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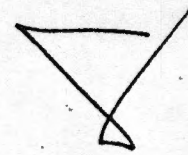
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November 1973



R. Gates

On Countering Strategic Deception

William R. Harris

A Report prepared for

DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

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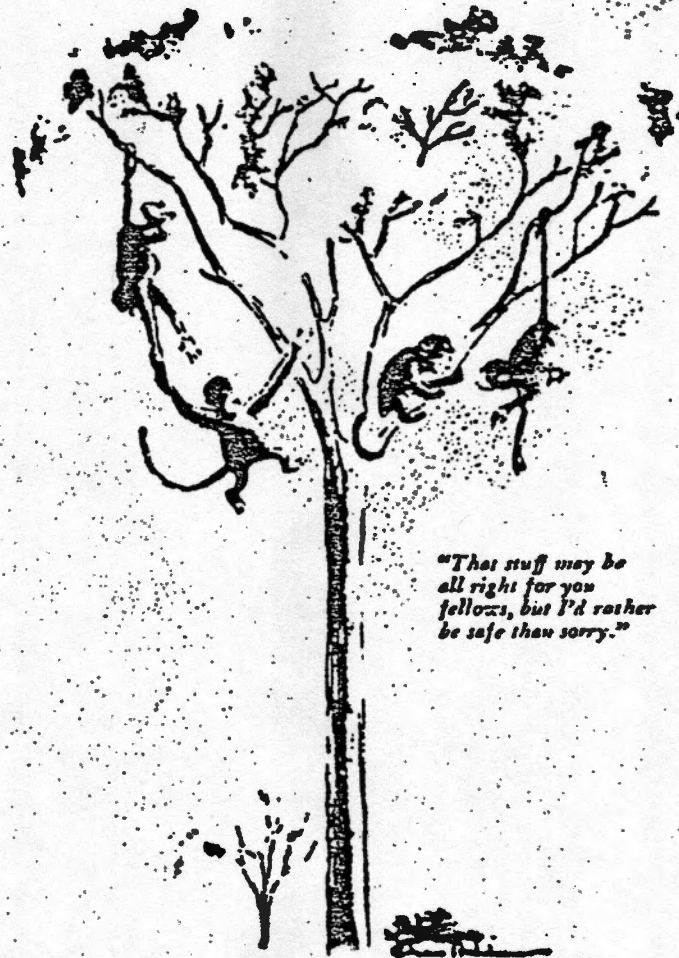
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PREFACE

When the blind seek to lead the blind, a cautionary note is in order. This report is written in blissful ignorance of whatever systematic efforts the United States Government has made to construct a counter-deception capability, designed to detect, neutralize, and undermine those foreign deception operations that degrade governmental performance through U.S. intelligence channels. To the extent that such a capability exists, what follows may be superfluous. Neither the public literature on intelligence activities nor the public record of intelligence predictions confirms the existence of such a counter-deception capability, but the public record is notoriously murky and subject to correction.

This report explores the effects of deception upon strategic warning systems, and possible protective efforts for the detection of strategic foreign deception. The report excludes from consideration evaluation of organizational alternatives for counter-deception systems. Drawing only upon public sources, this report is designed to serve as a background reference for readers interested in methodologies for coping with deception, or in references to the literature of deception and cognition.

Preliminary findings of this study were reported at a strategic planning conference sponsored by the then Advanced Research Projects Agency (ARPA) of the Department of Defense in April 1972. The report identifies methodologies of counter-deception planning that may be appropriate for subsequent DARPA research. This report was supported by ARPA Contract DACH1567C0141 with The Rand Corporation, where the author is a member of the Social Science Department.

SUMMARY

Strategic deception has risen with the incidence of strategic surprise in 20th century warfare. Expansion of systematic intelligence collection has allowed deception planners to degrade their adversaries' predictive performance, jeopardizing arms control opportunities and trust in the reliability of strategic predictions. Techniques for detection of foreign stratagems are reviewed with a view to establishment of formal counter-deception systems.

Section I offers a historical introduction to stratagem. Deception is proposed to have been an intermittent practice in war encouraged by: (1) war-fighting strategies dependent upon those of adversaries; (2) prior establishment of intelligence collection systems; (3) asymmetries in mobility, espionage, aerial, or electronic capabilities; (4) polarity of interests; (5) personalities; (6) deception doctrine; and (7) permanent deception organizations, generally existing since World War II.

