall capability of the Bloc to achieve its objectives in the cold war. The real capability of the Bloc is revealed only in a close survey of its economic structure and its production and growth characteristics. The basic facts are the $180 billions of current gross national product for the USSR and the annual growth rate of about 10 per cent in Soviet industry, a GNP of nearly $70 billions for the European Satellites and of over $60 billions for China.

Institutional characteristics, in particular the bilateral nature of Soviet trade, the isolation of the Soviet price structure, and the inconvertibility of the ruble, may cause the USSR serious problems in its future trade outside the Bloc. They have not seemed, however, to be a serious constraint so far.

To determine Bloc economic weaknesses and strengths, and to estimate the impact of the strategic trade control program as a whole, we look primarily to Soviet domestic production capabilities. The large and rapidly expanding production capacity of the USSR, complemented by the European Satellites and to an increasing extent by Communist China, is an impressive indicator.

The bases for the aggressive U.S. approach to documentation

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ON PROCESSING INTELLIGENCE INFORMATION

Paul A. Borel

The cycle of organizational activity for intelligence purposes extends from the collection of selected information to its direct use in reports prepared for policy makers. Between these beginning and end activities there lie a number of functions which can be grouped under the term *information processing*. These functions include the identification, recording, organization, storage, recall, conversion into more useful forms, synthesis and dissemination of the intellectual content of the information collected. The ever-mounting volume of information produced and promptly wanted and the high cost of performing these manifold operations are forcing a critical review of current practices in the processing field.

Storing and Retrieving Information

Efficient and economical storage and retrieval of information is by all odds the toughest of the processing problems. Millions are being spent on it by the research libraries of universities, of industry, and of government. Even as we meet here today, an international conference is under way in Washington at which new means of storing and searching for scientific information are being discussed.

For intelligence, storing and retrieving information is a particularly vexing problem. Our Document Division alone processes daily an average of some 1,500 different intelligence documents, received in an average of 15 copies per document. This is exclusive of special source materials, cables, newspapers, press summaries, periodicals, books, and maps. Since these reports come from scores of different major sources, the daily volume fluctuates and shows lack of uniformity in format, in reproduction media, in length and quality of presentation, and in security classification. As they come in they must be read

with an eye to identifying material of interest to some 150 different customer offices or individuals.

We have a general library of books and periodicals, whose operations approximate those of the conventional library. We have several registers (in effect special libraries) through which we handle special source materials, biographic data on scientists and technicians, films and ground photographs, and data on industrial installations. Most of these materials are subject to control through indexes of IBM punched cards.

We have a collection of two million intelligence reports miniaturized by microphotography. Short strips of film are mounted in apertures on IBM punched cards filed in numerical sequence. Access to these cards, from which photo reproductions can be made, is obtained through an organized index of IBM cards now numbering eight million. Thus access to the document itself is indirect, through codes punched into the index cards to indicate subject, area, source, classification, date and number of each document. The data on index cards retrieved in response to a particular request is reproduced on facsimile tape and constitutes the bibliography given the customer. This system—which seeks to fit a given request with the relevant "intelligence facts" on hand—we call the Intellofax system.

These then are our assets. I'll say no more at this time about problems in connection with the general library, or those of operating our registers, since they are in many respects variations on the theme of our concern with the effective operation of the Intellofax system.

Demands made on our document collection stem from three types of requests:

Requests for a specific document to which the analyst has a reference or citation;

Requests for a specific bit of information in answer to a specific question;

Requests for *all* information relevant to a subject which may or may not be well defined.

Our major difficulties are almost all connected with the last of these three, the one which requires a literature search. In searching unclassified literature we rely on commercially produced reference aids, but in searching classified materials we

use the Intellofax punched card index. This index we would use to retrieve, for example, information responsive to a request for "anything you have on the movement of iron ore from Hainan to Japan between 1955 and 1958, classified through *Secret*, and exclusive of CIA source material."

Intellofax is a high-cost operation. Only 10 to 15 per cent of the questions put to the information section of our Library are answered by literature search; yet some 30 people are used in the necessary coding, and another 50 to 60 in IBM and auxiliary operations exclusively in support of Intellofax. On the other hand, some portion of this cost would be incurred in operating any alternative system even at minimum level; and Intellofax makes possible the organization of bibliographic material in various forms and at speeds which would not be practical under a manual system.

Search results, however, are not uniformly accurate. We recently tested the accuracy of the Intellofax system by having a task team of three analysts from a research office conduct a controlled experiment. Five subjects, corresponding to common types of reports produced by that office, were selected. The test indicated quite conclusively that the system does an efficient job of retrieving documents referring to specific objects or categories (trucks, factories, serial numbers), but that it is less satisfactory in handling a more general subject, such as industrial investments in China. A comparison with the analysts' own files showed very satisfactory Intellofax performance in retrieving documents placed in the system, but some documents in the analysts' files were not retrieved. Reruns with the same code patterns yielded consistent results.

The inaccuracies of the Intellofax system reflected in the above and other tests can be reduced by revising procedures and improving supervision, but they cannot be eliminated altogether. In literature search a set of symbols assigned to incoming documents is used to provide the searcher with a clue to the pertinence of any document to the request he is servicing. This set of symbols is in the nature of an index, but different people viewing these symbols may give them different interpretations. This makes the problem complex, for the determination that there exists a meaningful relation between even two pieces of information depends on many differ-

ent, often subtle criteria which elude unequivocal symbolic representation.

The solution of the accuracy problem would appear to turn on the ability to develop a master set of symbols, a Code, large enough to cover an extremely wide variety of subjects and areas and small enough to be contained on an index card, one applicable to diverse documents containing fragmentary, fugitive and often seemingly unrelated information, and at the same time conducive to uniform application initially by those coding incoming documents and later by those seeking to retrieve them. To prepare such a Code is a tough assignment today. The job is not likely to be easier for some time.

It is relevant at this point to invite your attention to the views on this subject of the Working Party organized last year [redacted] to examine the possibility of establishing a common reference service:

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[redacted] *books of reference and finalized intelligence reports. It would be impracticable to try and include the welter of documents from which such finished reports are built up; even if it were practicable, it would be an immense task beyond our resources.*[1]

I disagree. Not as to the difficulty of the task or its relatively high cost, but as to its impracticability. I believe the solution lies in a) selectivity in identifying those documents to be held by the Center, and b) the organization of those documents into discrete collections, each controlled by an index suitable to its particular requirements. This is the aproach we have taken, more by accident than by design. Such an approach makes it possible to cope with small problems, even though the big problem may still be unmanageable.

Reference Service and the Research Function

Where central reference services have been organized independent of research offices, it soon becomes evident that the functional line of demarcation between them and the research units is not clear. This becomes important when it results in

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[1] [redacted] *Modern Methods of Handling Information,* 15 Oct. '57 (Confidential), para. 6.

duplication of effort or, worse, in non-use of reference materials by the researcher laboring under the misimpression that he has all relevant documents in his possession. Today's researcher, like his predecessor, feels insecure without files which he can call his own. In such a situation we must have a proper regard for tradition, but sometimes it is difficult to distinguish tradition from inertia. Recently our Biographic Register, receiving a report published by a research office, found that failure on the part of the author to check the Register files had resulted in some one hundred errors or omissions.

It must be decided whether a reference service is to be active or passive, dynamic or static. To take a simple case, a passive approach to reference service would mean that reference personnel would merely keep the stacks of the library in order, leaving it to research analysts to exploit the collection. Under the active approach, on the other hand, reference analysts would discuss the researcher's problem with him and then proceed, as appropriate, to prepare a bibliography, gather apparently pertinent documents, screen them, check with colleagues in other departments for supplementary materials, make abstracts, have retention copies made of popular items in short supply, initiate a requirement for supplementary field service, or prepare reference aids. In CIA we aim at active rather than passive reference service. How active we are in a particular case is a function of the customer's knowledge of our services, his confidence in us, and how pressed he is to get the job done.

Once a separate facility has been set up to provide reference services it is not long before it publishes. This comes about for several reasons, the least controversial of which is that a customer has made a specific request. Thus our science analysts may call for a compilation of biographic data on the individuals most likely to represent the Soviet Union at a forthcoming international conference on the peaceful uses of atomic energy. We call this type of publication a research or reference aid. Some are quite specific; others are more general, being prepared in response to a need generally expressed. A number of different customers may, for example, make known that it would be very helpful to have a periodic compilation of all finished intelligence reports and estimates for ready refer-

ence. Or the need may be implied rather than expressed: the reference analyst may note that over a period of time the demand on him for biographic data about Soviet scientists is heavy, many requests calling for much the same information furnished earlier to others. The result: the production of a major reference aid along the lines of our "Soviet Men of Science." And naturally it isn't long until a revised edition is called for.

Criteria for determining when and when not to summarize information holdings in a general reference aid are elusive. It is similarly difficult to define the proper scope of the general reference aid. How far can it go before the researcher considers it an infringement on the research activity for which he is responsible? This question has implications beyond those readily apparent. Quite basic is the feeling among research personnel that they and their mission are a cut above the reference officer and his role. A manifestation of this attitude is the steady flow of competent people out of reference into research, with only a trickle coming the other way. I doubt whether the inconsistency of this position is appreciated in view of the joint effort required by research and reference activities to provide the soundest base possible for the research effort.

In my view the legitimate limits of the reference aid can best be arrived at in terms of the highest level of service expected of the reference officer. Stated simply it is this: to make known the availability of services and information the existence of which may be unknown to the researcher; and, given a task, to make the preliminary selection of materials to meet the particular need of a particular user. This may involve bulk-reduction operations (such as abstracting) to leave a smaller quantity of material containing everything pertinent to the user's problem, or conversion operations (such as translation) to get information in usable form. I would even say that the reference function includes evaluation, evaluation of the reliability of information. To the researcher must be left the determination of its significance for the present; to the estimator its significance for the future; and to the policy-maker the indicated course of action.

Machine Application to Documentation Problems

In processing intelligence information, increases in efficiency may depend upon the adoption of techniques involving automata. This is especially the case when savings of time are sought. But as soon as you consider automation, that is, the inclusion in your processing system of a machine as an integral part of it, you are faced with the need to make decisions different in nature from those made with respect to the desirability of expanding staff or restricting functions. It is a difficult problem to achieve an optimum balance between man and machine. Among the many considerations involved there are two important ones which ought to be, but seldom are, fully explored before you commit yourself to a particular machine—you should accurately determine the *net* gain or loss in terms of time, space, manpower, and money; and you should be fully aware of the limitations of the machine and of its use by man. It is often more important to know what cannot be done with the machine than to look wholly to what can.

Nevertheless, I would again incline to disagree [redacted] 25X1

In view of the great initial investment needed to launch [a mechanized reference system], the very large and persistent requirement for coding, maintenance and other supervisory skill and the inevitable limitations of machinery when applied to intelligence processes, we do not think the introduction of such a system merits further examination.

No one would argue that large investments should be made in schemes unless they hold promise of relieving major problems. And the demands of a mechanized reference system for special skills are admittedly both high and persistent. However, these factors should be weighed in terms of the relative costs, not only the cost of alternative ways to solve the particular documentation problem, but also the cost of not solving it at all. We take exception to the conclusion that the limitations of machinery when applied to intelligence processes are "inevitable." We also believe it unwise to categorically dismiss the introduction of machinery as not meriting

further examination. Limitations there are today and will continue to be. But those which are inevitable are fewer than is generally supposed. Only by daring and risking will we come to know how few are the real limitations of a mechanized approach to documentation. This philosophy is yielding promising developments in the fields of microphotographic storage, automatic dissemination, abstracting, and translation, all fields of particular concern today.

Microphotography. Both Air Intelligence and CIA are testing a system developed by Eastman Kodak known as Minicard. This system in essence substitutes a 16 x 32 mm film strip for the present CIA system of IBM punched index cards corresponding to hard copy or film in the document storage file. Self-indexing Minicard document images are read electronically, not mechanically as IBM cards are. The characteristics of Minicard make possible a reduction of space requirements by a factor of 4, and an increase in speed of handling by a factor of 2. The new system is capable of a level of information manipulation and a degree of coding sophistication which gives promise of radically augmenting the contribution of the information fragment to the solution of reference problems requiring a search of the literature. And, contrary to present practice, the integrity of the file is maintained at all times.

Automatic Dissemination. Air Intelligence is testing a Document Data Processing Set designed by Magnavox. This is a general-purpose computer especially designed for problems requiring close correlation. Requests for information form the reference file against which incoming documents must be compared. Up to 20,000 words specifying the subjects and areas of interest, other qualifying data (such as evaluation or type of copy desired), and user identifications are stored to define the requirements of 160 users. When a document is to be disseminated, its subject and area coverage, previously coded and punched into paper tape, is fed into the machine. The machine searches its file of requirements and prints out a list of those who have requested such a document, the total number of copies needed, and the form in which it is wanted. Speed and uniformity of performance rather than financial economy is what the Air Force is after in this case.

Automatic Abstracting. Army intelligence and IBM are working on means for producing, entirely by automatic means, excerpts of Army field reports that will serve the purposes of conventional abstracts. At a recent demonstration the complete text of a report, in machine-readable form, was scanned by an IBM 704 data-processing machine and analyzed in accordance with a standard program. Statistical information derived from word frequency and distribution was used by the machine to compute a relative measure of significance, first for individual words and then for sentences. Sentences scoring highest in significance were extracted and printed out to become the "auto-abstract." Adoption of this method of producing abstracts of overseas reporting would require the use of a flexowriter in the field. When the original report is typed on stencil, a flexowriter tape would be produced simultaneously as a byproduct and would accompany the report to headquarters. There tapes in sequence would be fed into a computer and auto-abstracts printed out.

Mechanical Translation. The only successful Free World demonstration of machine translation to date took place on 20 August 1958, when a continuous passage of 300 sentences taken from Russian chemical literature was translated by the Georgetown University research group, under CIA and National Science Foundation sponsorship. An IBM 704 computer was programmed with the appropriate grammatical, syntagmatic and syntactic rules, and a Russian-English vocabulary was introduced into its memory system. The machine alphabetized the text, determined the lexical equivalents of the words, reconstructed the text, performed the necessary logical operations, and printed out the English translation. Only minor stylistic editing was required to make the product compare favorably with a translation made by a linguist. The rate of translation was about 24,000 words per hour. With improved input equipment (reading machines), rates up to 100,000 per hour are foreseen as possible. Research has already started on mechanical translation from Polish, Czech, Serbo-Croatian, French, Arabic, and Chinese. Soviet research in this field is considerably ahead of ours.

Outlook

In closing this general review of aspects of the intelligence documentation problem, we should look briefly at certain trends which affect us all. First, channels for procuring publications and techniques for storing and retrieving the physical document are extensive and well developed. The immediate outlook is for no basic change in ways and means in this field, but rather an expansion and intensification of present methods.

Second, the type of reference or information service coming to be required will demand action primarily in preparing reference personnel to give assistance of higher quality than is given today. Reference tools will need to be improved also, but this is likely to follow if there is a more sophisticated reference officer to create a demonstrable need for them. The increase in amount and kinds of material available will call for more intense exploitation of it by the research analyst; he in turn will by necessity rely increasingly on the reference officer for first-cut selection and evaluation. Reference officers will therefore need greater subject competence, more language ability, and a wider training and experience in all aspects of intelligence documentation. Already a number of American corporations are using information specialists as members of research teams. This approach deserves testing in intelligence.

Third, in the field of literature searching, specialized schemes will be developed to fit the needs of specialized users. While general theory will continue to be developed, pragmatic approaches to problems based on an analysis of the way users employ services and exploit materials will play an increasingly important role. Proved systems employed by reference centers will be simplified and adapted for use by the individual analyst to enable him to control the literature he requires in his immediate possession. The analyst in turn will provide the central system with the means of subject retrieval in his specialized field as a by-product of the way he controls his files. In this field, machines will long continue to play a secondary role.

Fourth, the present and future demands for reference service will lead to increased use of machines where these can be

introduced without jeopardizing the performance of essential intellectual operations. This fact and the increasing volume of information which must be processed will bring about more centralization. The problem then becomes one of insuring that central reference is at least as responsive to research needs as the reference facility which is an integral part of the research area. The solution is to be found in an approach which integrates the information-processing activities, wherever performed, into a single system within which collection, processing, and user components operate along well-defined lines.

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[redacted] *contemplates the tortured progress of a complex organism in getting its food from hand to mouth.*

THE GUIDING OF INTELLIGENCE COLLECTION

William P. Bundy

In tackling the subject labelled "Procurement" in the program for this conference, it seems most appropriate to discuss, for an audience predominantly of researchers or intelligence producers, not the whole range of collection activities, but simply the link between the people who use raw intelligence on the one hand and collectors of raw intelligence (or should I say "procurers?") on the other. To make even this restricted subject manageable, I have confined my illustration almost entirely to the procurement of positive intelligence on the Sino-Soviet Bloc, excluding other geographic areas and excluding also the effort in support of intelligence collection operations themselves.

The essential problem is of course simply one of communication between human beings. No one who has ever done research on his own will have the slightest doubt that the ideal unit is one—a single person doing his own collecting and producing with no intermediaries whatever. Or one might grudgingly accept as a model Mark Hopkins' picture of the true university—the collector on one end of a log and the producer on the other.

If these be only dreams, I do still recall one actual large organization that seemed to me to approach the ideal. During the last war I was at a place called Bletchley in England. There, in three low brick wings of the same building, side by side,—called, poetically enough, "huts"—were housed respectively a final producer apparatus, an intermediate processing apparatus, and a collection control apparatus. They were within easy walking distance, and the people in them knew each other by their first names and had been in their jobs long enough to have quite a knowledge of each other's problems. The result was a tremendously efficient collection oper-

ation, which balanced intelligence priorities and needs fully against the need to maintain assets for stand-by purposes, and all with what was—even by British standards—a minimum of red tape. As I recall, the weekly so-called control meeting used to take about an hour to dispose of all its business, including discussion and action on new ideas. I had never seen anything like it.

And I don't really expect to again. For that guidance system had two great advantages unlikely ever again to exist in combination in a large-scale effort. First, a relatively limited focus, almost wholly military, within which the basic substantive priorities were largely self-explanatory and seldom controversial. And second, a single collection system, and that of such a nature that its capabilities, though flexible in degree, were limited and readily tested for possible expansion. You knew pretty well what could be done, and if you didn't know you could find out fairly quickly. In other words, both the intermediate processor and the collector knew what the producer wanted, and both the producer and the intermediate processor knew what the collector could do. Where these conditions exist, and where you have continuity of first-class people, it would take a most imaginative management consultant to contrive a system that could gum the works.

There are in intelligence today a very few areas thus happily self-contained. Map procurement, I think, is one. But by and large we are now in a situation where the demands are manifold, the priorities difficult to keep clear, and the collection capabilities variable, hard to appraise and extremely limited relative to the demands. In these circumstances guidance becomes one of our major problems, one testing the competence, experience and knowledge of our people, and testing also our capacity to devise administrative methods than can assist the infirm and the temporary while not blocking the operations of the sophisticated and imaginative professional.