Section II reviews evidence on the efficacy of deception in 20th century warfare, primarily from the empirical historical research of Barton Whaley's *Stratagem*. Of 57 strategic initiatives involving deception in Whaley's study, 88 percent yield some element(s) of surprise; amphibious landings associated with deception yielded surprise in 89 percent of cases. Although it is widely assumed that intelligence predictions have been *improving*, given radar, better overhead reconnaissance, and other techniques developed in World War II, Whaley found that fully 68 percent of land battles in World War II yielded surprise, compared with only 48 percent in World War I. The Whaley datum may underestimate both the incidence and the usefulness of deception in war. Data on high-intensity deception operations were segregated from other cases; in 27 of 28 cases some element of surprise was obtained.

Following this report's testing of the effect of high-intensity deception upon the incidence of surprise, Whaley tested the effects of the intensity of deception upon casualty ratios and found that high-intensity deception correlated with reduced casualty ratios of deceiver to deceived for those attacking with broad cover and deception. Whaley found that increased intensity of deception correlated with increasing intensity of surprise, but *not* with an increasing overall incidence of surprise. This report's findings indicate that increases in intensity of deception correlate with *both* increased likelihood of *high-intensity* surprise and increased incidence of surprise in one or more modes: intent to attack, time of attack, place, strength, or style. Whereas 80 percent of low-intensity strategic deception operations resulted in some mode of surprise, 96 percent or more of high-intensity operations resulted in some degree of surprise.

It is concluded that in the absence of counter-deception systems, high-intensity deception has resulted in almost certain surprise, with great damage to defenders. Although the Bayesian probabilities from nonnuclear warfare should not be directly applied to estimation of prelaunch warning in nuclear war, data on past incidences of surprise do not generate *a priori* confidence in the reliability of prelaunch strategic war warning systems.

Asymmetries in intelligence capabilities, particularly in counter-espionage duels for control over adversary collection systems, have contributed not only to high incidences of surprise but also to surprise in the costliest cases and modes. Also contributing to the failure of intelligence predictions has been the bimodal information theory conception of "signals" and "noise," which leaves no room for the *spurious signals*, or *sprignals*, designed to penetrate the filtration barriers of signal processors.

The key impediment to strategic arms control verification is the challenge of deception. Section III addresses methodologies for counter-deception planning. *Ad hoc* efforts of intelligence analysts to cope with deception have been notably unsuccessful; judgments of captured enemy war plans have been significantly worse than would have resulted from coin tossings. Four of five genuine plans were treated as forgeries, five of five deception plans were accepted as genuine.

Three techniques for the detection of deception are outlined: the *reconstructive inference method*, in which the reconstruction of sprignals patterns is attempted; the *incongruity testing method*, the traditional form of intelligence analysis, which tests alternative hypotheses; and the *vulnerability assessment method*, which involves the prediction of future vulnerabilities on the basis of Bayesian estimates of conditional probabilities derived from past cases of deception.

National styles of deception are germane to both the reconstructive inference method and the vulnerability assessment approach. Previous Soviet "war scare" practices, which spoof strategic war warning systems, are inimical to arms control and war avoidance objectives. Traditional Chinese stratagem has aimed at winning without fighting, by manipulating the utility functions of the adversary so that he confounds himself. Communist stratagems in the Chinese civil war relied on strategic movement, with lures, traps, and multiple feints. The preponderance of Soviet and American strategic power, combined with a sense of territorial insecurity, may encourage Chinese strategic force procurements that emphasize mobility and stratagem and could create innumerable intelligence puzzles. The understanding of past national deception practices may contribute to Bayesian formulations of attack warnings based upon *a priori* practices and probabilities.

In attempting to distinguish *signals* from *sprignals*, it is dangerous to rely upon traditionally reliable sources or compartmented intelligence as test standards. Channels that are unquestioningly accepted are favorites of deception planners. Probabilistic information processing, cross-testing, and retesting alternative hypotheses are preferable to testing against a subset of supposedly reliable data. Deception planners have often reinforced preconceptions or anticipated expectations. Prominently displayed self-deceptions may be reinforced by foreign deception planners.

Counter-deception planning involves not only detection of deception but also countermeasures for stratagems that have been detected and those stratagems that may be anticipated on the basis of past experience though not specifically detected.

Detection of stratagems is complicated by randomly generated feints, just as stratagem is complicated by randomly generated countermeasures. In view of high incidences of deceptively induced surprise, designing strategic force postures that are not substantially degraded by surprise attack is a central element of counter-deception planning.