The Hydra-Headed U.S. Consumer and Collector

The complexity of the problem of guidance is indicated by the variety of consumers and of collection mechanisms in the U.S. intelligence community. (I am using the term "consumer" in the broadest sense, in order to avoid shades of distinction among the various stages of processing or intelli-

gence production and the various policy-making levels of consumption. From the collector's standpoint the rest of us are, in truth, all "consumers.") On the consumer side the principal units are:

1. State
2. Army
3. Navy
4. Air Force
5. Joint Staff
6. AEC
7. CIA ORR—for Bloc economic and worldwide geographic matters
8. CIA OSI—for basic scientific matters
9. CIA OCI—for current intelligence at the national level, including indications, and for research in support of current intelligence
10. CIA ONE—for national intelligence estimates (usually via one of the other consumers)

On the collection side, the list is even more extensive. The collection activities can usefully be broken down into two categories: first, what I shall call "self-contained" systems, such as the Foreign Service (including foreign aid and information people) and the system of military attachés, which work primarily for their own parent organizations, and second, a larger number of "common concern" systems, service organizations which work primarily for others. Of these latter, some use technical methods of a classified nature, for example the Atomic Energy Detection System and ELINT. Others, who make use of unclassified technical methods or simply "people and paper," include the following:

OO/Contact (for domestic collection)
OO/FBID (for foreign broadcasts)
OO/FDD (for material that comes by subscription)
Publication Procurement
Map Procurement
OCR Liaison & Collection (representing government officials not directly connected with intelligence)
Clandestine Services

In addition some "common concern" services are not complete organizations, but make use of the facilities of one or more of the others:

SovMat

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Defectors and returned German scientists
East-West Exchanges
Trade Fairs
International Conferences
Graphics

It would be pleasant to report the hitherto undisclosed existence of an IBM 704, or Hollerith Hurricane, that handled all requirements and steered them effortlessly to the right collectors. Alas, this is not the case! There is no central mechanism that attempts to do a thorough policing and sorting job on the requirements any one producer may choose to levy on collection. Basic to our entire system, in fact, is the principle that the individual producing agency—responsible for its aspect of total intelligence production—may levy upon any one, or upon all, of the collection facilities to meet its needs.

Whether this right is, in a given case, any more effective than Owen Glendower's ability to "call spirits from the vasty deep" is, of course, another matter. But at least the requirement can be levied, and unless patently outrageous it will reach the designated collectors. For almost all requirements levied by one agency on the collection facilities of another, this will be via the good offices of our CIA Office of Central Reference, which while not policing does fulfill an important function in registering, numbering, and transmitting requirements for most of the non-technical forms of collection.

In this, as in many other respects, it is useful—and historically important—to keep in mind the distinction between those collection systems that are organic parts of operating and intelligence producing departments—the "self-contained" systems—and those that exist for the benefit entirely of others. Foreign Service reporting and the attaché operations of the military services historically antedate the existence of any overall intelligence framework. An ambassador today hardly thinks of his reporting work as being the fulfillment of

a "requirement," and indeed in the formal sense it seldom is, for our senior department is understandably reluctant to tell its top people abroad what they should look for, at least in the political sphere, by the historic overt methods of diplomacy. As for the attaché system, the intimate ties between the attaché and his base are such that, armed as he may be with an apparatus of guides and requirements, most of his reporting is done, in practice, in accordance with a "felt necessity" derived from daily cable exchanges.

Not so with the other collection systems—overt, clandestine, and increasingly the various technical systems—operated as a matter of "common concern."[1] These have no direct base to report to (even those sharing CIA parenthood with producing offices must and do serve other masters with at least equal zest), and they must hence be governed by an unruly flow of requirements from their many consumers, and must make shift with this as best they can.

Agreed Objectives

To help reduce this state of potential anarchy to relative order, the U.S. community has evolved a commonly agreed framework for the overall intelligence effort at all stages—a set of Priority National Intelligence Objectives. These PNIO's have developed from a slow start. Originated in September 1950, largely on the initiative of the military services, they consisted at first of a short statement of about eight categories of key importance. Along about 1953, this statement seemed inadequate to cover the breadth of factors involved in the cold war, and it was decided that the Board of National Estimates, from its Olympian vantage point, should coordinate an effort to set up a longer list with more clearly defined categories. Substantively, the aim was to include political and economic objectives in perspective with military-related ones, and to separate the really crucial military-related objectives from those of more routine nature.

Since that time, the Estimates Board has continued with the assignment, revising the list annually in a far-from-per-

[1] This term has a precise statutory meaning in our National Security Act of 1947, from which many functional charters derive. It is used here more broadly, to cover all collection work not done predominantly for the account of the collecting agency itself.

functory exercise culminating in review at the top intelligence level and circulation for information to top policymakers as well. The document now consists of three categories of priorities, with a total listing of about 50 items. The PNIO's set priorities for all intelligence activity, production as well as collection. Their greatest weight, however, is almost certainly in the collection field, where they serve as a basis for adjusting major priority questions, especially in the guidance and direction of the "common concern" collection systems.

But there are also many things the PNIO's do not do, things that no document of the sort can well do. One is to forecast what may turn out to be crisis areas at any given time. If a Communist revolt breaks out in Ruritania, common sense dictates a top-priority effort which in practice would be undertaken irrespective of Ruritania's normal status as a third priority. The PNIO's cannot select the Ruritanias of the year to come—or at least they haven't reached that point yet, in spite of their being drafted in the Estimates shop.

More generally, the PNIO's are only statements of *objectives*. In themselves, they are only a most general guide and framework within which individual levies or major collection projects can be judged. Many stages of translation are required before they can become anything like true guidance, in any specific sense, for collection effort. One of those stages, for certain areas of intelligence, is provided within the PNIO framework itself, by a series of Annexes dealing with the priority economic, scientific-technical, atomic energy, guided missile, and international communism objectives, and in addition, in a crucial field which Mr. Patton will describe, one comprising the General Indicators List.

These subordinate annexes, drawn up by the several subcommittees of USIB charged with the respective subjects, vary greatly in bite and effect. Those on atomic energy and guided missiles get pretty well down to cases, and I have no doubt have a marked effect on the allocation of effort. The scientific and technical one reads largely in generalities, but does usefully highlight some of the important technical breakthrough issues. There is similar generality in the economic one, though it too has useful specifics on the Soviet penetration problem. Clearly any document of this sort runs a major risk

of boring the collector with what seems to him largely boilerplate, and thus getting no effective impact.

So much for attempts to state objectives. When the effort started, I find from the historical files, many powerful voices were raised prophesying nothing but a waste of time. I think it has not turned out so: certainly the blood on our Estimates conference tables every year looks real, so somebody must be getting hurt; and that is a good sign. Nonetheless, there are clear limits to what can be done along these lines.

Generic Practical Problems

There are certain problems of a day-to-day nature in the consumer-collection relationship common to most forms of collection which it will be worth while to look at one by one. They seem to be associated mainly with five steps in the process of levying requirements:

1. Defining the requirement, or locating intelligence gaps.
2. Stating the requirement for the collector.
3. Selecting the appropriate collection system.
4. Servicing the return, including supplemental requirements.
5. Making specific evaluations and appraising the collector's reporting.

I should say, by the way, that I shall be talking solely about consumer-originated requirements, leaving out the handling of requirements originated by collectors themselves for the purpose of testing or developing a source, or to take advantage of spot opportunities. This latter type of self-levy is common and often very important today—particularly, for example, when our overt collectors learn of projected travel behind the Curtain by knowledgeable legal travellers—but it raises no real machinery problem.

Defining the requirement. In the field of modern history writing, and I am sure other areas of scholarship as well, it is a commonplace that the great bulk of writers choose a subject because the available materials are ample, rather than ask what the key questions are and then seek out and work on materials however slender. This is a natural human tendency, and in scholarship the immediate cost may be no worse than massive cases of publisher's indigestion. In intelligence,

however, the tendency can be fatal, with the massive indigestion falling to the policy-making reader, while the poor collector goes about his business with no help from the producer in the middle.

Making the producer stress his gaps rather than his satisfactions is of course largely a problem in education of the individual, and toward this education the various priority lists certainly make some contribution. Yet something more intensive and specific is needed. In essence, the intelligence analyst must be taught not to begrudge time spent in pointing out gaps in information (and how they might be met) as an essential part of his job—and one to be done as early as possible. It seems to me that the difficulty in educating the analyst varies directly as the amount of material available to him. Our scientific analysts, having lived for years on a very thin diet indeed, seem to become collection-minded very easily. So too with our economic analysts in earlier years. But our political analysts, and lately, with the flood of published materials, our economic ones as well, need fairly constant tending and reminding of this aspect of their jobs.

We have a number of devices on this score that may be worth mentioning. Our current intelligence office has long had its men do a periodic four-month review of priority requirements (called Periodic Requirements List, or PRL) which for economic matters draws heavily on the Bloc economic analysts in ORR and which is also now reviewed in draft by State. In our estimative process, we have had for some years a system of post-mortems, in which the estimate writers state in broadbrush terms where they thought the available information was inadequate to support good answers to key questions—or, more realistically, as good answers as they thought might be obtainable by more or different effort. These are then taken by each agency and, we hope, made the basis of intensified collection.

Recently our Bloc economic analysts have instituted a promising procedure under which each division is responsible for a periodic statement of its gaps in intelligence. These must be stated not merely in general terms, but in terms of possible avenues of approach to solution—target lists and so on. And most broadly of all, our whole National Intelligence Survey operation—with a formal research framework, bibliographies,

etc.—serves to highlight excellently gap areas in our world-wide knowledge. Significant as these devices are, however, we are surely a long way from erring on the side of overemphasizing the problem of gap-detention.

Informing the collector. Once you have your gaps spotted, you must make perfectly sure that they cannot be filled by some available materials. The analyst who reaches for the requirement sheet before he has picked all the brains within reach and made a truly conscientious search of the open literature and available reporting (using Mr. Borel's massive tools as they should be used)—such an analyst is indeed a deplorable species. But unfortunately, I am told, not non-existent or even perhaps on the decline. Granted that the need has been found real, however, it must then be stated precisely and intelligibly to the collector, and must ask him for something within his potential capacity to provide. Thus this step may in practice often follow the next one, the selection of a collection method.

In the drafting of requirements we have increasingly stressed the inclusion of as much background as possible to make what is wanted absolutely clear to the field collector. But the ultimate questions must, at all costs, be firm and specific. A requirement that asks the production capacity of a Soviet plant, without more, is of no use whatever to the collector. Rather the requirement should seek feasible particular answers that bear on this desired conclusion. Moreover, great things can sometimes be accomplished if the requirement can be pitched so as to elicit useful responses by an untrained as well as a trained observer. You may not have a returnee scientist, but only a layman, so it behooves the analyst to think in terms of a layman's capacity to remember floor spaces, height of stacks, size of loading facilities, and so on. And even if you have (and can personally brief) an expert collector, you must still stress your precise gaps and go over ways to meet them.

Choosing the collector. If our analyst is fortunate enough to have one of the self-contained collection systems at his disposal, we need shed no tears for him. If he is in State, he may not be able to induce his department or the Kabul Embassy to share his interest in a full count of the goats in Afghanistan, but his only problem will be persuasion. A far more serious

case is that of the Bloc economic analyst who, in pursuit of his top-priority study of rocket-fuel inputs, finds that he lacks any real dope about the most prominent known Soviet producing facility. To what collection agency shall he turn?

This, frankly, is a major problem with us. I am told that something over 50% of the requirements that come through our inter-agency machinery now arrive "cold"—that is, without prior warning to the collectors or discussion of what they can or cannot be expected to accomplish. Such a requirement may often name multiple possible collectors, and each of these may conscientiously accept the requirement, try to find out more about it, and then make an effort to fill it. It would almost be better if they did not—and in practice we do find blanket requirements increasingly queried. A consumer should care enough about his need to do a lot of follow-up on it, and only if such follow-up produces no indication of the best collection method is he entitled to call broadcast upon many collectors.

This problem, like so many others, gets back in the end to the individual analyst's consciousness of collection problems and capacities, assisted and advised by requirements staffs—to whose importance I shall return. That analysts are not sufficiently collection-conscious is due to physical separation, security precautions often largely legitimate, and not least to personnel turnover. Perhaps a shade too to the academic tradition of self-help and solo effort. In any case, the fact remains that this particular link of collector selection is probably the weakest one in our process at present. It is of course a far from unique organizational problem. Perhaps its parallel could be found in the relationship between Production and Sales in any manufacturing business. But it certainly is one on which we can profit at this conference by a few shared experiences.

Servicing the return. Moving to the next stage, let us suppose that the requirement, in usable form, reaches a collector in the field (whether in an Embassy, in a clandestine station, or within the semi-overt collection complex in the United States) and that the collector is then able to do something about it and assemble some information. At this point, there arises the problem of servicing the return so that it can be

most useful. This problem is not serious if there is no great time pressure and if the source will be readily available for re-interrogation, further visits to the target, or more search of his files. In questioning returned German scientists we have been able to work through several stages of refinement, so as to be fairly sure of having tapped the collection capability to the maximum.

In other cases, however, we have often had disastrous experiences of misunderstanding and incomplete collection discovered when the source was no longer available. In seeking to avoid such failures we have found it useful, at major stations, to have a reports officer right on hand ready to put the take into at least semi-finished form, set the product against the requirement, and direct immediate follow-up to catch the gaps. I suggest that this device may have more uses than we have yet turned it to, perhaps including an area of concern to all of us, the handling of legal travellers from the Bloc, including Communist China.

Evaluating and appraising. From what might be called specific "intermediate" or "field" evaluation it is only a short step to the final major problem in the normal process, that of final evaluation and appraisal, a subject to which I shall return at the conclusion of this paper.

The need for specific evaluation may sometimes be voiced in an urgent plea from the collector who has developed a new source and wants to know whether it is worth further cultivation. That type of evaluation raises not too much difficulty with us. Provided he is not tackled too often, the consumer does respond adequately. But in the more routine case of information collected in response to general requirements, our collectors complain bitterly about the lack of steady evaluation, and I suspect it is one of the parts of our process that needs a lot of attention and perhaps a device or two.

In a community as far-flung as ours it is perhaps too much to strive for any uniform system or form of evaluation, and this we have never attempted. Moreover, there will always be the problem of reluctance to criticize, or appear to criticize, a collection service under separate command. Yet this is just the crying need, and felt by none more strongly than the collector himself.

Within what I have called the self-contained systems the evaluation job appears, on my brief survey, to be extremely well done. State and the military services appraise the reporting performance of their overseas posts quite rigorously. State, for example, does it by despatches on a spot basis, by periodic evaluation of its people from this standpoint, and by an annual critique of each overseas post's intelligence performance. And on all of these they may and do consult with other major consumers of the take. The CIA collection services, on the other hand, both overt and clandestine, find their consumers, CIA producing offices as well as others, limited in their evaluation efforts; and as a result the collectors are never too sure of just where they stand with respect to adequacy in their job.

In all of these five day-to-day problems, much depends on the personal competence and savvy of our requirements and liaison people. In our system, we maintain requirements staffs at both ends of the line, at least in the CIA production and collection services. In State and the military services they stand, I believe, more in the middle, attached organizationally neither to the producing offices nor to the offices charged with giving instructions to the collectors. What is clear, in either set-up, is that they must have the broadest possible knowledge of the capabilities of various collection units or of their own particular one, and must be able to interpret the collector to the consumer and vice-versa.

At the same time, I venture that the really good requirements officer should have a king-sized lazy streak in him, leading him to avoid interposing himself where he is not needed and to permit, indeed urge or compel, the analyst to get together directly with the collection agency, as far down the line as possible, so that he can make clear what his need really is and tailor it to the capacities of the collector.

So far as organization goes, I have sought in vain, in talking to all I could get my hands on, for any generalized formula. I do know [redacted] has a practice that our clandestine services have always resisted, namely having consumer representatives detailed directly to the collection shop and actually in on the planning of operations. This practice prevails to some extent in our military services' covert activities in support of field commands and similar missions within the

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sphere of what we call "agreed activities," but it is not used in the main CIA clandestine collection service. The advantages and disadvantages of the two systems may deserve some discussion at this conference.

Problems of Clandestine Collection

All the problems I have just discussed are common in some degree to all forms of collection. But there is a very great difference between the guidance problems of the overt and semi-overt systems and those of clandestine collection. Here, I should say, is the *ne plus ultra* of guidance and requirement problems, where all the types of problems, from basic allocation of effort to the attempt to meet specific requirements in relation to available resources, are at their maximum. This arises from the simple fact that clandestine assets cannot be laid on the table for inspection.

In the U.S. community our most important coordinating device is an Interagency Clandestine Collection Priorities Committee (IPC), on which all the major consumer agencies are represented. This committee, founded in 1950, has as its principal function the preparation of continuing guide lists of key specific targets in the USSR, Communist China, and the Satellites. (IPC's responsibilities are worldwide and may on occasion lead to work on other areas, such as the UAR, especially where a Soviet element is present.) These lists are based on, and under present practice stated in terms of, the basic First, Second, and Third Priority Objectives set forth in the PNIO's.

The IPC lists have evolved a great deal over the years. They were originally massive shopping lists, in which pistols were doled out more or less indiscriminately to the mole, the rat, and the badger on a sort of *prima facie* showing of relevance to Soviet striking power or some other key aspect of Soviet power and intentions. Particularly within the past two years, however, they have become a far more meaningful selection which we believe really does take in virtually all of the key physical targets of which we are aware. Moreover, the frighteningly encyclopedic character of the lists has recently been reduced by the production of special lists of installations of absolute top priority, and admission to these lists is very carefully screened indeed. The result is that today for the

first time our clandestine collectors have a fairly reliable frame of reference against which to judge the incoming spot requirement of consumers. Moreover, the lists have become of increasingly greater usefulness in a function they have always filled to some extent, that of providing a framework for long-range planning in the development of clandestine assets.

Yet there obviously remain major defects and problems. Although the IPC lists are pitched in terms of clandestine collection, each important case has to be shaken out to be sure there are not other forms of collection that can better take on all or a part of the job. We have made great progress in some fields in deciding what should be gone after by the clandestine route, but there have still been ghastly fiascos where great clandestine effort was applied to obtain results that were available all the time through careful analysis of the open literature, and conversely I am sure there are many cases where clandestine effort is not being pushed to the maximum in the belief that other sources are of some use, when in fact they are not. In this, as in so many matters in this field, the security fears of the collector (not by any means only the clandestine collector) play a large part.

Naturally, the consumer's dream is a situation where he could go to the collectors, get a full layout of their assets, and go back and frame his requirements accordingly. This can be done to some extent in areas such as East Germany, where the clandestine assets are considerable and of a general character that can be presented without much security problem. But in the key areas of the USSR itself and Communist China, assets are so relatively few that they cannot be usefully described without tending to pinpoint them in a way that does clearly present major hazards.

The result is that in this area, above all, there is a premium on use of the competent middleman, or Requirements Officer, who can master the possibilities of an asset and then, by some obscure process of osmosis and double-talk, get the consumer to use his imagination and frame requirements that will elicit useful responses. The premium on well-framed questions is tremendous, sources are not easily accessible for a second round, and often a great deal of collateral research is needed to think of things that the particular type of source is really in a position to observe and report. Thus the need for con-

sumer and collector to be close together is nowhere more acute, and yet nowhere is it made more difficult by the problems of security, physical distance, and the number of go-betweens involved.

Apart from their intrinsic difficulty, these problems suggest a larger question in the theory of clandestine collection—whether in fact it makes the best sense to have a system of consumer-originated spot requirements for clandestine collection. As a practical matter, virtually no spot requirement can be met without a great deal of follow-up contact as direct as possible between the analyst and at least the headquarters of clandestine collection. The tail does wag the dog, more than in any other form of collection, and it is a question whether requirements work should not be done almost wholly by laying out the general nature of the asset and then canvassing consumers to see what needs that asset can be brought to serve. This of course should not mean that clandestine planning and major direction would not continue to be done within as strong an overall framework of priorities as possible, but only that spot requirements would not be levied except after more general statements supplemented by all the personal contact and consultation possible. This relates to the organizational question I mentioned earlier, whether the consumer might not have his people right in the requirements shop of the clandestine collector.

Overall Evaluation

Last, and perhaps most important, I come to the problem of overall appraisal of the collection system and top-level work to set in motion major new developments and changes. Of all human activities, I suppose intelligence may be about the least susceptible to accounting methods or to attempts, at any given moment, to figure out just how well or badly you may be doing relative to the possible. Any businessman would despair if he tried to get the equivalent of a department by department profit-and-loss statement such as General Motors gets from Cadillac, Buick, and so on; and he would succumb to total frustration if he set out to take a measure of how the whole vast holding company was really doing.