Among counter-deception countermeasures are: (1) modification of intelligence collection systems to provide secure, variable, corroborative data; (2) pre-crisis resource allocation (some of which can be determined by operations research and gaming) to minimize the costs of being deceived; and (3) the mounting of *counter-stratagems* (stratagems that play upon vulnerabilities in adversary stratagems) once deception has been detected.

Section IV addresses problems of deception and counter-deception planning in an arms control environment. Deceptively induced uncertainty may contribute to mutual deterrence, particularly as surveillance and guidance systems become more precise. Some decoys may be more valuable than actual weapons at lower cost, because the resulting uncertainties complicate attack planning. Deception may prolong the survivability of existing strategic weapon systems. Counter-deception systems should be sufficiently discriminating that they can identify the approximate purposes of detected stratagems, thus avoiding unwarranted pressures to abrogate agreements merely because enemy "deception" has been identified.

Because the record of 20th century wartime deception indicates considerable advantage to attackers, counter-deception systems may reduce both the likelihood and the intensity of advantage resulting from deceptive attacks. Insofar as military attacks are surprise-dependent—to be launched only if surprise can be anticipated—enhancement of strategic warning is a contribution to deterrence. If mutual fear, distrust, and recrimination are detrimental to a *détente* in international relations, of which arms control is just one aspect, enhanced confidence in the predictions of the world's leading intelligence services should provide statesmen a firmer base for international commitments.

Special efforts to detect adversary deception activities may also contribute to arms control measures that have been blocked by past vulnerabilities to deception. On-site inspections whose patterns are known to host states and "facilitated" national verification in known patterns are subject to deception, termination, or both in that order. Counter-deception systems may turn adversary deception operations into early warning systems, providing safeguards in arms control arrangements beyond the value of on-site inspections.

In the late 20th century the communications systems of all the major states could be manipulated by foreign stratagematists. Enhanced counter-deception capabilities may restore a measure of integrity to transnational communications. Man is not alone in the use of deception, but most studies of other species, social insects and animals, suggest use of deception against *other* species. Evolution of closely linked genetic traits, permitting the mimicking of nonedible species' traits, suggests a continuing role for defensive stratagem in natural selection.

In certain species primitive counter-deception measures against predators have been reported. It is not yet known whether other species have learned the control of deceptive capacities within the species. If they have, perhaps man, too, may learn to cope with his apparent skill in deceit. And if man's intellectual powers have permitted previously unknown deceptions within the species, those same powers should permit establishment of counter-deception systems that may render such stratagems less likely and less deadly.

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The New Yorker has allowed reproduction of Charles Addams' "swinging" cartoon from its July 1, 1944 edition.

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I. A HISTORICAL INTRODUCTION TO THE ART OF STRATAGEM

At the outset, *strategic deception* should be distinguished from *propaganda* and *disinformation*, to delimit and emphasize the source of present concern. *Strategic deception* is the intentional creation of false reliance within a target group, to mislead that group for strategic purposes. This study will consider strategic deception of foreign targets, generally coordinated by intelligence or security services and directed at foreign policy elites. *Propaganda* and associated psychological operations are directed at wider targets, often by more diffuse channels than those used in strategic deception. Propaganda, both officially acknowledged and covertly presented, is used in deception, along with false information (*disinformation*), physical camouflage, display of decoys, mounting of physical feints, transmission of "dummy" radio signals, and the leaking of true information packaged so as to encourage false inferences.¹

Deception does more than replace passive "security," a shield rendered inadequate by the magnitude and penetration of modern intelligence. Strategic deception in its more ruthless aspects yields more than uncertainty and the consequent spreading of enemy resources; skillful deception causes a redistribution of the adversary's resources in the *wrong* directions, thereby assuring not only surprise but its full exploitation.

A recent study, Professor Barton Whaley's *Stratagem: Deception and Surprise in War* (1969), has introduced an expanding literature on strategic deception in 20th century warfare.² Before appraising the efficacy of deception in this century, and the importance of methodologies to counter its effects, I shall discuss a few practices of deception in military history.

Is strategic deception of unrelenting importance in all warfare, or are the techniques of stratagem favored in some eras more than in others? On the basis of all too fragmentary data, I shall attempt to identify some of the conditions under which deception operations have flourished.

There has been intermittent, not continuous, practice of deception in war.

This is not a startling statement, but it is a necessary prelude to analysis of the conditions that make stratagem opportune. There is a tendency to legitimate a practice of the present through discovery of a historical tradition. But to write that "deception runs through the history of war," or that there is "ample evidence of [deception's] use throughout history,"³ is to discourage analysis of the *discontinuities*, which are more striking than the continuities. Professor Whaley notes that deception is "infrequently, or rather, intermittently and idiosyncratically prac-

ticed," and that "deception is one of those odd strategic techniques of war...that seems fated to cycles of loss and reinvention."⁸

The history of stratagem's neglect is not a topic of rigorous investigation. Archaic warfare, in Assyria, Egypt, and Greece—as depicted on monuments and vases—emphasized the solid wall, or *phalanx*. Two walls of men confronted each other; often the more numerous group prevailed because its phalanx outstretched that of the opposition, outflanking it. There was little need of intelligence and little use for deception.⁹

During periods of defensive fortifications and "siege" warfare, victory was gained through logistical preparedness in defense, scaling or bombardment technology, or endurance in attack. The description of the deceptive attack from the Trojan Horse probably survived several centuries of oral legend because of its variance from the war-fighting practices of Bronze Age Greece.¹⁰ There is little evidence of deception operations in the warfare of Medieval Europe, another period of defensive fortifications. And the codes of chivalry that accompanied feudal warfare were inconsistent with the systematic practice of deception. On the Western Front in the first years of World War I, the regression to the phalanx in trenches, to attrition warfare along fixed fronts, did not encourage the practice of deception.

The cyclical process by which deception is practiced, lost, then rediscovered is not a random process; environmental factors encourage deception practices.

Among these are the following:

First, interactive strategies must pre-exist. The incentive to deceive an adversary is quite obviously related to the value of any resulting misdirection. Where action is substantially independent, as with nomadic tribes who fled from potential enemies or walled city-states prepared for siege, the incentive to initiate stratagem is reduced.

Second, the prior establishment of intelligence collection systems has encouraged deception. By an "intelligence system" I do not mean the mere presence of occasional spies. Rather, I assume a climate of rationality and planning that nurtured *systems* of planned intelligence collection. Such systems have been in evidence, with occasional lapses, since the Renaissance, most notably in 15th century Venice, in postal intelligence systems of the leading sovereigns, and in the 16th century organization of the British secret service. Although the history of pre-Renaissance intelligence has not been the subject of rigorous study, scattered investigations suggest the following unanticipated hypothesis: Deception seems to correlate better with establishment of planned intelligence systems by the *initiator* of deception operations than with intelligence efforts of the target state. The mounting of deception operations may involve a substantial element of assurance that one can predict favorable deception targets and outcomes.

There appears to be a weak link between the reported practice of wartime deception and the existence of intelligence systems sponsored by states that are the *targets* of adversary intelligence. For example, Byzantine commanders of the 7th, 8th, and 9th centuries A.D. probably launched the most active intelligence and deception operations of the period,¹¹ but their main adversary and threat to the continued existence of the Empire, the Arab armies, also possessed advanced intelligence systems. The Arabs, by this period, were working on the decryption of foreign ciphers,¹² a practice not known to occur in other societies of this period.¹³

On the other hand, there are examples of commanders who appreciated both intelligence and deception and managed to deceive even those who were not listen-

ing. Hannibal, during his invasion of Italy in the 3rd century B.C., plundered the countryside, spreading news to his Roman counterpart and drawing Roman forces behind him into an ambush at Lake Trasimenus. The Roman forces failed to send advance scouts but managed nonetheless to be lured into a trap.

In general, intelligence systems flourished before and during periods of great interest in stratagem. Each of the extant classical texts on stratagem arises in a time and place in which intelligence systems were strong. Sun Tsu's *Art of War* from the Chou dynasty in China indicates a mature perspective on intelligence and counter-espionage, aside from its appreciation of deception, in the 5th or 4th century B.C. The Roman texts of Frontinus, about 90 A.D., and Polyaeus, from the Parthian War in 162-165 A.D., follow development of elaborate scout intelligence systems in the Roman empire, as do the fragments of Polybius' *Histories* relating 2nd century B.C. Roman encounters with stratagems of the Macedonians. The *Stratagemata* of the Byzantine Emperor Leo (either Leo VI, the Wise, or Leo II, the Isaurian) corresponds to the best ongoing intelligence establishment of the Medieval period; and the resurgence of interest in the classical deception literature, dating to the translation of Polyaeus into Latin as *Strategica* in 1549 A.D., follows the resurgence of espionage systems in 15th century Europe and the renewed interest in codebreaking observed in Venice from about 1400 onward.