Yet though we may be rightly skeptical of quantitative or even qualitative appraisals on an overall scale (I have earlier

remarked the importance of appraisal in a more specific context), we have become increasingly conscious over the past five years of the need to draw back from the operating picture and take stock to see if we are not leaving undone really big things that we ought to be doing. For this purpose the ordinary machinery of government has severe limitations. For two years I had the dubious experience of chairing a working group to inform our National Security Council, on a most discreet basis, how intelligence was doing. The report has become better over the years, but the amount of uncandour, ellipsis, and just plain backside protection is still formidable. You simply can't get people to confess their sins in front of others.

Within the structure of government the one device we have found useful is the creation of a gadfly post at a high level. Given a self-starting, inquiring, and energetic individual with power to open all doors, this can be quite profitable. For the large tasks of appraisal, however, we have found it most useful, in many cases probably indispensable, to bring in groups of more or less expert outsiders to advise us. They are a nuisance while in the inquiry stage, but they bring together people from all corners of the community, put their work into greater focus than it had, and on many occasions come up with extremely important recommendations.

Lastly, we have embarked during the past year on a significant experiment in seeking to deal with our most serious collection gaps. This is the creation, last March, of a Critical Collection Priorities Committee, chaired by CIA's Deputy Director for Intelligence and with high-level representation from all the main agencies. This committee, chartered to look into any aspect of collection on key priority objectives and to recommend action, has taken as its first task the field of guided missiles. Aided by the fact that the overall requirements in this field had been built up with exceptional care and thoroughness by our guided missile committee, the CCPC has achieved as a first step what may be the first single-document inventory of all assets being employed on the guided missile problem. Its work has great promise—which I can say the more easily as I have no connection with it—and it may well be the forerunner to future exercises in really comprehensive collection planning, though I doubt if the approach fits any but the most cleanly focused substantive problems.

A Look Ahead

Let me conclude with a word on the future of collection against the Sino-Soviet Bloc. I suspect that in terms of method the future will see an increasing emphasis on the technical collection methods, and that as to targets we should be focusing more and more on Soviet scientific plans and progress. From my viewpoint as an estimator it appears that our information on the Soviet Bloc economic picture, while of course still far below what we would like it to be, has sorted itself out tremendously in the last few years. On the political side we must go on trying, but are not likely to succeed beyond modest limits in getting advance knowledge of inner political developments or changes in foreign policy and plans. And as to military hardware, we are not in too bad shape on the conventional weapons and forces.

It is in advanced weapons and scientific progress that we find at once our most critical area and the one where our present status is least good. Though our hopes lie in the expansion of technical collection systems, it is also true that in this area we have a much greater number of opportunities for getting at the fringes, and sometimes more, through contacts with Soviet scientists, the expanded Soviet scientific literature, and a host of other sources that can be tapped through the more orthodox overt and clandestine methods. Yet the use of these methods, in turn, will require a degree of education and training well beyond past needs. It is one thing to train an agent to count the flatcars going through Brest-Litovsk; quite another to train and give the right questions to an agent in a low-level position in a scientific establishment. From a guidance standpoint, this seems to me to present the greatest challenge to our ingenuity, industry, and machinery. The need is greatest, perhaps the response will be also.

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[redacted] *the U.S. strategic warning watchtower still under construction.*

THE MONITORING OF WAR INDICATORS

Thomas J. Patton

To provide warning of any surprise attack against the United States and its allies is our first national intelligence objective, but one, it has been our experience, that cannot be adequately served by the normal processes of estimative or current intelligence. We have therefore found it necessary to develop a somewhat specialized intelligence effort for advanced strategic early warning. This effort, which we have termed "indications intelligence," seeks to discern in advance any Soviet or other Communist intent to initiate hostilities, whether against the United States or its forces, its allies or their forces, or areas peripheral to the Soviet Orbit. It also seeks to detect and warn of other developments directly susceptible of enemy exploiting action which would jeopardize the security of the United States; and this effort has been extended in practice to any critical situation which might give rise to hostilities, whether or not there is an immediate threat of direct US or Soviet involvement.

We maintain a sharp distinction between this intelligence early warning—a strategic warning in advance of military operations, based on deductive conclusions about Soviet preparations—and operational early warning, tactical conclusions from information on Soviet operations now obtained largely by mechanical means. I like to think of the indications activity as having four aspects:

First, it is the cultivation of a mental *attitude* which leads to first assessment of all Soviet or Communist action in terms of preparation for early hostilities.

Second, it is the development of a body of *doctrine* which can serve as guidance for the collection of warning information, for its physical handling, and for its evaluation. Basically this is the isolation of those actions which would be most likely to constitute preparations for hostilities, whether

deliberate or in response to the immediate international situation. It is the creation, through experience, of a body of "common law" applicable to the selection, evaluation and analysis of information pertinent to warning.

Third, it is the development of *new techniques* and methods for the collection, processing, evaluation, and analysis of information significant principally or solely for purposes of strategic early warning. These techniques and methods range from finding new sources to analysis by electronic devices. With the development of missiles and the consequent sharp reduction in the time lag between an enemy decision to attack and the attack, we must give this aspect of the activity increased attention. The alternative would be a degree of abdication by intelligence to "operations," with a consequent loss to national flexibility.

Fourth, it is the *organization* of the intelligence community at all levels so that it can process most rapidly and effectively information from every source which could provide insight into Soviet preparation for hostilities. This processing involves every step from initial screening, or even collection, to the reporting of conclusions to responsible officials of the executive arm of the government. This continuous process is an integral part of, and yet different from, the current intelligence and estimative processes. When a threat appears great, as in moments of considerable crisis, the indications process tends to coalesce with both the current intelligence process and the estimative process, at least at the national level.

Before treating these aspects in detail I shall outline the organization and procedures for advance strategic warning which have evolved in the United States. Far from perfected and still evolving as they are, they will at least illustrate one national effort to provide intelligence indications of threatening war.

The Watchers and Their Work-Week

The Director of Central Intelligence and the US Intelligence Board, who have the ultimate national responsibility for this warning, have in effect delegated the function to the USIB Watch Committee. The Watch Committee is composed of senior intelligence officers at the general officer of senior colonel

level representing the major intelligence agencies, and is chaired by the Deputy Director of Central Intelligence. Although it meets only weekly during normal times, or perhaps daily during crises, its function is continuous, exercised through frequent liaison and contact and through a constant routine exchange of information and evaluations, formal or informal.

Serving the Committee is a permanent staff in the National Indications Center, the physical locus of Committee functions. The NIC staff of 25 is composed of intelligence officers at the colonel or naval captain level representing each of the major intelligence agencies, assisted by administrative, communications, and graphics personnel. The Center itself is linked by electrical communications to the major agencies. It receives from the USIB agencies a flow of possible indications information, both on a routine across-the-board basis and as evaluated and selected for possible pertinence. It has a 24-hour intelligence duty officer who is in frequent contact with duty officers in other agencies and with members of the staff. Through these contacts and communication links there is a constant interchange of information and views, but formally the Watch Committee functions on a weekly cycle which can be telescoped during crises to a matter of minutes. The cycle is rather elaborate, and while imperfect it at least aims at thoroughness. It runs roughly as follows:

Friday to Monday noon: Screening and processing information, in the NIC and in each member agency.

Monday afternoon: The NIC staff reviews available information, compiles a preliminary agenda for the Wednesday Watch Committee meeting, and teletypes it to member agencies.

Tuesday: "Pre-watch" meetings in each member agency, attended also by NIC staff members, at which available information is reviewed and selected for the Watch Committee meeting. Final agenda and graphics are prepared in the NIC.

Wednesday morning: Watch Committee meeting. All intelligence and operational information considered pertinent and its interpretation is reviewed, orally and graphically, in a two- to three-hour session. The Committee drafts its conclusions at the table.

Afternoon: Watch Committee members check its conclusions individually with USIB members. The conclusions, when coordinated through the medium of the NIC, are then published as USIB views and transmitted to responsible government officials and other recipients around the world. NIC prepares the draft body of the Watch Report, a summarization of the evidence considered by the Committee, and sends it by courier or teletype to USIB member agencies.

Thursday morning: The draft Watch Report is reviewed, updated, and commented on by USIB members and by responsible analysts at the desk level in all major agencies.

Afternoon: The NIC staff, on the basis of agency comments, prepares a final draft report and submits it to USIB members for approval.

Friday morning: The printed report is disseminated to all recipients; all concerned breathe deeply and plunge into the cycle again.

This fairly exhaustive procedure is complex, sometimes ponderous and time-consuming. But in addition to the production of the formal Committee reports, it has served another very important purpose: it has accustomed all those involved to the joint hammering-out of all the issues, including minor or particular ones. This means that when time is pressing and the issues really urgent we can arrive at joint evaluations and conclusions very quickly. Upon occasion a Committee conclusion has been passed to the White House less than an hour after the Committee was summoned to meet.

Within most of our agencies, the normal internal intelligence processes and organizations are relied on to flush out and evaluate the information which is passed to the NIC or utilized by Watch Committee members at their meetings. Several agencies, however, maintain small internal groups whose sole function is to screen out warning information and seek or stimulate evaluations of it. They are parallel pieces, by way of insurance, to the normal internal intelligence organization and process. In Air Force, for example, a 24-hour indications center is maintained to serve USAF Headquarters and to act as central for a net of small indications centers in the major geographical air commands.

Each of our major joint military commands outside the continental United States has a replica of the national Watch Committee. These are responsible to the theater joint commander, but forward their reports to Washington, where they are regularly considered by the Watch Committee. Thus in our national intelligence warning process the Watch Committee cycle has its concurrent parallels abroad dealing similarly with local warning problems. In some instances the timing of the process abroad has been adjusted to that of the Watch Committee.

With these mechanics as a background, I return to the four aspects of indications intelligence which I mentioned earlier: mental attitude, doctrine, the development of techniques, and organization. My remarks constitute an amalgam of the experience and ideas of a small number of us who have worked in indications intelligence for some years. Some of these ideas have yet to be adopted throughout our community, but our experience leads us to believe that in time they may be more widely accepted.

Attitude of the Watcher

Ideally, for the purposes of indications intelligence, some or all of the following assumptions must be made as basic working hypotheses, though each can be legitimately challenged in any given situation:

The Soviets, together with the other Communist states, are seeking an opportune time to initiate hostilities to achieve their ends.

The attack will attempt maximum surprise, possibly during periods of international calm.

The decision to initiate hostilities may be made without the military capability which we would consider requisite.

Any estimates which argue from other assumptions may be quite wrong.

If intelligence officers dealing at any stage with potential warning information can be conditioned to these assumptions, we feel that we have a greater chance of detecting that pattern of developments which may attend preparations for an attack. Intelligence officers need not be ruled by these assumptions, but they should be conscious of them when any possibly relevant information is considered: for instance, military exer-

cises should always be considered as deployments and as changes in degree of military readiness or as rehearsals for an impending attack.

We must instill and maintain this attitude in all personnel dealing with potential warning information, particularly during non-critical periods or during the fading days of a crisis. This is a difficult task, especially in a large intelligence organization with a high degree of specialization and compartmentalization. There are two obvious alternative ways of going about it. One is to wage a relentless educational campaign among the body of our intelligence personnel. This method faces some of the obstacles of a highway safety campaign or a campaign against sin; and it is possible that in laying extensive general stress on the warning problem we might overdo it and give rise to unbalanced or unduly alarmist intelligence reporting and estimates.

The other approach, which I favor, is to develop a small group of indications intelligence officers, either working together as a body or spread among various organizations but maintaining close contact. Such officers would consider information from the warning point of view only, would provide continuity in the development of doctrine, would serve as missionaries among both collectors and analysts, and would keep pressing for adequate attention to fragmentary information of potential but not necessarily apparent significance to warning. Such officers need not achieve great depth in any regional or functional intelligence field, since they could rely on experts for the necessary support. It has been our experience that intelligence officers given this responsiblity become enthusiasts, if not zealots, of the indications hunt, and extremely sensitive to those visceral signals which in the last analysis may well be the vital factor in our judgment as to the imminence of a Soviet attack.

In the United States several intelligence agencies have made use of this approach to a greater or less degree. Others depend largely upon having their representatives in our National Indications Center and upon the fact that our major joint current intelligence committee, the Watch Committee, focuses on indications of hostilities and does not spread its considera-

tion to all matters of general intelligence significance. Although it might appear that this specialization could develop a predisposition to a too-frequent crying of "wolf," we feel that the joint nature of the considerations which precede the forwarding of our warnings tends to preclude the danger. In practice, we have found that the nature of our system has served to reduce the number of alarmist "flaps" which arise, particularly outside intelligence circles, from undeliberated interpretation of developments.

Doctrine of the Watch

In the development of a doctrine to guide and assist us to provide warning of an attack, we have sought first to identify in advance those actions which would constitute preparations for hostilities. Such pre-identifications, useful to both analysts and collectors, we have compiled into Indicator Lists. An *indicator* we define as a major action which the Soviets must take before they are ready for hostilities, whereas an *indication* is evidence that such an action is being or has been taken. The distinction is an essential one which all of us tend to lose sight of in common usage.

In isolating those actions which we designate as indicators or potential indicators, we are seeking answers to several key questions:

- What are the essential steps the Soviets and their allies must take in their preparation for early major hostilities?
- Which of these steps represent a degree of national commitment which would only, or most likely, follow their decision to initiate hostilities?
- In the light of the nature of information currently available to us, or which can be expected, what sort of information will we accept as evidence that these preparatory or implementing steps are being taken?
- How do we distinguish, during periods of crisis, between those actions which are precautionary and those which are preparations for deliberate hostilities?
- What actions constitute evidence that the Soviet decision-making process is in action, possibly considering the question of hostilities?

We have attempted to distinguish a series of preparation phases representing progressive steps toward a decision to attack or progressive commitment of the enemy state to war. We group the indicators in four such stages as follows:

Long Range: Actions involved in the intensified achievement of specific military capabilities, offensive or defensive, essential to the prosecution of general hostilities which are either generally anticipated or deliberately planned.

Medium Range: Actions or developments which might accompany or follow a decision to ready the nation or the military forces generally for any eventuality, or which might follow a deliberate decision for war but precede formulation, issuance or implementation of specific operational plans and orders.

Short Range: Actions which might follow or accompany the alerting and/or positioning of forces for specific attack operations or to meet an estimated possible US attack.

Immediate or Very Short Range: Actions which might accompany or immediately precede a Soviet attack (frequently combined in practice with the preceding stage).

These stages can, and have been, defined at greater length or quite differently, but the purpose is the same—to arrive at a listing which groups at one end those actions which may represent long-range preparations for hostilities, but not necessarily a commitment to them, and at the other end those actions which, by their urgency and costliness, appear to connote a commitment of the enemy state to war. It also gives us a sensing of the imminence associated with such indications as we may detect, and of the phasing in time among them.

In our listings we attempt to give not only the major actions which constitute indicators, but also some of the contributory indicators which, if noted in concert, would comprise evidence of a major indication otherwise undetected. Our phased approach also serves to isolate actions by which we hope to gauge the extent and danger of Communist reaction to a particular, perhaps seemingly localized, crisis.

Our proposed schedule of lists will include:

First, a general indicator list stating in broad terms the major actions we would expect.

Second, a series of functional lists in much greater detail. There will be separate lists for Long Range Air Force preparations, ground force preparations, political and diplomatic activities, clandestine activities, civil defense, military medicine, weather service, etc.

Third, a series of lists which address themselves to specialized sources, including the technical sources. These lists, in effect, are an application of the preceding lists to information provided by individual sources, particularly to changes in a routine take whose warning significance might not be immediately apparent. One such list addresses itself to monitored changes in the conduct of Soviet broadcasting. Another might concern radar monitoring. Another would cover observations our embassy personnel in Moscow might make in the normal course of their daily routine: closure of some subway stations, for example, and an absence of fire engines from normal stations might provide confirmation for suspicions that late-stage civil defense preparations were under way. A similar list for legal rail travelers would include actions observable from a train window which might fit into indicator patterns.

Fourth, a series of target lists naming those installations or outfits by whom or at which *certain* activity would be of major significance, and those by whom or at which *any* activity would have major significance. Examples of the latter might be an elite Long Range Air Force unit or an air transport unit suspected of a role limited to the ferrying of nuclear "pills" to operational commands.

This is an ambitious program, reflecting primarily the paucity of available information, particularly information on the major instruments of Soviet attack. When completed, it will be a massive document. We also plan, however, a highly condensed one-sheet version of each list, perhaps in tabular form.

Such lists must be looked on only as guides, and quite often they rapidly become obsolete. In some instances we have failed so far to come up with anything really satisfactory—most notably in the missile field. But when we have had sufficient experience with our own missiles and with information on Soviet missile operations, we expect to be able to list actions

which would serve to indicate the operational readying of the Soviet missile system.

Another aspect of doctrine is formulation of the answers to these questions:

How early, or at what stage, and how often in a given situation do we inform officials of the executive arm of the government?

What general criteria do we use to determine that a warning situation exists?

Our first premise is that we should provide executive officials with the earliest warning possible. This means, in effect, a progressive series of warnings—from a generalized one, perhaps conveying only our sense of uneasiness, through a contingent one pointing out that if certain further actions take place it may be that hostilities are imminent, to an unconditional one conveying our conviction that an attack is forthcoming.

The criteria of a warning situation lie in patterns, in configurations of Soviet or Communist activity which might be consistent with some stage in preparations for early war. Once an apparent pattern is detected, giving an indications situation although not necessarily an alert situation, the hypothetical patterns which we have constructed in the preparation of our indicator lists suggest further developments to look for. If information on such developments is subsequently received, we have then progressed toward an alert situation.

When we note apparent patterns of preparation we alert our field collection, particularly to our need for information on major indicators. When we receive information on the accomplishment of one or more isolated major indicators, we also alert the field, this time to our need for information on those other indicators we might expect to see patterned with them. In both instances we feel that we have the basis for some form of warning to the government, even though we may have no conviction that a pre-war situation exists.

The pattern approach is particularly applicable to the surprise attack; it has limitations in situations of localized tension, where the buildup for a limited attack may be as complete as it will ever be, but where there may have been no political decision to make the attack. The indications effort

may suggest refinments in our collection, and it may assist in narrowing the field we must search in order to detect evidence of the decision; but it cannot go a great deal further. Subsequent developments are sometimes almost exclusively matter for tactical or operational intelligence. Indications intelligence is looked to, however, for warning of preparations to broaden a localized situation or to cope with an expected broadening.

Techniques and New Techniques

Our attempt to develop techniques has thus far been aimed at facilitating the processing and analysis of information and the detection of patterns, and at exposing areas requiring further analytical investigation or more extensive collection efforts. We have used extensively the more orthodox methods, although despite their usefulness we have had to abandon some because of their expense in time and personnel. To describe a few:

Card files of information extracted only for apparent or potential indications significance—one item to a card in three separate files, according to functional fields, date, and the apparent axis or targets of Soviet/Communist attack.

Running lists constituting highly condensed summaries of apparently significant developments arranged according to the apparent axis of attack.

"Shelf-paper" rolls of charts with summarized information of apparent indications significance entered according to date of activity, area and functional field, or in other arrangements.

Highly condensed summaries of apparent current indications, negative and positive, bearing on particular situations.

Quarterly summaries of indications, including only selected developments of apparent medium- or long-range significance.

There have also been efforts, some only experimental, at posting developments on display charts or boards categorized variously according to area, functional field, date of activity, and degree of imminence or hypothetical length of pre-attack time remaining. Through the use of colors

and other devices, such displays serve to call attention to possibilities which need further investigation. The Air Force, which has been the most active among our departments in the development of indicator techniques, devised such an indicator display board for use in all Air Force indications centers and is now experimenting with other graphic means of calling attention to trends and potential warning situations.

There have been a number of suggestions for the use of electronic devices which could store information so coded and weighted that when queried they would respond with a "temperature" reading and a predicted area and time of danger. We have been hesitant to plunge into this sort of thing, because the information fed in would in many cases be so uncertain, and its weighting—which would reflect immediate judgment as to its significance—even more uncertain. I do not believe, however, that we should rule out this approach forever. In many respects, our most important warning information is becoming more and more fragmentary and more and more of a technical nature. It is hard information, such as detection of radar emanations, but difficult to evaluate, analyze and record by our conventional methods. It may be that an imaginative and judicious use of machines will enable us to put such information quickly into meaningful patterns which can contribute to our warning.