The availability of asymmetries, or targets of opportunity, have encouraged the practice of deception.

Beyond the necessity of a strategy interacting with that of one's adversary there are the temptations to press opportunities of asymmetry: an imbalance of mobility allowing one-sided redeployments;¹¹ the control of an adversary's primary espionage system;¹² imbalances of cryptanalytic success;¹³ aerial superiority permitting one-sided aerial reconnaissance; electronic countermeasure dominance;¹⁴ or, in contrast to the foregoing, a preponderance of adversary technology, equipment, or manpower impels the underdog to tempt adversary misapplications of those superior resources.¹⁵

The polarity of interests at stake in war is associated with the practice of deception.

In the parlance of game theory, in the playing out of "zero-sum" or "fixed-sum" encounters, one side wins what the other side loses, and vice versa. Stratagem has a place in the dealings of friends, in the "white lies" of society, and in the rituals of diplomacy. However, deception causes a breakdown in trust, if not in people then at least in indicators of behavior. There is a manipulation of the channels of reliance, the side payments for which are minimal when deceiving an all-out enemy in a one-move fixed-sum game—a circumstance too neat to describe the complexities of war. When there are multipolar constituencies, or continuing encounters, the costs of deception are higher. We should not be surprised to find most of the reported deception operations to be those of wartime, nor to find that many of the peacetime deceptions operations aimed at foreign targets are within the province of secret or security services, which can use deniable or replaceable channels aimed at selective audiences, and thus minimize the costs of deception.¹⁶

The personality of the strategist or decisionmaker may encourage the practice of deception.

Professor Whaley suggests that some have the gift of stratagem and some do not. Likewise, some personalities may be more vulnerable to the reinforcement of preconceptions, or the sowing of paranoid denials of those valid warnings that have been uncovered. Many pre-eminent military strategists had a facility for the deploy-

ment of stratagem, what may be termed "ironic flair." The role of personality in grasping the possibilities and constraints of stratagem or in accentuating command vulnerabilities to adversary stratagem has generated a large body of research.¹⁷

The five factors mentioned above have encouraged *development* of the craft of deception. Two additional factors encourage *perpetuation* of deception practices in warfare.

The development of a body of deception literature or doctrine contributes to the practice of deception.

Modern strategists have either read the classical texts or studied the practices of great commanders who themselves studied the classical texts on stratagem. Roman writers on stratagem learned from Polybius and others describing the stratagems of Greek warfare; the Byzantines were aware of pre-existing Greco-Roman writings and were scholars of military strategy.¹⁸ With the resurgence of organized intelligence in Renaissance Europe came a demand for translation of the classical texts, and from 1549 A.D. these have been available in a variety of editions and combinations of strategic thinkers.¹⁹ The classical texts were available to Frederick the Great in French and Latin, and the same texts plus Frederick's experiences on the battlefield were available to Napoleon. The practice and the doctrine, together, may be seen to have influenced the use of stratagem in the American Civil War, in the Boer War, in World War I (particularly in the Middle Eastern Theater), in World War II, and thereafter. The origins of stratagem in the style of guerrillas may not be simply characterized, but Sun Tzu's writings may be seen to have influenced Mao and those who have written more recently.

The literature does not beget the practice, but the practice is stimulated by the literature, or more precisely that minority of the military literature that emphasizes economy of means and stratagem. Feudal chivalry blended with the geometric rationalism of Renaissance strategy to yield an alternate tradition, in which principles (mass, will, geometric or proportional relations) left no room for stratagem. Before the 20th century, the literature of stratagem was a frequently disregarded doctrinal reservoir.

The development of permanent deception organizations, and their incorporation in the strategic planning and operations of war, have perpetuated the practice of deception.

This phenomenon is of utmost importance in understanding the suspected contribution of stratagem to the decline in the reliability of 20th century strategic warning systems. Although permanent deception organizations are not necessarily of 20th century origin, only in this century have all major states had institutionalized deception functions. Following development of the general staff concept in the 18th century we find repeated examples of stratagem in the battles of Frederick the Great or Napoleon. But it is not until the late years of World War I that evidence appears of deception organizations at work. Before this time there were probably bureaus within security and counterespionage organizations that specialized in misinforming their foreign adversaries—that is, counterpart espionage organizations; but no evidence has been found of deception organizations that calculated their misinformation programs so as to exploit the grand strategy of their adversaries on a systematic basis. It was not until World War II that most of the major powers integrated deception planning with the planning of strategic operations.²⁰ And there is no reason to believe that permanent deception organizations have faded away in the last decades.