In developing these techniques we are merely seeking aids to analysis and to presenting the situation. In no sense do we believe that intelligence warning can be performed mechanically, although there are a surprising number of people who believe that this is possible or that it is what we are trying to do.

There is also a need for development of new collection techniques for warning purposes. One thing that can be done is to formulate a coordinated series of collection requirements and reporting directives which would be put into effect only during periods of alert or international crises, when certain types of information would assume new significance. Another is to direct a series of routine monitoring-type missions against selected targets for indications purposes only, with a view to detecting any changes from normal activity. The targets

themselves might be of minor importance, but changes in their activities might reflect far more important activities elsewhere. A series of somewhat riskier pre-planned monitoring-type missions could be reserved for periods of alert, when the risks could be justified by the depth of our suspicions.

It may be possible to devise new technical collection systems or adapt some now in use to the purposes of warning intelligence. Electronic intelligence, for example, I understand now produces chiefly information on capabilities, new technical developments and order of battle. We must rethink it to see if it can produce unique information on changes in day-to-day activities which would be meaningful to indications intelligence. Early in the development of any new collection device its possibilities for indications intelligence should be examined. This is frequently done far too late.

There is also a need, presumably through communications techniques, for reducing the time lags between collection of information and its effective presentation for evaluation. Our air defense has found it necessary to develop methods for automatic or semi-automatic presentation, and even analysis, of tactical air warning information. But intelligence warning information, although we have been able to cut down actual transmission times for a few highly select messages from field collection points, is too often subject to completely unacceptable, even though understandable, delays.

Organizational Devices

I have touched in the foregoing sections on some of the organizational devices introduced in the National Indications Center and member agencies in support of the Watch Committee's function, devices which range from the establishment of the NIC itself and the USIB coordination mechanism to the creation of small parallel indications staffs in individual agencies. I believe that certain other organizational measures might in some form or combination further facilitate our warning efforts. One would be a sort of national directory of intelligence assignments which would locate and fix responsibility for analysis and reporting of potential warning information for every segment of our intelligence coverage, no matter how minor.

Then there might be created a body of collection experts, perhaps even supported by a collection coordination center, which would work in harness with the Watch Committee and the National Indications Center. This might assist, particularly during moments of crisis when time is short, in the coordinated search for missing elements of information or in the rapid clarification of uncertain information.

Finally, we could organize against emergencies a thoroughgoing phased national intelligence alert, making provision for availability of intelligence personnel, extent of 24-hour staffing, availability of administrative support (including communications), comprehensive situation reporting by field collection and by intelligence agencies, and the initiation of preplanned collection measures such as the assignment of new priorities and targets and the activation of reserve or one-shot sources. Such a total alert would be very difficult to arrange and to keep current, but it could save precious hours.

There is such great change either present or impending in methods of warfare and the balance of power between East and West that the task of providing warning is increasingly difficult. The two major factors in this increasing difficulty are a) the accelerating compression in time between the enemy decision to launch an attack and its launching and between the launching and its delivery, and b) the concurrent reduction in the amount and variety of discernible pre-attack activity. It seems to me that now, as never before, we must subject our intelligence organization and processes for collection and evaluation to continuing scrutiny, and must improve or adapt them to cope with the changing conditions. We must ensure that we are collecting and considering the proper information and that we eliminate every possible delay in the processing of the potentially vital information. Furthermore, in order to provide warning, no matter how contingent, at the earliest possible stage, we must improve our understanding of Soviet Bloc decision-making and strategic doctrine.

The intelligence officer turns salesman to tap the potential of big business and the suspicious refugee.

TECHNIQUES OF DOMESTIC INTELLIGENCE COLLECTION

Anthony F. Czajkowski

The process of getting intelligence information out of people is normally associated with overseas operations, but it was demonstrated during World War II that this clandestine activity can usefully be supplemented by collection in the analyst's own back yard. Potential sources of intelligence within the United States are myriad. US concerns have been active in various parts of the world for many decades and their records often contain information which a clandestine agent would have little hope of obtaining, especially in war-time. Representatives of industrial plants travel continually and compile expert reports and evaluations on foreign economic and financial affairs. The current increase in East-West contacts has sent thousands of US citizens as travellers to countries of the Soviet Bloc. Scientists and academicians attend international meetings and conferences, where they meet and exchange information with opposite numbers from all parts of the world. Refugees from the Soviet Union and its satellite nations continue to enter the United States for permanent residence.

For more than ten years the Contact Division of CIA's Office of Operations, with its network of field offices throughout the country, has been tapping this vast potential of information on behalf of the intelligence community. Since 1948 over forty thousand individuals and companies have supplied information ranging into every field of intelligence. Through this collection operation the community has at its disposal the expert analysis and commentary of the most knowledgeable people in the academic, scientific, professional and industrial fields.

Getting information from these individuals calls for techniques different from those employed in clandestine collection. The contact specialist, as the domestic field collector is known, has no control over his Source. The Source provides the information voluntarily, with no hint of pressure or threat, because he has been convinced that he can be of singular assistance to the US Government; but mere waving of the flag does not automatically trigger the cornucopia of intelligence plenty. US citizens, as a rule, know little of intelligence organizations and intelligence needs. A visit to a businessman by a government representative arouses instinctive fear that the company books are about to be examined for tax purposes, that an anti-trust suit is pending, or that an investigation is being conducted against a friend. Academicians and missionaries are apprehensive that their cooperation with US intelligence will become known and hinder their future activity in a foreign area. The alien, wise to the ways of intelligence and security services, distrusts the contact officer (credentials are easily forged, he claims) or fears for the safety of relatives still living behind the Curtain.

To convert the hesitant businessman or fearful alien into a cooperative Source, the contact officer must have a wide diversity of skills. He must be a salesman, selling his prospect on the importance of the intelligence function; he must be an intelligence officer, knowing the needs and the gaps in the community's information; he must play the practical psychologist, handling dissimilar personalities with dexterity; and finally he becomes a skilled reporter, putting the Source's information into a concise and readable intelligence report.

Locating and Contacting the New Source

Since the contact officer cannot hope to approach all the commercial, banking, educational, and scientific institutions, as well as all the aliens, in his area, he must learn to select from among his possible sources. He obtains leads from trade journals and directories, from established sources, from Agency headquarters, and from other government agencies. Matching these leads against his knowledge of current intelligence requirements, he tries to pinpoint those individuals and companies in his area which have the best potential for filling the requirements.

Once he decides or is directed by his field chief to "open up" a new company, institution, or individual, his first step is to brief himself on the company and if possible on the individual he is to contact. At the same time he reviews intelligence requirements in the prospective contact's field, making preliminary exploration of its potential for his purposes. He will offer no pretensions to expertise in the Source's field of specialty, but will be able to win confidence and rapport by recognizing the Source's professional interests and understanding his terminology. He cannot walk in cold on a new Source and hope to establish the proper rapport for a continuing contact.

No security clearance is required for initial contact with a US citizen. The existence of the Central Intelligence organization and its general purposes are public knowledge, and no classified information is discussed in the initial interview. Contact with an alien, on the other hand, must first be cleared with the FBI as a matter of internal security.

In approaching a new company or institution, the contact officer always goes to the top man, to the president, the chairman of the board, or whoever determines broad policy for the company. Once cooperation is obtained at the highest level, it is assured at all subordinate levels. The president will not ordinarily have the information intelligence is seeking, but he will designate the official in the company who does have it and who will be the future contact. If a subordinate is contacted first, experience has shown, an embarrassing situation can arise when the president inquires why his company is being "penetrated" by the US Government.

To interview the executive an appointment is of course necessary, and executives have secretaries whose function it is to keep unwelcome visitors away and screen phone calls to the "boss." The secretary wants to know who is calling and why. The contact officer gives her his name and identifies himself as a representative of the federal Government who wishes to speak to her boss on a confidential matter. Few secretaries dare to block such a call except in companies which have frequent contact with government agencies. The persistently inquisitive secretary is told that the caller will explain his purpose fully to the boss.

Once he has been put through to the executive, the contact officer identifies himself more fully by revealing his association with US intelligence or, if pressed, with CIA. He outlines briefly why he desires a personal interview. Most individuals, when first approached, associate a government official with one of the enforcement agencies, and the contact man therefore seeks an early appointment.

The First Interview

Since the contact officer's objective is to convert the prospect into a continuing and cooperative Source, he must take especial care to make the best initial impression. Temperaments and social customs vary in different parts of the country, and the officer must comport himself according to the Source's taste. Whereas a ten-gallon hat and a string tie may be acceptable in Texas or in Arizona, they cause raised eyebrows in Boston and New York. It has become axiomatic that the contact man should dress as conservatively as the most conservative of his contacts for that day. Religious or fraternal pins are better not worn. In calling on a missionary or religious source discussion of religion is avoided. The intelligence officer cannot allow himself the liberty of drawing racial, color, or religious lines.

When, promptly at the time of his appointment, the contact officer arrives and is ushered into the Source's office, he immediately shows his credentials and underscores his association with CIA to emphasize that he does not represent the FBI or any other federal agency. The Source is naturally curious about the visit, and may even have been troubled since the first phone call. The officer tries to put him at ease immediately. The approach will vary, depending on circumstance, on the personality of the Source, and even on the area. In the North and West, and to some extent on the West Coast, the typical Source is a busy man who has sandwiched this appointment into a tight schedule. The contact officer must talk fast and convincingly, in a business-like manner, to win his cooperation. In the South and the mid-West a certain amount of pleasantry or chit-chat may be in order before getting down to the issue at hand.

Whatever approach he uses, the contact man must accomplish three things during his initial visit—explain the intelli-

gence mission, assess the potential of the company for his purposes, and show the Source how he or his company can be of assistance to the cause of national security.

Private citizens have varying amounts of knowledge about intelligence, and the first task is to orient the Source on Central Intelligence purposes and its place in the federal Government. The contact officer brings out the Director's advisory function to the National Security Council headed by the President, stressing how necessary it is for policy makers to be well informed on conditions and events throughout the world. He also explains that he represents all the intelligence agencies in the Government, so that needless duplication in visits by other intelligence representatives can be avoided. The Source can contribute to the welfare of the country, he says, by making available whatever information on foreign plants, research and development, or other matters he may possess or acquire.

The assessment of the company's potential then follows naturally. The Source is usually willing to cooperate but may fail to see how any information he has will be of value to the intelligence effort. The contact man then introduces questions on the company's foreign branches or affiliates, the extent of its foreign business, and the degree to which the home office is kept aware of conditions in areas in which the company operates.

At this point the Source may become apprehensive that any information he provides may boomerang against his interests, through punitive action by another federal agency, through revelation of proprietary information to a competitor, or through embarrassment of his future dealings with foreign companies or governments. The contact man convincingly reassures him that a guiding principle of all relations with informants is Source protection. The name of the Source is never connected with his information. Nor is data provided by a Source ever turned over to another federal agency for any regulatory or punitive action. Information given by the Source is circulated only in intelligence channels within the United States, and the Source need not have any apprehension that his name or his information will get into unauthorized hands. His cooperation with intelligence, as well as the information provided by him, is kept classified.

Conversely, the Source is requested to treat the contact as classified and not to reveal to anyone the purpose of the visit. It is pointed out that the need for security is mutual. Further, since this confidential contact may be followed by other visits in which classified requirements may be used, biographic information on the Source for security assessment is requested. Ordinarily, if the contact officer has laid the proper basis for a continuing contact with the Source, whether the top executive or one of his subordinates, he has no difficulty in securing biographic data.

The officer cannot rely on his memory to retain the information divulged during the interview. He inquires whether the Source has any objection to note-taking—an inquiry which is generally academic, for it adds to the Source's feeling that he is doing something important if his words are taken down. On biographic and technical data note-taking is naturally a matter of course.

The length of the first interview is governed by the time available to the Source and the contact officer's estimate of the Source's intelligence potential. The experienced contact man can assess the company's potential in a short time, and if his assessment is negative he arranges for a graceful exit as soon as possible. If he believes that the company does have access to useful information, he explores the possibilities as completely as time and circumstance allow. In this case, the length of interview must be gauged by the Source's attitude and his appointment book. It sometimes happens, on the other hand, that the Source has time on his hands and relishes having the ear of a government representative into which to pour all his ideas on what he thinks is "wrong with Washington." Here the contact officer politely steers the conversation to the purpose of his visit, creating the impression that he himself is a busy man.

The first interview is terminated with the understanding that the officer will probably return to explore the company's information further. If a return is actually contemplated, he leaves a personal card which bears his name, his field office's postoffice box number, and his (unlisted) office telephone number. The name of the Agency does not appear on this card. About a week or ten days later he writes the Source to thank

him for his cooperation, mentioning that he is looking forward to another visit. The letter serves to remind the Source of intelligence interests and gives him again the officer's name and phone number, should he have misplaced the calling-card.

After the initial interview the contact officer must estimate the future usefulness of the Source and his company. Should he follow up or not? If after consultation with his field office chief he decides that the company has insufficient potential to warrant further expenditure of time and effort, he sends a complete account of his visit, plus the biographic data he has obtained on the Source, to Division Headquarters, with a notation that further contact is not contemplated. A copy is of course retained in the field office, for the guidance of other contact officers who may some day obtain a lead on the same company. If, on the other hand, he decides that the company and the Source can and will supply intelligence information of value, he submits to Headquarters not only an account of his visit but also a request for security clearance on the individuals with whom he will be dealing. The secretary, if she is witting to the intelligence contact, may also have to be cleared.

Continuing Contact

How often the contact officer calls on a company depends on several factors—the amount and type of information it has available, its distance from his field office, his own work-load, the Source's own preferences and schedule. If the contact officer has determined that a company has information periodically, he makes it a point to pay it several visits a year, even though each visit may not produce intelligence. An ideal Source is one who has been "trained" to such a point that he will telephone when he has information of interest or when a company official has returned from a trip abroad. But the contact man is well aware that a company official thinks in terms of his own daily business needs and tends to forget intelligence needs. Like the salesman, the contact specialist must periodically revive interest in his product.

Subsequent visits to a company are relatively easy to handle. In a large company the contact officer utilizes as principal Source the person designated by the president, but also continually attempts to become acquainted with the

head of every department in which foreign intelligence may be found. This intelligence may take the form of reports from managers of overseas branches or affiliates, contracts or neogtiations with foreign companies or countries, or interviews with returning officials. Travellers abroad are an important font of intelligence, and the officer tries to arrange for regular immediate notification when such travel takes place.

When the contact officer learns that a cleared company official is about to travel on company business abroad, he is faced with the often difficult question of whether to brief him, that is, to instruct him beforehand in specific intelligence interests in the areas to be visited. The decision to brief, involving security and psychological hazards, is an infrequent one. Sometimes the business traveller is outraged at an attempt to recruit him as a "spy." But if the officer has worked with a Source for some time, considers him reliable, and is confident that he will not interpret the briefing as a mandate to engage in cloak-and-dagger activity, then he requests the entire intelligence community, through his headquarters channels, to provide questions for which the Source may be able to obtain answers. If he decides that a specific outlining of intelligence gaps is not desirable, he reminds the prospective traveller of the general needs of the community and suggests that whatever is of interest to him as a specialist in his field will be of interest to intelligence as well. In either case the Source must be discreet enough—and not all business travellers have been—to avoid advertising abroad that he is out to get "inside dope for CIA."

After the traveller has returned, the contact officer seeks an interview as soon as mutually convenient. If there was a briefing, the same questions may be used in debriefing. If the Source was not specifically primed with requirements for the trip, community requirements may be obtained for the debriefing. Formal requirements, however, are only guides to the interview rather than limitations on it. The contact officer tries to get as much detail as possible on all items of interest the Source may have encountered. Since a detailed interview takes time and the returned traveller is generally preoccupied with business matters that have piled up during his absence, a copy of the trip report which he must usually write for his company may be helpful. This report, however,

will deal exclusively with his company's business, and interviews will still be necessary to explore any other subjects or areas on which the Source may be competent to report.

Mechanical aids are occasionally used to expedite the interview process. Although the modern businessman is well acquainted with the tape recorder or dictaphone and generally has no objection to their use, the contact man makes it a point to get advance permission for them. Some Sources, suggesting that an outline of the type of information desired be left with them, offer to dictate the answers as time permits into a tape recorder. Under this procedure the Source must be reminded to specify which questions he is answering and to spell out proper names.

Intelligence collected is not limited to the spoken and written word, but often includes maps, flow charts, photographs, graphics, floor plans, etc. These items are of most use to intelligence analysts when they are obtained for permanent retention, preferably in the original copy; but the Source usually has only a few copies and may balk at providing any for retention. Here the persuasiveness of the contact man must again prove itself. If he cannot talk the Source out of a copy, he tries at least to obtain the item on loan for 30 days so he can send it to Washington for reproduction.

Intelligence collection is essentially a one-way street, with the Sources giving and the collector receiving, but occasionally a Source requests reciprocity. The contact officer does have such unclassified items as the FBIS daily report on foreign broadcasts and translations of Soviet scientific abstracts at his disposal for distribution to selected Sources, and this *quid pro quo* helps to cement a cordial relationship. A greater strain on the relationship with a firm occurs when the Source requests specific information in return. A company may be opening a new branch overseas and desire information as to whether its proposed indigenous branch manager is pro-Communist or unreliable in some other way. Or a firm may request assistance in arranging for the immigration of a skilled worker. Such requests are especially embarrassing when they come from a company which has been thoroughly cooperative and which may itself have provided covert support to the Agency. The contact man extricates himself from such situations by referring the requestor whenever possible

to the appropriate federal agency. If that does not work, he agrees to take the matter up with his Washington headquarters and throws on Washington the blame for inability to comply with the company's request.

The many foreign specialists who visit US firms and institutions also have information of intelligence interest. These, however, the collector cannot talk to directly; intelligence policy forbids interviewing aliens in the United States on temporary visits. If time and occasion permit, the contact officer enlists the aid of an established Source within the firm visited to act as a cut-out or middleman. He briefs the cut-out on intelligence interests and encourages him to intertwine intelligence questions into his conversations with the visitor. The cut-out is also in a good position to assess the visitor's technical competence and personal idiosyncracies. Interviewing through a cut-out, even more than interviewing through an interpreter, is less satisfactory than a direct encounter, but is preferable to creating an impression that visitors are invited to the United States only for intelligence exploitation.

University Exploitation

Thus far we have dealt almost exclusively with commercial or industrial firms as sources of intelligence. Other fruitful Sources are found in universities, research institutes and hospitals, pharmaceutical houses, etc. The contact officer often finds that he must approach these Sources somewhat differently than he approaches industrial ones. In the industrial firm he deals with Sources as officials of the company. In universities and similar institutions he deals with professors and researchers as individuals.

The basic approach is nevertheless the same. The president of the university is the initial point of contact; the contacter needs his blessing for the exploitation of university personnel and records. Lesser officials and faculty members also tend to be more cooperative when they know that the president is aware of the intelligence collection activity and approves of it. The deans of the schools, the dean of students, and department chairmen are worth cultivating, for most of the day-to-day activity of the university filters through their offices. They can, for instance, provide information on special

research projects, foreign travel of faculty members, visiting foreign scholars, foreign graduate students, and other points of intelligence interest.

But the best Source is usually the individual professor who has just travelled abroad, attended an international conference, or entertained a foreign visitor. Like the businessman, the professor must be convinced that his information will receive the highest degree of protection.

The contact officer finds it rewarding to consult a *Who's Who* or some other reference work to obtain personal data and to determine the Source's professional stature and specific field of research interest. The Source is usually flattered that his professional competence is known to a layman. At the same time the officer must not pretend to knowledge he does not have on a technical subject, for such a sham is easily and quickly detected by the Source. Every man, and especially a professor, likes to talk about his work; and the interviewer's manifested interest in learning more about a subject of which he knows little usually kindles the academic spark. As a novice in the subject, the contact officer has ample excuse to ask for explanation and detail on each point made, even though the information may appear elementary to the Source. The officer must, however, take especial care to record faithfully this kind of data, for technical information has little value unless it is accurate. This may require another visit to the Source to verify the accuracy of the officer's report after he has finished writing it.

A problem the contact officer may encounter in his visits to a university is the lack of privacy. Few universities have individual offices for all members of the faculty. Doubling-up is frequent, and in some schools general faculty rooms or departmental offices are used in common. The officer makes every effort to arrange a meeting in private, soliciting the aid of the professor himself in trying to find a private spot. Even a quiet corner of the cafeteria or a meeting in the officer's automobile is preferable to one in a room where the interview can be overheard by other individuals. The professor is usually impressed by the officer's insistence on a secure meeting, and the confidential nature of the relationship is thus underlined.

The Alien

Getting information from the alien involves techniques vastly different from those used in dealing with US citizens. For collection purposes an alien is defined as a recent arrival for permanent residence in this country, as opposed to the visitor or foreign student. In practice, alien Sources have been refugees from eastern Europe, with a small sprinkling of immigrants from the Far East. Initially the displaced persons of World War II, driven or escaping from lands occupied by the German military forces, were exploited for their knowledge of areas which were under Communist rule after 1945. The influx of Hungarians after the events of October 1956 presented another golden opportunity to collect current intelligence on an inaccessible area. More recently the increased travel between the Soviet Bloc and the United States and the greater emigration of Satellite nationals to visit or rejoin relatives here have given impetus to the alien exploitation program.

Because techniques in contacting and exploiting aliens are so different from those used in dealing with industrial or academic Sources, alien specialists with language ability and particular adaptability and perseverance have been assigned to field offices where alien concentrations are greatest. Adaptability is needed because of the varied types of alien with whom the contact officer must deal, ranging from a former minister in an exiled government to the janitor in a munitions factory. Perseverance is required to spend the time and effort needed to track an alien as he moves from one address to another. The interviews must usually be conducted in the evening or on weekends, since the alien in most cases cannot be interviewed at his place of employment.

In addition to the difficulty of locating the alien, and the odd hours involved, the contact officer faces the much greater problem of eliciting the cooperation of the Source. The greatest barrier is the alien's suspicion. He is likely to have lived by his wits almost continually since 1938, and to have been interrogated and reinterrogated by various intelligence and security services, not always in friendly fashion; his instinctive reaction is to have nothing to do with an intelligence agent. A second barrier is the language, for few

aliens speak enough English to carry on a detailed interview. The contact officer's language ability may overcome this handicap, but he should be aware of the danger that a native fluency may cause the Source to suspect him as the agent of a foreign security service. Frequently the alien has greater trust and confidence in a contact man whose crude working knowledge of the foreign language betrays him as obviously American. If there is no mutual language in which to converse an interpreter must be obtained. Field offices maintain lists of cleared Sources who can act as interpreters, but here again the alien may doubt the *bona fides* of the interpreter. He may trust the contact man but be suspicious of his co-national.

The contact officer tries to make an appointment with the alien, by telephone if any, or by letter. Often, though, he must knock on the door without previous appointment, hoping that his prospect is at home. The scene that greets him when he enters the alien's home is that of the entire family arrayed behind the man of the house, who, they fear, is in trouble. He realizes that he cannot possibly speak to the alien in private, for any attempt to lead him away from the family group confirms their suspicion that something is wrong. He is forced to present the purpose of his trip to the entire family in an effort to allay their fears. Most aliens are quick to grasp the needs of an intelligence service but they must still convince themselves that their caller is actually a representative of the US and not a foreign intelligence service. The officer tells them that if they have any doubt about the authenticity of his credentials they should call the local office of the FBI. He stresses very emphatically, however, that he is not an FBI agent, but represents an intelligence organization interested only in foreign intelligence.

Once the hard shell of suspicion and distrust is pierced, the alien becomes a most cooperative source. He is flattered that the US Government has sought him out and pleased that he can contribute to the fight against Communism. He is useful both in supplying information from his own knowledge and experience and in giving leads on co-nationals who may have additional information. Aliens also correspond and send pack-

ages to relatives abroad and the correspondence may be of intelligence interest, but the contact officer must first overcome their fear that harm may come to a relative if they reveal too much.

The officer is very often the federal Government's only contact with the alien, who therefore tends to look to him as a general father confessor, employment counsellor, psychiatrist and sounding board for pet ideas or pet peeves. His immigration and citizenship problems, obstacles to the immigration of his relatives, or his dissatisfaction with his employment he presents to the contact man for solution, since in his mind an intelligence service is above the laws and regulations established for ordinary citizens. The contact officer is careful not to make any commitments, referring the alien to the appropriate federal agency. He must also take care not to involve himself in the politics of ethnic groups, for most of them are split into hostile camps.

The matter of payment sometimes arises here. The vast majority of alien Sources are happy to make available whatever information they have as a contribution to their new country. Occasionally, however, having spent a considerable amount of time in preparing a detailed and important report, an alien may express a desire for compensation. The contact officer must obtain an evaluation from Headquarters before he can make such compensation; and even with Headquarters' approval he is treading on dangerous ground, for there is an effective grapevine within the nationality groups, and his future requests for cooperation from others may be met with similar demands for payment. In general, an occasional lunch or dinner should constitute the extent of financial outlay on an alien.

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This discussion of domestic collection techniques has of necessity been cast in terms of averages and stereotypes. Every contact specialist in the field could point out many exceptions to the generalizations here drawn and show the peculiarities of dealing with Sources in his own area. The techniques which have been developed remain individual and flexible, varying with three variable factors, the collector,

the Source, and the material to be collected. Each collector applies those personal techniques, gained through experience, which are called for in a given situation to extract the greatest amount of raw intelligence from his Source; but his methods are likely to fall roughly into the patterns outlined above.

The estimator must cure the raw findings of the social sciences in the light of history in order to weigh soundly the probabilities for the future.

HISTORY'S ROLE IN INTELLIGENCE ESTIMATING

Cyrus H. Peake

A major responsibility of the intelligence analyst is to make estimates or forecasts of developments in the field or country of his specialty. What can a knowledge of history contribute to the accuracy of his estimates? It is frequently said that history cannot instruct the contemporary generation because it never exactly repeats itself. This negative viewpoint, held even by some professional historians, is of little comfort to the harassed analyst who is required to forecast economic trends and anticipate uprisings, election-results, coup d'états, and even wars, when all too frequently he has observed that his effort to forecast an economic or political development on the basis of specialized knowledge provided by the methodology of economics, social or political science, or some other particular discipline, has missed wide the mark.

The reason for his disappointments in relying on these sciences, the historian might inform him, is that coming events, like past ones, are brought to occur through the decisions of men, men reacting to a complex milieu of interwoven economic, social, political, psychological and historical forces. There are no simple direct cause-and-effect relationships among these forces which might form the basis for a precise logical calculation of their composite resultant. Therefore the estimator has to be more than a specialist. He needs to have a grasp of all aspects of a developing situation combined with an understanding of the personalities of the decision-makers involved.

There are two ways to acquire the broad and balanced sensitivity needed by the estimator, one through long residence in the area in question, with close observation and participation in its life and fortunes, and one vicarious, through

thoughtful study of its history. The vicarious way is the practical one for most intelligence analysts, and it has the advantage of bringing a perspective which might be distorted in on-the-spot experience. Particularly in reaching this perspective, there is really no substitute for a profound understanding of the past in general, as well as the history of the particular nation or people with which the estimator is concerned. Armed with such an understanding, he will be able to protect himself against a number of fallacies to which the functional specialist falls prey.

Capabilities and Intentions

He will be better able to resist the temptation to project into the future simple cause-and-effect relationships and logical or rational deductions which have not been found valid for human affairs in the past. He will be protected, for example, against the assumption that an "objective" appraisal of a nation's capabilities is the same as that held by the nation's ruling elite, as well as the more fallacious assumption that the rulers' intentions are necessarily formed and limited by their capabilities.

Back in 1950 the opinion was widely held in the Washington intelligence community that the Chinese Communists would not enter the Korean conflict because their logistic capabilities were patently inadequate to win it and because they would want to devote their energies to consolidating politically and economically the hold over China newly acquired through military action. They ignored these inadequate capabilities, however, and came to the aid of their fellow-Communists. By hindsight, it seems clear that, aside from considerations of national security, their objective of political consolidation was served by the psychological effect on the Chinese people of fighting in defense of the "motherland" against "imperialist" America, and meantime the USSR was required to supply them with modern weapons and facilitate their development of modernized armed forces. The limitations on their capabilities need not have entered their calculations, since these advantages could be gained without driving the UN forces out of Korea, and the limited objective of forcing the invader back from the Yalu involved appropriately limited military requirements.

Similarly bad estimating resulted from too much attention to the capabilities at the disposal of Hitler, Mussolini, and the Japanese militarists. Their war goals were far more ambitious than those of the Chinese in Korea, and many prominent and responsible individuals in their countries knew they did not have the capabilities to attain them. Yet with the willfulness, wishfulness, or desperation of human rulers, these men made the decision to go to war.

Historically speaking, the intentions or objectives born of men's ambitions, conceits, and hopes have more often influenced their decisions to go to war than an objective appraisal of their capabilities. Intelligence should of course estimate capabilities, but should use such estimates to determine whether courses of action would be successful or how long they could be pursued, not as the sole determinant of decisions on courses of action.

More Than Bread Alone

The estimator with historical perspective will be on guard against the error of extending a narrow unilinear analysis of a current situation into a general forecast, of automatically extending, for example, the analysis of an economic situation to cover the political and psychological future, on the mistaken assumption that economic laws determine the course of human affairs. Karl Marx, the most successful of the economic determinists in getting his theories tested in practice, has been strikingly unsuccessful in getting them confirmed by history. He theorized that Communism would come inevitably to those advanced industrial societies where capitalism was most developed; but approaches to Communism have taken best hold in the least capitalistic and industrialized societies, Russia and China, and have been most successfully resisted in advanced industrial societies, both East and West. And the nineteenth-century Communist prophecy that the rich would become richer and the poor become poorer in capitalistic economies has in the twentieth century proved patently false.

Human motivation is no more exclusively based on economic factors than on Freudian principles. Even *economic* courses of action do not necessarily derive from economic motivation, as witness those of the materialistic Marxist

states themselves, where "commercial considerations alone are seldom the moving spirit of [foreign economic] policies.[1]" And elsewhere history has repeatedly shown that man is capable of denying himself immediate economic advantages in order to maintain dignity and self-respect or to acquire independence. In short, while everyone may have his price, his price or what he prizes is not always primarily economic.

How is one fully to explain the historical lag in the economic and technical development of areas such as pre-bolshevik Russia, pre-Communist China, and Latin America, all relatively rich in natural resources, as compared with the rise of modern industry in Japan or England, without a study of historically developed political and social factors? Economic factors alone cannot explain it.

The Elephant's Tail

The reading of history will keep the intelligence analyst aware that the interpretation of a development in isolation from the matrix of forces from which it arose can be used as the basis for only the most limited and strictly qualified estimate. Every development or issue or crisis has to be viewed and appraised in broad context; it cannot be "scientifically" separated out for sterile test-tube analysis.

The 1956 intelligence failure, for example, to gauge Nasser's reaction to the withdrawal of Western financial support for his Aswan dam project apparently arose from estimative concentration on domestic Egyptian reaction to the US–UK decision, with a view to Nasser's prospects for staying in power. The State Department analysts who were asked to consider this limited range of consequences [2] apparently did not feel obliged to take into account the international aspects of the situation and the motivations of world position and prestige which led Nasser to his dramatic seizure of the Suez Canal in answer to this Western "humiliation." The partial estimate that Nasser would be able to retain power, correct as it was, proved confusing and embarrassing in the light of subsequent events, if not definitely misleading. The

[1] Stanley J. Zyzniewski, "Soviet Foreign Economic Policy," *Political Science Quarterly,* June 1958).

[2] The question was not introduced at the National Estimates level.—Editor.

analyst as estimator should not voluntarily view developments in isolation from their total setting, and should always relate his findings to the whole configurative environment historically considered.

World Views and the Man

A detailed knowledge of history will bring home to the analyst the need to place decision-makers at the focal center of his thinking, rather than abstract concepts of the laws governing human affairs. The economic determinism of Karl Marx and his intellectual descendants, the Providential guidance pictured by Bossuet and others, the random chance of chroniclers and some contemporary historians, the inevitable progress of Turgot, Condorcet and Comte, the cyclic rise and fall of nations, dynasties, and civilizations conceived by Vico and others, the organic society of Spengler's biological analogy, even Toynbee's excessively abstract challenge and response, inner and outer proletariat, etc.—all these philosophies, whatever their validity or appeal, throw into the future a light too dim and uncertain to guide the estimator.

The estimator does, however, need to be aware of these grandiose general concepts of the past, because one or more of them may frame the historical thinking of the decision-makers in his area; and a man's views of the past, whatever they are, are important in determining his decisions for the future. For man, endowed with memory and imagination, is capable of living simultaneously in the past, the present and the future. And his views of the past, which condition his actions in the present, he tends in turn more or less consciously to shape in such a manner as to justify his hopes for the future.

An estimator who does not consider with attention the personality attributes and characteristics of the decision-makers in his area and their views of the past has greatly reduced his chances of making a valid estimate. But biographic research needs to be an intimate and closely related part of economic, social, and political research, since an individual cannot be properly appraised apart from his time and milieu any more than the events which arise from his decisions and actions can be evaluated apart from the time and situation out of which they emerged.

Specific Parallels and Broad Trends

A grasp of the comparative history of civilizations, social and economic orders, empires, states, and societies will create in the analyst an imaginative awareness of the constancy of change. He will learn to look for trends in the society or state or institution he is studying, and for indicators of the direction in which it is moving. Is the trend one of flexible growth, enabling the organization or state to overcome the forces opposing it, or is it approaching the rigidity characteristic of economic, social, political or religious monopolies which suppress all competition and become inflexible in the face of changing circumstances? An awareness of trends and indicators of growth or senescence will help the analyst estimate not only the decisions which will be made, but the vigor of courses of action and the significance of events consequent upon these decisions. In other words, he will also be in a better position to assess decision-makers' capabilities to carry out their intentions.

Here we should return in conclusion to the statement that history never repeats itself and examine more carefully the validity of historical parallels. It would of course be absurd to suppose that any complex historical development is likely to be repeated in every exact detail; but it would be equally absurd to maintain because of this that developments separated in time and space are wholly dissimilar in their consequences and therefore cannot show parallel characteristic trends. One danger in using historical parallels lies in the tendency to jump to the conclusion that the end result or consummating event capping two similar developments will be logically the same. Another is the even more deplorable practice under which an interpreter of current developments, having made up his mind by other processes, searches the past for a roughly similar development to prove his point. This is a very easy and tempting thing to do: history is so rich a storehouse of strikingly parallel developments that it does not take long to find one to suit such a purpose.

If the analyst has a real grasp of history, however, he will be on guard against this easy temptation and will be able to utilize roughly similar developments of the past to stimulate reflection on the relative probabilities of a number of pos-

sible alternatives. He will be on the lookout not only for the striking parallels, but also for wherein the complex of factors and personalities entering into a current development differ from those composing the historical ones. With the aid of this process of detailed objective comparison and evaluation of historical events he will arrive at his estimate of the most probable outcome of a current development. In other words, a knowledge of history aids the estimator to employ as "scientific" a method as it is possible to devise for prognostication in the realm of human affairs. The social sciences provide the methodology, but history offers the only laboratory—unfortunately lacking the exact measurements and controls at the disposal of the physical scientist—in which to test the theories and findings of the social scientist. The intelligence estimator, in utilizing the findings of the social and political scientist, needs to superimpose on them his own imagination, insight, and understanding in order to arrive at useful and valid estimates; and this insight he will have slowly gained through study of the past.

Your professional adversary is not only a dedicated and disciplined Communist, but a learned one, with a specialty in the area where he faces you.

SOVIET INTELLIGENCE TRAINING

Sherman W. Flemer

The younger generation of Soviet intelligence officers now operating around the world have received a professional education probably unequaled anywhere. They were energetic Party activists when the intelligence services spotted them. They were already college graduates, in our terminology, thoroughly grounded in the social sciences, history, foreign affairs and languages. Beyond the college level they had done graduate work in Party schools on the theory of human social evolution—*i.e.,* Marxist-Leninist ideology—and had received some training in intelligence techniques and revolutionary tactics. Then they had been selected for their good characters, intelligence aptitude, and clean records from among many with similar educational qualifications to attend one of the intelligence institutes, where they spent at least two years in full-time study of tradecraft, the organization and methods of Soviet and foreign intelligence services, and the area and languages of their planned operational assignments. Those that have been in the business for some years have probably also taken a full-year refresher course by now.

The older generation is dependent on refresher courses to pick up what they have not learned by experience, for the intelligence institutes were not established until late in World War II days. There are now two main ones for foreign intelligence, run respectively by the military and civilian members of the Soviet intelligence community—the Armed Forces' Chief Intelligence Directorate and State Security's Foreign Directorate. The missions of these two intelligence services, and therefore the curricula of their institutes, considerably overlap: the military service collects not only military

but also scientific, technical, and economic intelligence. State Security runs also a third main Soviet intelligence institute, one training officers for the internal security services.

The Military Diplomatic Academy

The military school is called a Diplomatic Academy, in allusion to the practice of using diplomatic cover for intelligence officers abroad. It accepts candidates from all the armed forces, but they must have graduated from secondary school and a military academy, have had two years' command experience and some intelligence service, and be Party members. Their health, security, and service records must be outstanding, and they must not be older than 32.

Recognizing that its matriculants from the armed forces, for all their schooling, may not have the polish or professional scholarship expected of a military attaché, the Academy spends two years giving them as it were a B.A. in liberal arts, with courses in music and literature, philosophy and logic, psychology, and law, and some military science and military history thrown in. Only then does it get down to serious intelligence training, so its whole course lasts four years.

Beginning in the third year, the Academy's Diplomatic Preparation Department schools the student primarily for his cover duties, offering courses in diplomatic etiquette and attaché observation, collection, and reporting; but it also touches on covert tasks, operational as well as informational reporting, and the organization of deep-cover operations. Another Department teaches him about the organization of foreign armed forces and their intelligence divisions, with emphasis on the American. Meanwhile he is learning tradecraft in classes of the Special Preparation Department. Here the third year is devoted to subjects like intelligence history and methodology, comparative organization, comparative techniques, Soviet intelligence objectives, procedures under official cover and under deep cover, and the organization of third-country operations. Tradecraft proper comes in the fourth year, with courses such as agent recruitment and direction, operational techniques, communications—radio, photography, secret writing, microdots—camouflage and concealment, and counterintelligence evasion.

Practical operational exercises are carried out in Moscow and its suburbs after the techniques have been mastered in laboratories and classrooms. Theoretical exercises are also organized with the help of a *spetsfond,* a collection of classified materials including sanitized operational case histories; these are studied, analyzed, criticized, and debated with a view to developing skill and ingenuity in the establishment and operation of intelligence networks.

In preparation for his particular future assignment the harried student—for he has been attending regular political lectures and physical culture sessions on the side—is at the same time pursuing courses in the Area Studies and Foreign Language departments. He learns about the geography, politics, economics, industry, agriculture, and the communication and transportation networks of the country where he is scheduled to go and of its immediate neighbors. He learns at least one foreign language, perhaps two, with the aid of a system which divides language students into groups of no more than five for study and instruction. Finally he graduates—brain-weary, one imagines—and is assigned abroad in an attaché office of one of the military services, or perhaps in a foreign trade mission or a TASS bureau overseas.

The RaSh (Higher Intelligence School)

State Security, we noted, has separate institutes for foreign intelligence and internal security; the civilian counterpart of the Military Diplomatic Academy is the RaSh. Candidates for the RaSh, like those for the Diplomatic Academy, must belong to the Party or Komsomol, must pass a special security clearance, must be physically fit and show particular aptitudes for intelligence work. Educational prerequisites for RaSh are higher, or at least broader, than for the Academy, since the two-year RaSh curriculum offers nothing comparable with the Academy's first two liberal-arts years: candidates for enrollment must be graduates of schools of higher learning, *i.e.,* the equivalent of M.A.'s, notably in foreign trade, international relations, or foreign languages.

Our most recent detailed information on the RaSh curriculum, dating from 1953, shows the first year, like the Academy's third, filled with the more general professional subjects and a good deal of world-wide area study. RaSh seemed to

offer no equivalent of the Academy's courses on individual areas, apparently seeking to make its graduates area generalists rather than specialists; but area study nevertheless got down to details, including even foreign customs and social etiquette. Training in operational techniques was reserved for the second year, except for those of countersurveillance, a subject in which theoretical lectures were supplemented by actual tailing practice wherein the student tried to evade experienced teams shadowing him about the Moscow streets.

The second year was packed with tradecraft—Locks and Picks, Flaps and Seals, secret writing, photography, audio-surveillance, operational communications, and the spotting, development, recruitment, handling, training, and indoctrination of agents. Three categories of agent motivation were examined in order of preference—ideological, material, and blackmail. Officers with experience in foreign operations gave lectures on the organization and practices of the police and counterespionage agencies of individual countries. In the meantime, throughout the two years, the student was gaining an oral mastery of at least one foreign language, together with some reading ability. As in the Military Diplomatic Academy, the language classes were restricted in size to five students or fewer.

We have some glimpses of student life at the RaSh as of 1945–53. Students used cover names, but the married ones were allowed to live with their families in Moscow. In addition to a subsistence allowance fixed on the basis of rank, students were given free issues of civilian clothing. Radios were furnished and foreign movies shown as an aid to learning languages. Students attended lectures from 0900 to 1300 every day but Sunday and spent the afternoons and evenings doing homework, participating in exercises, and listening to Party political lectures or to special professional presentations, frequently scheduled on short notice, by outside officials from State Security or the Foreign Ministry.

The Higher School (Security)

State Security has a whole network of schools at various levels to support the discharge of its responsibilities for counterintelligence, domestic operations, investigation, and the development of foreign-language capabilities. They include a

special school for security personnel in the Satellite countries and China, a school for sergeants attached to the State Security staff, a variety of technical schools for all ranks, a Higher School for Investigators, and the Leningrad Institute of Foreign Languages. Here we shall consider only its main staff institute, the Higher School, which operates under law institute cover and is actually so accredited.

Except for its law courses, however, this school is pitched at a lower educational level than the two foreign intelligence institutes, being designed to give advanced operational training in internal security methods to officers who have already had a good deal of practical experience. Nevertheless it requires graduation from secondary school and passing a university-level entrance examination of its matriculants. As in the foreign intelligence schools, these must be Party or Komsomol members and meet high physical and security standards. They must be under 35 years old and have one or two years' experience with the security organization. They continue to get their full pay during the three-year course.

Aside from the law courses, a few general subjects such as "Party History" and "International Politics," and professional lectures on topics like "Anti-Stalinist and Deviationist Movements" and "Ecclesiastical Milieux," the course names that have reached us suggest concentrated work on security tradecraft—self-defense without weapons, recruiting agents, the guidance of networks, handling informers, field observation, surveillance, investigation techniques, radio direction finding, documentation, recognition of false documents, search, communications, operational records. Lectures are supplemented by seminar discussion sessions and by part-time assignment of individual students to operating security sections by way of practical training exercises.

The Product

Our information, detailed if somewhat dusty and remote, thus enables us to reconstruct the bare bones of Soviet intelligence training, the skeleton of the *deinosaurus*. The fearsome reptile's frame is a strong and massive one, but what counts is the flesh that clothes and the spirit that moves it. Education can enlarge a man's or a nation's capac-

ity to fulfill its creatively conceived ends, but training can also crystallize its pattern of action into a series of unimaginative automatic responses; and the individual and group capabilities which constitute the Soviet intelligence challenge cannot be measured by counting up curricula only. One must somehow gauge also the inspiration, flexilibity, devotion to a cause, self-discipline, and drive of the professional graduate. This should be the subject of another article.

A Nazi intercept officer traces the development of illegal listening-in in World War I, ascribing to its successes a monstrous influence on the course of world history.

THE EARLY DEVELOPMENT OF COMMUNICATIONS INTELLIGENCE

Wilhelm F. Flicke

For three thousand years history has offered examples of great political and military successes due solely to methods of spying on the transmitted thoughts of an opponent. Alexander the Great, Caesar, Cleopatra, Napoleon, and Metternich owed their successes to the extensive use of this kind of spying. But in modern times the invention of the telegraph, telephone, and finally radio communications has enormously increased its possibilities and given birth to organized systems of illegal listening-in, to the intercept services.

France and Austria were the leaders in this field. As early as 1908, during that period of strained relations with Italy, Austria undertook to intercept all Italian radio traffic and began regular cryptanalytic work on it. In 1911 the Austrian service was put to work on military communications, following move by move the Italian campaign against the Turks in Libya. In similar detail it reported the course of the Balkan wars of 1912–13.

France also maintained surveillance of foreign radio traffic but had little opportunity for practice on military operations before World War I began. Its principal success was in the cryptanalytic field. Having solved the cipher used between Berlin and the German ambassador in Paris, the French read Berlin's telegram transmitting the 1914 declaration of war and so garbled it before delivery that the ambassador could make nothing of it. They gained some time thus while he was asking for repeats.

Elsewhere the British had had some success with cryptanalysis; the Germans had done practically nothing; and the

Russians hadn't given intercept a thought. German field regulations did suggest that radio operators might listen in on foreign traffic when they had none of their own, but this suggestion had not been put into practice.

The War in the East

When the war broke out a few German operators began to listen to Russian army traffic for fun, but didn't know what to do with the intercepted messages; there was no regulation covering this point. Radio was still a novel and mysterious thing both in Germany and in Russia. In the Russian army the idea had not even become general that its own radio messages could be heard just as well by the enemy, and on the German side the possibility of formulating tactics on the basis of intercepted enemy traffic had not occurred to middle and lower commands.

In the first month of the war, however, the potential of military intercept was dramatically demonstrated at Tannenberg, where Hindenburg's Eighth Army faced the First and Second Russian Armies. The Russians were using plain-text radio with abandon for operational orders. The chief of the fixed German radio station at Thorn, on his own initiative, began before the battle to monitor the Russian traffic and to supply Hindenburg by motorcycle with copies of intercepted messages. Later in the course of the battle the fixed station at Königsberg and the two heavy stations of the Eighth Army staff joined in the work. The German command learned through dozens of messages the strength and organization of the enemy, his objectives and his immediate plans, and was able to make its own dispositions and adjust its tactics accordingly.

After the war the role played by this intelligence in the Tannenberg victory was minimized. Ludendorff, Hindenburg's chief of staff, acknowledged grudgingly that he ". . . had received an intercepted enemy telegram which gave us a clear picture of the enemy's moves for the following days." Hindenburg himself described the battle in such fashion as to give the impression that he was in the dark about the enemy's objectives and organization. The German Archives publication *Der Weltkrieg* admits that the German command "was advised of the objectives of the enemy in a way rarely possible

in wartime" but insists that "the critical decisions and orders for the battle . . . were made independently" of this information.

The general has not yet been born who, after winning a battle, would admit that he had won it thanks to a well-functioning intelligence service. At Tannenberg the contents of the intercepted messages played a decisive role and developments without them would have been entirely different. On the losing side, the Russian General Danilov spoke of an "unpardonable negligence" in the Russian radio service and declared that faulty communications had been the chief reason for the catastrophe.

At any rate, the success at Tannenberg gave a fillip to the German intercept work. Both the fixed stations and the army radio units were instructed to perform intercept duty when not engaged in their own traffic. Channels were set up for forwarding intercepted messages to command headquarters. The Russians were now enciphering their orders, but the Austrian cryptanalytic service was so far advanced that it had solved the Russian cipher by 19 September. The Germans did not begin regular cryptanalysis until the end of 1914.

The Russians used the simple type of cipher, invented by Julius Caesar, which substitutes a group of digits for each letter of the alphabet. This type is solved by knowledge of the relative frequency with which each letter occurs in a given language; in a ciphered German text, for example, the most frequently encountered cipher element will represent the letter *e*. Another simple system replaces syllables, endings, prefixes and other word elements with cipher; but these elements also occur with regular frequencies in a given language. Similarly full-word substitutions. More complex systems conceal these frequencies by varying the cipher element substituted, by burying the meaningful ciphers among meaningless ones, by transpositions—"box," "comb," "grille," "double box"—by reencipherment with additive sequences of meaningless symbols. All of these can be solved; it is only a question of trying enough alternative possibilities. For the cryptographer the trick is to make the number of alternatives enormous and then to change cipher so often that the cryptanalyst can never catch up with him.

During the German-Austrian operations on the eastern front in late 1914 and 1915 the military intercept service came into its own. Preparation for the joint operations was initiated by a radio deception. Once before, in the late stages of the Battle of Tannenberg, the Germans had tied up Russian reserves on their north flank when preparing to attack on the south by sending a garbled plain-text message referring to the arrival of reinforcements in the northern area. Now, after the Austrian defeat near Lemberg in September, it was necessary to withdraw elements of the German Eighth Army in East Prussia for the formation of a new Ninth Army to support the Austrian front. This weakening of the defense of East Prussia was successfully masked by referring in two garbled plain-text messages to an unloading of reinforcements which implied preparation for a new German offensive in the north.

Meanwhile the Austrians had been heartened to learn from intercepted messages that the Russians, contrary to expectation, did not intend to pursue them beyond the Wisloka, but they were worried by reports of strong enemy cavalry forces between the Nida and the Vistula. The intercept service found, however, that these were only a reconnoitering cavalry corps under General Novikov. At 0840 on 24 September Novikov transmitted a full report on his reconnaissance to the Russian High Command in Warsaw. While the Russians were deciphering this message in Warsaw, Austrian cryptographers were working on the same text, and before noon laid it deciphered before the Austrian High Command. It was probably the first time in the history of warfare that the result of enemy reconnaissance was revealed so swiftly to those against whom it was directed.

In the next few days intercepted messages showed that the Russians were regrouping and shifting their main weight north to the middle reaches of the Vistula. The German-Austrian forces, in an effort to catch the enemy off balance during this regrouping, mounted an offensive which for a time went well. But Russian traffic now betrayed the fact that enormous forces—94 divisions against the German-Austrian 52—were being assembled for an advance toward the heart of Germany.

The German and Austrian armies withdrew south to a line based on Krakow and the Carpathians. Hindenburg, appointed commander in chief of the forces in the east, ordered the Ninth Army, with all available reinforcements from East Prussia, to undertake an encircling movement on the Russian right flank. The movement began on 13 November. The Russians, their traffic showed, had no idea of the extent to which their right was threatened, and on 19 November began their general grand offensive. By this time their right wing near Lodz was almost encircled.

At this climactic juncture the German communications intelligence failed. The Russians had captured the German cipher key and deciphered enough messages to know that their own traffic was being read; they now changed their cipher. The German command had for the present to work in the dark. New Russian forces came up from the Warsaw area, and the German divisions which were supposed to encircle the enemy found themselves encircled. In the resulting battle of Lodz the annihilation of the German forces, fighting in ice and snow without any supply, seemed almost certain. Indeed, the Russians had already prepared transports to carry the remnants to captivity.

But the Austrian and German cipher bureaus had been working feverishly, and late on 21 November accomplished the solution of the new Russian cryptographic system. Current Russian messages revealed a relatively weak spot in the ring encircling the German forces; a sector near Brezeziny was held only by cavalry units. General Litzmann undertook to break through this sector, and to everyone's surprise was successful. The German troops escaped, leaving behind only their heavy materiel. The feat won for General Litzmann the nickname "Lion of Brezeziny"—a captive lion but for the cryptanalyst.

All during 1915, particularly in the German break-through and victorious advance from May to September, the interception of Russian traffic was of decisive importance. All Russian countermeasures were known in advance. Ludendorff had become so accustomed to making his dispositions on the basis of intercept results that he was impatient and nervous if he did not get them. His first question was "Any radiograms?" If no messages of importance were handed him, he

used to growl that they had not been paying enough attention and would they kindly do better. If a new cryptographic system was not promptly solved, he called it a "damned mess" and said the cryptanalysts had become "absolutely stupid."

This was the period of glory for the intercept services; it is inconceivable under the strength ratios which obtained that the summer offensive could have succeeded as it did without their intelligence on Russian dispositions. Of course, the Russians were always changing their ciphers, but the Austrian cryptanalysts were so well tuned to the Russian systems that every new key was broken within a few days. And in this the Russians afforded wonderful assistance: often they sent one and the same message in the old key and the new one; or they would send an inquiry in the old cipher and get the reply in the new one; or they would send messages in plain text referring to encrypted messages.

The consistent German and Austrian anticipation of Russian measures did not escape Russian notice. The cry of "Treason!" ran through all Russia and the Russian army, and a search for traitors began everywhere. Every Russian officer with a German-sounding name was suspect, and many of them were courtmartialled. The fury went to such lengths that finally it had to be stopped by cabinet order of the Czar. The real "traitor" was never found, and in that lay the great tragedy for the Russians; for those summer days of 1915 decided the campaign and decided it against them. And this defeat was the opening act of the revolution of 1917.

The slowness of the Russians to recognize the insecurity of their communications was amusingly illustrated as late as the spring of 1916. To veil their withdrawal of two corps from the Austrian front they had several stations carry on deceptive plain-text traffic. But they announced this plan in advance in transparent cipher, and prefixed to each of the fake messages the warning "Do not be alarmed; this is just deception."

Blitzkrieg in the West

When the war began the Russian plan on the eastern front and the German plan on the western front both called for what came later to be known as "Blitzkrieg." The Russian armies were to fight decisive battles in East Prussia and then

advance quickly on Berlin. In the west the German armies were to dash through Belgium and northern France and deliver a crushing defeat to the French army somewhere east of Paris.

There is a certain irony in the fact that at the very time when the Russians in the east were exposing themselves by clumsy use of radio so disastrously that the course of the Battle of Tannenberg wrecked their entire blitz campaign, the Germans in the west should be making the same mistake with the same result, so that although the war continued for years the fundamental idea had already been hopelessly wrecked. In the east it was the Battle of Tannenberg; in the west it was the Battle of the Marne.

Few battles in military history have had so much written about them as the Battle of the Marne. There are many names for it, of which one of the favorites among the French is "Miracle of the Marne." People have sought and found all sorts of explanations for the seemingly inexplicable bogging down of the German advance, and German Lt. Col. Hentsch has been made a scapegoat for recommending the "unnecessary" retreat. Glimpses into the archives of the French Deuxième Bureau provided by Polish Lt. Col. Szieszynski and French Col. Calvel reveal what the "miracle" was.

The invading German forces relied heavily on radio communications but devoted very little effort to making them secure. Every transmitter attached to a particular army had the same initial letter in its call sign, and call signs and frequencies were never changed. Corrections and answers to encrypted messages were often sent in plain text, and frequently the signature of the commander was carried in clear. Occasionally entire messages were sent in plain text.

The French had committed their intercept service in full even before the beginning of the war. By mere checking of call-signs they were able to identify the staff transmitters of the armies, the staff transmitters of most of the cavalry divisions, and the staff transmitters of some of the army corps and infantry divisions. Enciphered messages were all quickly solvable because of references in plain text to their contents. In the course of fourteen days the French service picked up some 350 messages from the cavalry corps under General von der

Markwitz alone. These revealed not merely all this corps' movements, plans and deployment, but those of the whole First Army to its north, under von Kluck, and of the Second Army to the south under von Bülow.

The First Army had had to move north to avoid being outflanked by the French Sixth Army, and this had overextended the German line, leaving a gap between the First and Second Armies which von der Markwitz' cavalry corps was trying to fill. The intercepted messages showed where the weak places were, and the French and English broke through the two armies on 8 September, threatening to encircle von Kluck and outflank von Bülow. The Germans had to retreat. Their attempt to gain a quick decision in the west had failed, and in the resulting war of position the eventual superiority of the Allies in materiel decided the entire campaign.

After the Battle of the Marne the French and Germans continued trying to outflank each other to the north in the famous "race to the sea." The focus of French reconnaissance lay in the intercept service, whereas the Germans had to rely exclusively on patrols and scouts along the front, who of course were able to make observations only after the enemy units had already been committed. The French service recognized the movement of the German Sixth and Seventh Armies from the southern front to the extreme north and to the Aisne sector respectively. With the help of the British intercept service, which had now become active, it identified the formation of the new German Fourth Army in Belgium and anticipated its 18 October offensive in time for countermeasures which stopped it at the Yser. Then the attempt of the redeployed Sixth Army to break through toward Ypern was prematurely betrayed in radio traffic and failed. These battles ended the war of movement in the west.

Stabilized Fronts and New Devices

Late in 1914, after their experience in the east, the Germans also began systematic interception of enemy radio traffic in the west. Both sides now developed extremely great activity in the invisible struggle between camouflage, concealment, and deception on the one hand and interception, evaluation, and cryptanalysis on the other. Of utmost importance for com-

munications security was attention to details. A German message ordering a change of call signs sometimes gave the old and new signs in parallel. Or when they changed signs German stations might not break the sequence of message numbers. One German divisional transmitter could be recognized by its habit of noting the sending time and word count at the end of the message instead of at the beginning. Another could be identified by its stereotyped greeting, "Can you hear all right?"

The French were also leaders in the field of radiogoniometry, that is transmitter direction finding. The principle is simple enough: the way a directional receiving antenna faces to bring in the strongest signal shows the point of the compass from which the signal comes. The intersection of this directional line with that from another DF receiver is the location of the transmitter. The line from a third DF receiver should theoretically intersect the others at the same point; in practice, it shows the margin of error. There were practical difficulties in correcting for local and magnetic deviations of the radio beam, in placing DF receivers at a sufficiently wide angle for distant direction-finding, and in developing mobile equipment of sufficient accuracy. The British and Italians, as well as the Germans, were well advanced in this field also; the Russians had not got beyond modest beginnings by the end of the war.

DF operations achieved their greatest importance in the naval intercept service; the sinking of many a German submarine could be credited to the British DF service. But the course of raiding Zeppelins could also be observed by the British DF with great ease because of their low speed, the continuous radio traffic verifying their bearings, and the fact that they used a set frequency and a fixed system of call signs.

As the vulnerability of radio communications became generally recognized and as the war of position on both fronts made possible the establishment of wire networks, the intercept services began to devote most of their effort to tapping telephone lines. Single-conductor telephone lines were still in general use, with the return circuit through the ground. Metal stakes driven into the ground as close as possible to the enemy lines would pick up these ground circuits for monitor-

ing in a dug-out connected by wire to the stakes. One such intercept station might supply as much as twenty pages of significant information a day.

In the east this activity was an important one-sided factor from the summer of 1916 to the end of the war. German and Austrian stations were located at intervals of about ten kilometers along the entire front and could monitor all Russian telephone calls as far as five kilometers behind the front. The strategic exploitation of this source of intelligence was the withdrawal of a large portion of the forces of the Central Powers from the eastern front, since there was now no danger of a surprise move by the enemy. Except for the intercept service it would not have been possible to keep the front stabilized with the remaining forces, whose strength ratio to the enemy was in many sectors no greater than one to ten.

In the west the German and allied intercept services now largely neutralized each other, with advantage to one side or the other depending upon whether the intelligence was properly exploited. On one occasion the Germans, having learned by listening to French artillery telephone calls the hour of a planned French attack, made the mistake of passing the information and appropriate orders to their own units by telephone in plain language. The French in turn heard these calls and made a completely successful attack several hours in advance of the original time.

In the half-year of battles before Verdun in 1916 telephone lines were so badly damaged by the uninterrupted artillery fire that new methods of communication had to be found. Everywhere along the front they used "ground telegraphy" instruments, which sent buzzer currents short distances through the earth. Nearby interception was easier than for telephone, but units which had been accustomed to intercepting voice now had to learn Morse and sometimes cryptanalysis. The English, on the other hand, invented an apparatus called the Fullerphone, which they considered a secure combat-zone communications device; but even it could be intercepted under certain conditions.

The German intercept service achieved strategic significance only once in the West. It learned of the preparations for the grand Allied offensive on the Somme in the spring of 1917, pin-

pointing the direction and areas of attack. For once the German supreme command drew the correct conclusions and immediately before the attack ordered a withdrawal to the "Siegfried Line." The target was thus withdrawn from the crushing superiority of the Allies, and the attack petered out in empty space. The Allied intercept services had advance information of this German maneuver, but their command failed to adjust its tactics accordingly.

The German command missed its greatest opportunity during this same spring. The French army in its unsuccessful attack on the Aisne and east of Reims had suffered such severe losses that its morale was badly shaken. Intercepted messages revealed that there was mutiny in numerous army corps, that individual soldiers and whole units were leaving the front or deserting to the enemy. In this situation they could not have resisted a German attack. But the incredible happened: the German command, seeing in this situation a parallel with the Russian front, expected the French power of resistance to collapse without any further German action. It missed the chance which was never to return. While the Germans waited for capitulation Petain resumed command, the crisis came to an end, and the French front stood firm again. The scale of victory now tipped slowly in favor of the Allies.

The War at Sea

The naval intercept war was highly developed from the very beginning. The British and the Germans used cipher and disguise here far more than ashore. A message from a coastal command station intended for a ship at sea would ostensibly be directed to another coastal station while the warship stood by for it on the same wave length.

Through mishap the Germans were long at a disadvantage in this activity. The Russians had sunk the German cruiser Magdeburg in the Baltic late in 1914. The Germans did not know for years that a Russian diver had recovered the code book from the radio cabin of the sunken vessel. The Russians reconstructed the cipher system and passed it to the British. Consequently, at the Doggerbank in January 1915, the British were able to follow the movements of the German fleet and sink the armored cruiser "Blücher."

The British had also succeeded in solving the German cipher used in submarine traffic, and could follow the movements of the German submarines precisely from day to day. While in Germany people were doubling and tripling security precautions in connection with the movements of submarines in a downright convulsive fear of English spies, the English had only to listen to the radios of the submarines and their command stations. It was only this which made possible the British blockade of the North Sea coast with meager forces.

The Germans were at a disadvantage too in the relative effort they devoted to the naval intercept service. It employed at its height a few dozen cryptanalysts and evaluators under the command of a naval lieutenant, whereas the British Admiralty had several hundred commanded by an admiral, handling an average of 2,000 messages daily. The British were the first to create a technically exact and fast working system of evaluation. Their DF stations were connected with each other and with the central office by teletype. Every reading was promptly registered at the central office on a great orientation map. All intercepted call signs were carded and systematized, so that the British were able to determine the pattern according to which the German call signs were changed and so to know in advance what sign a particular German transmitter would be using today or tomorrow or next week. The Germans never achieved, even during World War II, such well organized collaboration among direction finding, decipherment, and evaluation. People never got away from petty preoccupation with their own interests and rivalry with other units.

Nevertheless there were some German successes. Von Spee's cruiser squadron had been pursued into the Pacific by superior Allied naval forces. In their search for him the English used their radios with unconcern, with the result that he was always posted on the movements of the enemy. On the other hand, he was able to mislead his pursuers by radio silence and occasional deceptive traffic from the little cruiser "Emden" in Australian waters. His appearance at Coronel in Chilean waters came as a complete surprise to Admiral Cradock, who supposed him far away toward Australia. The German warships struck so unexpectedly that the British armored cruisers

"Good Hope" and "Monmouth" were quickly sunk, and several other units were badly damaged. Allied shipping in this area was almost completely paralyzed for a number of weeks.

The Diplomatic Front

Better known are the intercept activities on the diplomatic front during World War I. Both the German and the Austrian diplomatic ciphers were compromised, not through cryptanalysis but by traditional cloak-and-dagger methods.

One Alexander Czek, a Belgian resident of Austrian and English parentage, was employed at the heavy German radio station in Brussels, one of the direct links for traffic from the Foreign Office in Berlin. He began as a technician, but was so capable and conscientious that he was soon entrusted with operations and later came to be called on as an extra in the cipher office. In the summer of 1915 the British Intelligence Service began to work on him with the help of a young lady of the Belgian liberation movement. He was finally persuaded that it was his duty to work not for the Germans but for the Allies. He was unable to make off with the radio station's code book, but saved the work-sheets he used when called in for decoding. By the time he became suspect to the Germans, having been seen in company with members of the liberation movement, he had enough of these work-sheets to reconstruct the cipher. He escaped across the border and turned them over to the British. It did not occur to the Germans to change their cipher, and the messages from the German Foreign Office could be read in London from about the end of 1915 on.

The most famous use of this source of intelligence was to expose publicly the negotiations early in 1917 for an alliance of Mexico and Japan with Germany, an exposure which helped precipitate the entry of the United States into the war. In mid-January the German Foreign Minister, Zimmermann, sent a message with instructions to undertake such negotiations to his Ambassador in Mexico, offering to Mexico the inducement of repossessing its lost territories in Texas, New Mexico and Arizona. The message was transmitted enciphered through three separate channels to the German ambassador in Washington for forwarding to Mexico City: by radio via New York,

by radio via Stockholm and Buenos Aires, and by cable via London, appended through trickery to a cable of the American Ambassador in Berlin. At the Berlin Foreign Office they thought themselves pretty sly to have devised this last method.

All three messages were intercepted and read in London. The United States must be informed, but the source could not be revealed. The British therefore ordered a fourth copy of the message obtained in Mexico, and when it arrived after five weeks showed it with the translation to the American Ambassador in London, acknowledging only that they had come into possession of a cipher key. President Wilson was not convinced of the authenticity of the message until the British agreed to redecipher it in the presence of an American representative.

On 1 March the President made the message public, giving out that it had somehow been obtained in Mexico. There was a storm of indignation in the United States and one of apprehension in Germany and Mexico. Von Eckhardt, the German Ambassador in Mexico, cabled on 2 March in the same code:

. . . *This was not revealed by me here. Treachery or indiscretion must have occurred in the United States.* . . .

The exchange of messages seeking to fix responsibility lasted through March, with von Eckhardt suggesting again that secret messages were carelessly handled in Washington; and Berlin was finally convinced of his innocence. But traffic continued in this code to the end of the war. The Germans retained the firm conviction that ciphers of other nations were capable of solution but not their own.

It was perfectly marvellous how the British intercept service was able during the entire war to keep its work so secret that not the slightest hint about it reached the outside. It even went so far in camouflaging its work that it had inserted in the British press violent attacks on the antiquated methods of the Secret Service, to which it belonged. The press articles pointed to the American intelligence service as much more thorough and efficient, lamenting the fact that the Zimmermann affair had been uncovered in Washington rather than in London. The Austrian aristocrat whose son had made all this possible tried to find him after the war. He applied to

the British Secret Service and received the following reply from its chief:

. . . I must inform you this is the first time I have ever encountered the name Alex Czek . . . I cannot tell you anything whatsoever regarding your son. . . .

The Austrian diplomatic code was betrayed similarly, if with less dramatic results. Count Czernin, the Austrian ambassador in Bucharest, was a diplomat of the old school, a cavalier who not only knew his job but also knew how to live agreeably. Once when spending an hour with a lady of his acquaintance he left his briefcase, containing among other things the cipher he used for dispatches to Berlin, in his cab outside. Unfortunately the driver also found it necessary to leave the cab for a time, and when the Count returned the briefcase was gone.

Conscientiously Count Czernin informed Vienna and offered his resignation. Emperor Franz Joseph in his courteous fashion declined to accept it, calling the matter a regrettable oversight; no real damage was done, since the Rumanian police found and returned the briefcase with contents intact after three days. In Vienna it never occurred to anyone to change the cryptographic system. Not until 1917, when the Austrians occupied Bucharest and found the photographic negatives of Count Czernin's documents in the Prime Minister's attic, did they realize that the Rumanians and their Allies had been reading Foreign Office traffic since the war began.

It seems almost incredible that the two powers which developed the intercept service to a high degree of perfection during the war and whose military operations were based to a very great extent on its results, which therefore knew very well how vulnerable the communications of a country are to penetration by the enemy, should have displayed such utter unconcern about the security of their own communications.

You might think that possession of this cipher would have given the Rumanians more advantage in the four-month German-Austrian blitzkrieg against them. Actually it only made them overconfident, feeling that the collapse of Austria was imminent. In the military operations the Rumanians used

their radios in a way that paled even the Russian practices at Tannenberg. The German and Austrian intercept services were overwhelmed by the flood of intercepted messages. The strength, organization and all the intentions of the Rumanian forces were written clear for the enemy to read. General Falkenhayn crushed them in one swift battle after another.

The Rumanians, like the Russians two years before, were convinced that treachery was involved. They replaced men in various positions and court-martialled a number of high officers, but for the most part did not change their radio practices. They did get the French military mission to help them set up a new cryptographic system, but this was broken in six days by two German cryptanalysts who had worked on French systems before. If the lightning defeat of the Rumanians was a "judgment of God," as they used to say in Germany and Austria, for their perfidious declaration of war, we can see here what divine instrument was used in execution.

The Peace Negotiations

The intercept services continued to play their decisive role even at the peace conferences. At the Allied headquarters in the Forest of Compiegne the French Deuxième Bureau deciphered all the telegraphic traffic of the German delegation, even the famous instruction to "Try for milder terms; if not obtainable, sign nevertheless." All the German cards were on the table.

Earlier, at Brest-Litovsk, the German and Austrian delegations had the benefit of three intercept sources. A large radio intercept center was set up to monitor traffic inside Russia. The teleprinter put at the disposal of the Russian delegation for communications with Moscow was tapped, and the fifteen cryptanalysts assigned had broken the Russian cipher by the third day of negotiations. And microphones were concealed in the chandelier of the Russian conference room and in the walls of the living rooms of all the Russian delegates. The Russians changed cipher once, after the negotiator for the Central Powers seemed to know so much that they became suspicious, but the new code was broken in six days. Thus at this conference it was the Russians who found their hands hopelessly exposed.

COMMUNICATIONS TO THE EDITORS

Dear Mr. Riposte:

Your reply to Mr. Tidwell's article in the summer issue of *Studies in Intelligence* leads me to suspect that you are more of a sabre man than a foils devotee. In your game of fencing with ideas you have applied the blade with gusto, but in your enthusiasm I am afraid that you have neglected your opponent's point and that it is now waving dangerously over your head.

Just to be sure that you and I are fencing our own match on the same mat I will recapitulate what I believe to be the main points of "Kim or Major North." I will then explain why I think you have exposed yourself unnecessarily.

Mr. Tidwell said that it is essential that America understand people who live in alien cultures and that if American intelligence personnel do not understand them, nobody else will. He pointed out the natural, human difficulties that must be overcome if we are to think our way into another culture, and listed a number of additional, artificial barriers that we have created for ourselves. He then suggested a number of ways that might help to make it easier for our people to work toward overcoming cultural barriers. His most important point, however, was that we should recognize the need to understand other cultures and to consider this understanding as the goal toward which our personnel policies and operational procedures should be oriented.

Your use of the term "Procrustean" in this connection is mystifying. Far from recommending uniform conduct, Mr. Tidwell was recommending agreement on a common goal toward which individuals would work according to their personal attributes and the needs of a given situation. *Ça va sans dire.*

You advocate asking Arabs about Arab plots. Mr. Tidwell was suggesting ways in which it would be easier and more profitable to ask Arabs about Arab plots.

You say that Germans were sometimes suspicious of persons who spoke their language too well. The Germans are noted as being somewhat power-conscious. He who controls the

transfer point between languages, *i.e.*, the interpreter, liaison officer, cut-out, middleman, go-between, etc., wields tremendous power. I don't blame the Germans for being suspicious under the circumstances, but your argument is circular. He would be even less suspicious of Americans if we stayed home.

Your comments about curved dictionaries are all too typical of the difficulty that we have in thinking our way out of American culture. It is very hard for us to talk about sex without a snicker.

The best item I have saved for last. You say that our people abroad have to act like the others in their cover organization. This is fine within reason. I have seen people, however, who were perfect at maintaining cover, but so perfect that they never did anything else. The real point is the nature of their mission abroad. Do we send people overseas so that they can play games at hiding their identities from the Russians or do we send them overseas because we need the information that we hope that they can collect? If our cover organizations inhibit our doing our job then perhaps we might consider changing our cover arrangements.

Mr. Tidwell's article attacked a problem that has come to mind frequently in recent months. The same problem in somewhat different context has been raised in the recently published book, "The Ugly American." I think that he has suggested some ideas that should be thought about seriously. He may not have the right answers, but please, sir, do not be a sabre-wielding Pangloss.

Sincerely yours,

R. E. BUTTALL

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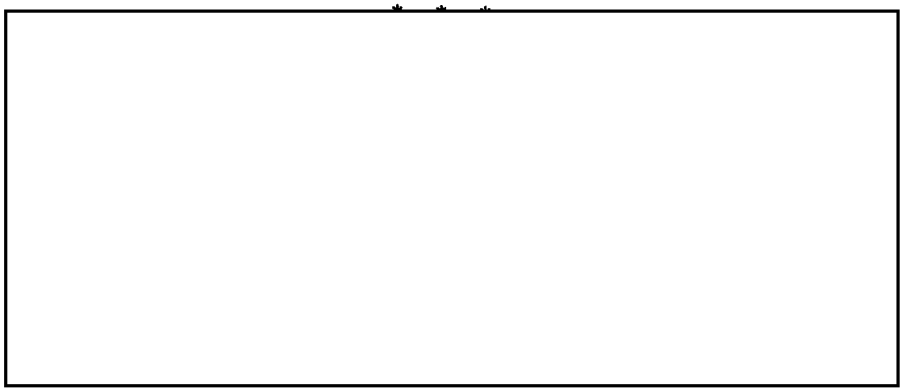

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AGENT RADIO OPERATION DURING WORLD WAR II

During World War II the use of clandestine radio for agent communications was widespread. Literally hundreds of agent circuits were operated during the war. On the enemy side they ranged in type from highly organized nets involving German diplomatic installations to single operations in such widely scattered places as Mozambique and isolated locations in the United States. On the Allied side there was no part of Axis territory where we did not have clandestine communications representatives—"Joes," as they were called. It was almost impossible to tune a communications receiver of an evening without running across signals which were so obviously not what they were trying to seem that you wondered why they were not wrapped up the first time they came on the air.

On both sides the signal plans (call signs, frequencies, and times of transmission) and procedures used by agents were for the most part of utmost simplicity. One service was also easily distinguishable from another by their different characteristics. The random contact times and frequent changes in wavelength considered so essential today were represented by uncomplicated regular patterns simple to reconstruct. In many cases the rota—the cycle in which the plan repeated itself—was of only a week's duration. Often only the list of call signs was carried out to a 31-day rota.

The agent was generally given a reasonably good range of operating frequencies, usually between five and ten, to help protect him from detection and arrest, but he was often his own worst enemy. Certain times and frequencies, because they afforded better operating conditions either radiowise or from a personal standpoint, became his favorites. Almost nothing his base could say or do would convince an agent that he was endangering himself when he abandoned even the simple non-repetitive pattern of his signal plan in favor of the convenience of operating day after day on the same frequency at the same hour. It must be said, in all fairness, that in some cases this practice was almost unavoidable because of the agent's need to live his cover. In others, however, it was stupidity, laziness, or complete incomprehension of the need

for good radio security. Security laxness was particularly foolhardy of those who operated alone and without benefit of "watchers" to warn when enemy personnel were approaching.

Four types of agent radio operators can be distinguished—those who operated in metropolitan areas in concert with well-organized watcher organizations; those who operated on their own in cities; those who were with the guerrilla groups; and those who worked alone in isolated rural areas.

The City Mouse

In cities a variety of techniques was employed to protect the operator. In one case as many as five operators in widely separated areas were geared to function as one station. All had transmitters on the same frequency and copies of the traffic for a given schedule. If the enemy approached the vicinity of a particular operator, he would stop transmitting when signaled by his watcher, and at the same time another operator in a remote part of the city who had been listening to his colleague would, with hardly a perceptible pause, continue the transmission. As necessary, a third would take over from the second and so on, much to the frustration of the opposition. In another instance long-abandoned telephone lines were used to key distant transmitters, whose remoteness from the operator greatly increased his security. These and other sophisticated devices were employed successfully in target areas where an extensive and highly organized underground was able to create the conditions for them.

In the main, however, a less imaginative but equally effective means of protecting the operator was used—teams of watchers strategically placed in the streets around or on the roof of the building in which the agent was working his set. When enemy direction-finding trucks or personnel with portable sets were spotted approaching, a signal would be sent to another watcher either in the room with the operator or close enough to warn him to stop transmitting. Usually the warning was enough; but one agent was so intensely anxious to get the traffic off that he repeatedly ignored the warnings of his watcher on the roof above him. A string had to be fastened to this man's wrist, with the roof watcher holding the other end, so that he could literally yank the operator's hand away from the key!

Less is known about the singletons who operated in cities. They lived lonely, frightened lives, particularly tense during their transmissions. Frequently they had the feeling that the enemy was just outside the door waiting for the right moment to break in, and sometimes he was. The most grateful moment in the singleton's day came when he heard the base say "Roger. Nothing more." Sometimes the base operator would impulsively end with the letters GB ES GL—"Good bye and good luck"—even though he knew it was against the rules.

The lone agents who survived owed their lives to a highly developed sense of security and intelligent use of the resources available to them. They went on the air only when they had material they considered really important and they kept their transmissions short. They either were or became such good operators that they approached the professional level in skill. Sometimes they were able to change their transmitting procedure from what they had been taught to one which enabled them to reduce greatly their time on the air. They took advantage of unusual operating locations and moved frequently. In addition, they undoubtedly owed something to good fortune: many who were caught were victims as much of bad luck as of enemy action. One German agent in Italy who had most skillfully and successfully evaded Allied apprehension over a long period was caught only with the casual help of an Italian woman. After watching with curiosity the efforts of a DF crew in the street for some time, she finally approached the officer in charge and diffidently offered the suggestion, "If you're looking for the man with the radio, he's up there."

Some singleton agents who were unable to live alone with their secrets were spotted because of their inability to keep their mouths shut. Their compulsion to tell a sweetheart or a friend or to draw attention to themselves by living or talking in a manner out of keeping with their covers resulted in their apprehension. And yet they sometimes got by with incredible indiscretions. There was one case in which the base, having taken traffic from a "Joe" in northern Italy, was about to close down when Joe, in clear text, asked if it would take traffic from "George," an agent who had been trained and dispatched from a completely different location. The base operator was flabbergasted, but took down the transmission and

then asked the man in the field to stand by for a short message, which was being enciphered, to the following effect: "Where did you get that traffic and where the hell is George?" The answer was prompt and again *en clair:* "From George, he's on leave." For several days Joe continued to send in George's messages, evidently prepared in advance, as well as his own, until George showed up on his own schedule and resumed business as usual. To the best of our knowledge these two agents remained unmolested and free of control; they were contacted regularly until Allied troops overran the area.

The Country Mouse

The radio operator with a guerrilla group came in for his share of difficulties too. First of all, he usually arrived at his destination by parachute. Often his equipment was damaged in the drop. Many times he had to lug it over almost impassable terrain in a wild scramble to protect it and avoid capture. Sometimes he never got on the air at all, and he and his teammates would be the subject of melancholy speculation on the part of his comrades at headquarters until some word trickled back as to what had happened to them. The radio man was expected to do his share of the fighting when the situation demanded it; and injured or sick, he was supposed to keep at his radio as long as he was strong enough to operate it.

The singleton in the country usually had a specified mission such as the retraining of an already infiltrated agent or the transmission of information being gathered by specific sources. He frequently could use some city-type methods of operation, being protected by watchers as he worked in some lonely spot, or had the advantages of the guerrilla type, in that he was among friendly irregulars or in their territory. Very often he had little privacy, let alone security, of operation, and his sole protection was the good will of the populace of the area through which he was travelling. Frequently he had to meet contact schedules in the open in broad daylight, with interested indigenous bystanders looking on. Given good will, however, this circumstanding was not bad; it provided volunteers to crank the generator and hold up the poles on which his antenna was strung.

The country singleton was usually no worse off than his counterparts in other situations, and sometimes much better

off; occasionally he was treated as an honored guest. But his status varied with the moods and political views of the so-called friendly leaders of the area, and at times he was viewed with suspicion or open hostility. The agent or agents he was supposed to retrain often resented him and added to his difficulties. He developed skills beyond those he had brought with him: equivocation, tact, flattery, subterfuge, and downright dishonesty became abilities essential to the doing of his job. His one thought was to get it done and get out in one piece and on to the next assignment.

Occasionally the agent operator interjected into his otherwise anonymous transmission bursts of temper, displeasure or eloquent disgust. Usually these outbursts were spontaneous profanity, unenciphered, directed at the quality of the base signal, the base operator's poor sending, or some other immediate cause of annoyance. They most often came in the agent's mother-tongue, but a certain group of German clandestine agents used to swear at their base operators with great eloquence in beautifully spelled-out English.

Not all such expressions of opinion were sent in the clear. Over the years, enciphered messages have been generously spiked with agent invective and profanity. One such message received during the war, a marvel of succinctness, spoke volumes on the subject of what makes an agent tick. The agent in question had been trained as a singleton. It had been planned, with good reason, that he should be dropped several hundred miles ahead of the bulk of his equipment, of which there was a great deal, and make his way to it later. The operation went according to plan except in this respect; all the agent's gear was dropped with him. In due time the base heard him calling, established contact, and took a brief but carefully enciphered message, which when decoded was found to consist of one extremely vulgar French word. The agent was never heard from again.

The Ingredients of Partnership

What kind of person made a good agent operator? His special qualifications required that he be young or old, tall or short, thin or fat, nervous or phlegmatic, intelligent or stupid, educated or unlettered. His political views were of no conse-

quence. If he had a burning resentment at having been thrown out of his country, of having lost family or friends to the enemy, so much the better—or maybe worse: uncontrolled hatred could create security problems. He didn't even have to like radio very much. About the only attributes he really needed were: ability to put up with all the unpleasantness of six weeks of radio training to get at least a nodding acquaintance with the subject; a willingness or desire to go anywhere by any reasonable means of conveyance—"reasonable" includes dropping fifty feet from a plane into water—and stay for an unspecified period of time; and the abiding conviction, in spite of feeling constantly that someone was looking over his shoulder, that it would always be the other guy who got caught. In short, he must come to like his work and take, with the well-educated call-girl, the view that he was just plain lucky to get such a good job.

At the base end of a clandestine circuit a good operator was, in his own way, different from any other radio operator developed during the war. And he was proud of it. In the first place he had to learn to live in a world of noise, an experience which occasionally resulted in permanent psychoses or suicide. The agent transmitter was and is a miserably feeble communications instrument, capable under the best of circumstances of putting only very small amounts of radio energy into the ether. Being illegal, it had to compete with jammers, commercial telegraph, and broadcast stations, whose signals often exceeded its power tens of thousands of times. If the reader can picture himself surrounded by the brass section of a large orchestra playing one of the lustier passages from Wagner while he is trying to hear and identify a different melody coming from a piccolo played by an asthmatic midget in the balcony, he will in some measure approximate the auditory frustrations of the base radio operator searching for and copying some of the typical agent signals.

Yet this small group of men not only took pride in their work, but because they understood the problems of their unseen friends on the other end of the line, went out of their way to make sure that their agents got the best service possible. Frequently they would become so concerned about a certain agent that they would get up during off hours at what-

ever time of day or night their particular Joe was scheduled to come on, to make sure that he would be properly copied, even though the base operator assigned to that watch was thoroughly competent. And the regular operator never resented this interference with his watch; he probably had done or would do the same thing himself.

The devotion and skill of these otherwise apparently undedicated and average men was equal to almost any demand. Sometimes as many as five operators would voluntarily concentrate on one agent transmission, piecing together the fragments each made out, so the man could get off the air as fast as possible. They learned to recognize the agent's signal as he was tuning up, in order to shorten the dangerous calling time. They managed to make sense of the spastic tappings of obviously nervous agents and through their own efforts and example frequently instilled confidence in them. If they did not accept with good grace the often unwarranted criticism leveled at them by the agent, at least they did not reply in kind.

They recognized their special friends by the way they sent their characters and were in many cases able to tell when the agent was in trouble or had been replaced at the key by an enemy operator. In many instances they developed a sixth sense which enabled them to hear and copy signals correctly through prolonged bursts of static or interference, and they developed shortcuts which further reduced the agent's time on the air. Many of these shortcuts became the foundation for more efficient and sophisticated methods of operation.

Their patience was truly marvelous. When necessary, they would sit day after day listening for a man who had never been contacted or who had disappeared for months. That he might be without equipment, drunk, or dead made no difference to them. As long as his schedule was on their contact sheet, he was real and they looked for him. If he showed up they nearly always established contact.

Not every man assigned as radio operator to this type of base station made the grade. Some tried and just didn't have it. These nobody criticized, and other useful duties were found for them; but those who didn't take the work seriously

were not tolerated and soon left the station. The good ones came from all walks of life. Unlike the agents, they were trusted nationals of the country operating the station. They were draftees, professional communicators, amateur radio operators, philologists; but almost without exception they had imagination, skill, and a deep (if frequently unrecognized) love for both radio and that type of radio work in particular. They were in short a new breed, the clandestine intelligence service radio operator.

CRITIQUES OF SOME RECENT BOOKS ON INTELLIGENCE

THE ZIMMERMANN TELEGRAM. By *Barbara W. Tuchman.* (New York: Viking. 1958. Pp. 244. $3.95)

On January 17, 1917, the German Foreign Secretary, Arthur Zimmermann, abetted by British decoding experts, placed a steaming hot potato into the hands of Admiral William Hall, the director of British Naval Intelligence. The shrewd juggling of this gift by Admiral Hall and its impact on the American public, poised on the brink of entry into World War I, are the focal themes of this novelized but scholarly and documented account of a famous diplomatic interception. Zimmermann's secret telegram to the German minister in Mexico, made public in *The New York Times* on March 1, 1917, has frequently been cited as one of the causes for American intervention in the war in Europe. Zimmermann told his minister that Germany would shortly begin unrestricted submarine warfare, and that if the United States were to declare war Germany would seek an alliance with Mexico and sound out Japan. Mexico would have the prospect of recovering its "lost territory in Texas, New Mexico, and Arizona."

At first glance the six weeks' delay in releasing news of such a blatant German proposal seems curious: the American public, wavering between a deep desire to remain at peace and a strong urge to come to the aid of the Allies, would be decided by proof of the German intent to dismember the United States. But to Admiral Hall, as he held the decoded message in his hands, the problem was not so simple. A decoded enemy message of such portentous content would require the greatest assurance of authenticity before it could be believed, and giving such an assurance involved revealing how it was obtained and thereby jeopardizing a rich source of future information. The way the Director of Naval Intelligence did manage to make use of the intelligence while keeping his source secure is from the professional point of view the most intriguing aspect of the story.

The source was straightforward communications interception. The British had obtained, by combining the results of

three distinct intelligence operations, a major part of the German diplomatic code. Since September 1915 the cryptographers of Room 40 in Whitehall had been engaged in successful decoding of Berlin's messages to all German embassies in the Western Hemisphere. The value of such a source was of course immeasurable. Hall considered its value so great that for two weeks, while he worked out his own solution to the problem, he didn't reveal the existence of the decoded message to his *own* government. His solution rested partly on knowledge of the routes German telegrams took to reach their destinations in the Western Hemisphere. It was determined that many messages were sent to the United States in the guise of Swedish diplomatic cables, and the German embassy in Washington used commercial lines to forward telegrams to Mexico City. Hall's operatives penetrated the telegraph office in Mexico City and obtained a copy of the Zimmermann telegram. The slight changes that occurred during transmission would give some credence to the story he was creating that the telegram was discovered in America.

Once he had the copy of the telegram as received in America, Hall permitted an American official to use the reconstructed German code key and personally decode the German message, thereby establishing the authenticity of the message in the eyes of the U.S. Government. To establish a plausible source for the telegram in the eyes of the American public and of the Germans, Hall went further. When Count von Bernstorff, the German Ambassador to the United States, embarked on his return trip to Germany after the break in diplomatic relations, a mysterious trunk, reputed to be full of Swedish diplomatic papers, was found in his baggage. According to the story released to the newspapers, it was taken into custody by the British when the Danish liner, Frederik VIII, docked at Halifax. The Swedish diplomatic seal had already been broken, British authorities told the press, before the liner reached Halifax. The bait was swallowed, and the source of the Zimmermann telegram became, as far as the Germans and the American public were concerned, Von Bernstorff's mysterious trunk.

Admiral Hall's coup cannot, of course, be considered the immediate cause for the U.S. entry into World War I. Mrs. Tuchman analyzes with great insight most of the major factors affecting the decision to go to war. She chooses with discrimination from the vast amounts of historical data those elements that most vividly characterize the atmosphere in which the Zimmermann telegram played such a significant role.

From the historian's point of view her book represents sound scholarship and balanced judgment, for all its popular form. As a case study in intelligence operations, *The Zimmermann Telegram* presents in detail the complex problems of an extraordinary case and their successful solution.

ALLIED INTELLIGENCE BUREAU. By *Colonel Allison Ind.* (New York: David MacKay. 1958. Pp. 304. $4.95.)

Colonel Ind describes in dramatic detail the principal activities of the AIB, an agglomeration of British, Australian, Dutch, and American clandestine services which performed in the World War II Pacific theater roughly the same functions as the OSS in other theaters of war. His book shows how clandestine operations in the Pacific were developed pretty much by ear, without the benefit of counsel from experienced men in the field. The magnificent daring of those who undertook the work cannot be overstated, and their exploits make exciting reading; but Colonel Ind's account—pardonably, perhaps, coming from the AIB's "deputy controller"—is apt to lead the reader to attach more importance to the value of this segment of intelligence in the advancement of the war than it actually had. There was comparatively little in these operations that is instructive for today's professional intelligence officer.

The first half of the book is devoted to the work of the Australian Coast Watchers in the southwest Pacific islands. The members of this service gave a magnificent demonstration of selfless courage and daring. Colonel Ind does not cover the organizational and recruitment phases of the Coast Watchers, perhaps because these have been well reported by

Eric Feldt, the brave and able Australian officer most responsible for the effective functioning of the service.[1] The perils and privations of a white bushman on a fetid jungle island occupied by a vicious enemy whose strength and movements he observes and reports make suspenseful anecdotes of adventure. The situation was basic, dangerous, and cruel; but it was not attended by any of the complex nuances of sophisticated espionage operations.

From the tradecraft point of view Colonel Ind's chapters on operations in the Philippines are the most useful ones. These required well-rehearsed cover and organized partisan resistance. Fragments of the story have been published from time to time, but to my knowledge this is the first history available to the general public covering the whole organization and all its activities.[2]

The final major section of the book, "The Commandos," deals with the several isolated operations of the so-called "Services Reconnaissance Department," an outgrowth of the British SOE. They were a small group of able, courageous, and experienced British saboteurs who pumped adrenalin into their systems while pleading for action. It is a great pity they were not used more freely. In their anxiety to ply their specialties in the theatre they staged a splendidly shocking show by planting dummy limpets on our own shipping in Townsville harbor, and it was touch and go for a while as to whether they would be expelled unceremoniously from the area. Finally they were permitted to destroy shipping in Singapore harbor, some 3,000 miles away, and they accomplished their mission with fine finish.

Stylistically, Colonel Ind's book is one for a lover of vivid phrase and brilliant color. The casual reader may find it too dazzling, kaleidoscopic to the point of vertigo.

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[1] Eric A. Feldt, *The Coastwatchers.* (New York and Melbourne: Oxford University Press, 1946. 264 pp.)

[2] Colonel Ind was largely responsible for an official documentary account, *Operations of the Allied Intelligence Bureau, GHQ, SWPA,* published under "restricted" classification in 1948 as Vol. IV of *The Intelligence Series,* GHQ, FEC. Most of this material is now designated for official use only.

MAN HUNT IN KENYA. By *Ian Henderson,* with *Phillip Goodhart.* (New York: Doubleday. 1958. Pp. 240. $3.95.) Also under title THE HUNT FOR KIMATHI. (London: Hamish Hamilton. 1958. 21/–.)

Man Hunt in Kenya is a fascinating and well-written book about the last important operation against the Mau Mau rebellion in Kenya. Its British title is more precise; Dedan Kimathi was the undisputed leader and guiding spirit of the largest and most dangerous Mau Mau gangs, and this story shows how he was also a master of bushcraft of the highest order. The fact that it took 10 months to capture Kimathi even in the Mau Mau's dying days in 1956 gives some indication of the problem the security forces set for themselves when they elected to make an all-out effort to get him one way or another.

Phillip Goodhart, British Member of Parliament for Beckenham, who prior to his election had been covering the Mau Mau revolt for the London *Daily Telegraph,* has written a three-chapter Background for the book, and apparently collaborated with Ian Henderson, its principal author—and actor—throughout its preparation. But the Background does not make clear to the unfamiliar reader the origins of the mass rebellion, the character of its heyday in 1953, and its dwindling course to the end of 1955.

One might argue that the main reason the Mau Mau revolt got out of hand was a collapse of British intelligence in the Kikuyu reserve. Its system of African informants had pretty much broken down. Only a handful of Europeans—among them notably Ian Henderson of the Kenya Police—knew how to speak Kikuyu and had any meaningful contacts with the tribe. It had been known since 1950 that, in addition to the overt political resistance centered around Jomo Kenyatta and his Kenya African Union, a secret society was at work among the Kikuyu; but it is doubtful that Kenya officials really had any indication of the seriousness of the Mau Mau oathing or of how widespread it had become. In 1953, after the outbreak of the Emergency, everyone was taken aback by estimates that 90 per cent of the million-odd Kikuyu had taken some kind of Mau Mau oath. The British have relied successfully for centuries on a system of indigenous informants and infiltration agents, usually supplemented, however, by officials with a firm

grounding in the language and culture of the indigenous people. This combination had been allowed to deteriorate in Kenya, and the Government had lost intimate contact with what was going on in the Kikuyu Reserve.

At the height of the nightly Mau Mau raids for food and vengeance on Europeans and Africans alike, a period studded with incidents like the Lari Massacre of March 1953, when some 150 loyal Kikuyu men, women, and children were wiped out in a single night because the local chief was friendly to the Kenya Government—during this time a retired British Army colonel argued most persuasively with me that one Russian saboteur could have brought the Colony to its knees in two weeks. It certainly was true that communications, water supplies, radio stations, etc., were all woefully unguarded. Why the Mau Mau failed to strike at these vulnerable spots remains one of the mysteries in what must be counted among the strangest rebellions in the history of the British Empire.

Later in 1953 the security situation began to improve. The introduction of British troops and the strengthening of the Kenya Police and Provincial Administration began to reduce the Mau Mau gangs in number and put them on the defensive. Operation Anvil, the massive operation in April 1954 around Nairobi directed by Sir Richard Turnbull, now Governor of Tanganyika, led to the detention of some 30,000 Kikuyu, thus strangling a crucial Mau Mau source of money and supplies. Most important of all, the Kenya Government organized an effective group of tribal policemen known as the Kikuyu Guard. It was the Kikuyu Guard's denial of food and support for the Mau Mau gangs that began to tell. No longer were large gangs able to run roughshod through the Kikuyu reserve stealing and plundering. The years 1953 and 1954 also saw a prodigious collection of intelligence from detainees at the various screening centers. The processing of this intelligence gave the Kenya Government details on the people involved with Mau Mau gangs, a catalog of the bestial Mau Mau oaths, and frequently step-by-step outlines of past rebel operations.

By the beginning of 1956 the movement had about run its course, and the security situation had improved so radically that a major action to eliminate Kimathi, the last important

Mau Mau leader still at large, was all that was needed. The natural leader of this operation was Superintendent Ian Henderson, whose record during the Mau Mau revolt was truly outstanding. In 1954 he had made repeated unarmed trips into the forest to negotiate surrender terms with Mau Mau gangs. These talks were abortive, but they demonstrated the man's skill and bravery, and won for him the George Medal. Born and raised in Kenya, Henderson was in fact about the only British official who could have led the Kimathi operation.

Henderson's book is particularly vivid in portraying the incredible Alice-in-Wonderland world in which most of the hunt was conducted—the primitive jungle lore of tracking and survival, the thin irrational line between friend and foe, the minglings of bestiality and childish magic. In the almost impenetrable forest wild game was as much of a problem as any offensive action by terrorists, and Henderson suggests by indirection that the only effect of the much-vaunted RAF bombings of the forest was to make the wild beasts even more dangerous than usual. He gives us a good picture of what life is like in the middle of a tropical rain forest: the Aberdare Range rises to over 13,000 feet and when the sun is not shining it can be extremely inhospitable.

The importance of witchcraft both to the Mau Mau and to the Government teams of ex-terrorists is well illustrated. Two puff-adders falling out of a tree on the back of a collaborator, though they glided away harmlessly, were such a bad omen that they threatened to stop one whole operation. Kimathi's insistence on praying to the Kikuyu god Ngai while facing Mt. Kenya under a wild fig tree meant that one could pinpoint for ambush the dozen or so fig trees to which he would go.

Ironically, Henderson had had to leave the jungle hunt to be presented to Princess Margaret at a tea party at Government House in Nairobi on the very day Kimathi was captured, and was called away from that elegant atmosphere to interrogate Kimathi at Nyeri. Contrasts like these are introduced into the story with a minimum of flamboyancy, and with the traditional British understatement which characterizes the whole account.

One aspect of the operation that still defies full comprehension is Henderson's success in inducing Mau Mau terrorists to change sides and go back into the forest to hunt down their one-time friends. Time and again Henderson converted or at least recruited individual terrorists and sent them armed and supplied with government weapons and provisions to seek out the gangs they had just left. Although some leniency was promised them in return, there was never any suggestion that they would not still be liable to prosecution for the crimes they had committed. One of my strangest impressions from this period I got during a visit to the Athi River Detention Camp in 1954, where several Mau Mau detainees described in some detail to our party their individual roles in the terrorist movement and their participation in several murders. Their psychology is a mysterious one to the Western mind, and Henderson's success in handling them is fascinating and confusing.

The direction and control of the Kimathi operation remained in the hands of the European officers; but it is obvious that no European, not even Henderson, would ever have been able to live and fight in the forest with the same skill as the Mau Mau terrorists. Ultimately, therefore, success in wiping out the last remnants of the Mau Mau gangs rested in the hands of these ex-terrorist recurits. Dedan Kimathi emerges as one of the masters of self-preservation. Henderson shows how extremely knowledgeable as trackers and hunters the last few Mau Mau terrorists had become. As masters of the African bush he rates them higher than the Wanderobo, a tribe of hunters who are excellent in the forest and have traditionally been regarded the finest hunters in East Africa.

I would agree with Henderson that "Kimathi was hardly a political figure, but he was a criminal of the first rank." Goodhart's assessment that "if the Kikuyu are the Germans of tribal Kenya, Kimathi was their Hitler" is patently overdrawn. Still, his stature as a leader, even in 1956, and the possibility of his dying a martyr were reason enough for mounting the operation against him. With his death on the gallows at Nairobi Prison the last active spark of the Mau Mau rebellion was gone. Much of the credit for this accomplishment must go to Ian Henderson, and he has written a first-rate book about it.

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