There is also no evidence that any of the major powers has established a strategic counter-deception system—that is, a system organized for the detection of adversary deceptions and the design of countermeasures thereto. The striking Israeli application of stratagem in the Six Day War of June 1967 may be identified as the symbol of awareness that deception was a critical element in the erosion of strategic warning,²¹ thus an inevitable subject of analysis by those concerned by the recurring failure of war warning systems.

Whaley's analysis of 20th century stratagem²² encouraged World War II deception practitioners to release their own accounts, despite governmental objections and private lawsuits.²³ The result has been that, by 1973, it was possible to purchase a variety of handbooks on the principles of subverting and misdirecting strategic warning systems.

Fortunately, the technology of intelligence systems since World War II provides opportunities to reduce vulnerability to stratagem and thus new complexities for deception planners. But technology does not assure more reliable warning systems *per se*, and it may provide new channels of deception opportunity. The technological improvements of World War II intelligence, radar and overhead reconnaissance being the most prominent, did not prevent an apparent *decline* of strategic warning reliability from the less "advanced" circumstances of World War I.²⁴

NOTES TO SECTION I

1. Oliver Wendell Holmes observed, "Candor I have always thought was the best form of deception." Edward J. Bander (ed.), *Justice Holmes, Ex Cathedra* (Charlottesville, Va.: Michie, 1966), p. 195. Benjamin Franklin, at one time an ambassador, took pains to tell the truth in dealings with politicians, noting: "That is my only cunning; and the politicians are so corrupt that I always fool them by this means." In Carl Van Doren, *Benjamin Franklin* (New York: Viking Press, 1938), p. 150.
2. Barton S. Whaley, *Stratagem: Deception and Surprise in War* (Cambridge, Massachusetts: Center of International Studies, Massachusetts Institute of Technology, 1969), p. 3.
3. *Ibid.*
4. Colonel Leonard E. Durham, *Political and Military Deception in Achieving National Objectives*, Research Report (USAF Air War College, 1971), p. 1.
5. Whaley, *Stratagem*.
6. J. F. C. Fuller, "Tactics," in *Encyclopedia Britannica* (14th ed., 1929).
7. Herodotus, VIII, p. 128, describes the attempted betrayal of besieged Potidaea to the Persians.
8. Arthur T. Olmstead, *History of the Persian Empire* (Chicago: University of Chicago Press, 1948; 1966 ed.), p. 299.
9. David Kahn, *The Codebreakers* (New York: Macmillan, 1967), pp. 93-99.
10. H. Curling, "Means of Secret Communications in Ancient Armies," *United Service Magazine & Naval and Military Journal* (London: H. Coburn, 1843), Pt. I, pp. 71-79, not known to Kahn when he prepared the first edition of *The Codebreakers*, does contain one early reference to an effort at communications security, achieved through means of deception:

No. 1 — Involved Epistles of the Ancients.
From the Besieged.

Wee prosper still in our affaires and shall
without hauing any further helpe endure the
siege.

Curling observes that if the letters of the second alphabet are picked out of the epistle, "the situation of the garrison will be fully described with military brevity."

Wee perish with hunger helpe us.

Curling's anglicized text is of small value as evidence, but he claims that "it was frequently the custom of the ancients, in their extremity, to write that which, on being unluckily intercepted, would . . . although it failed in obtaining them the succours or assistance they required, at least, mislead their enemies as to their real situation."

11. On imbalances of mobility permitting advantages of maneuver, see Charles A. Willoughby, *Maneuver in War* (Harrisburg, Pennsylvania: Military Service Publishing Company, 1939).
12. See, among others, John C. Masterman, *The Double-Cross System in the War of 1939 to 1945* (New Haven, Connecticut: Yale University Press, 1972).
13. See Kahn, *The Codebreakers*; and Hugh Trevor-Roper, *The Philby Affair* (London: Kimber, 1968), p. 116.
14. See Alfred Price, *Instruments of Darkness* (London: Kimber, 1967).
15. See, for example, the writings of Mao Tse-tung, especially the 1936 essay, "Problems of Strategy in China's Revolutionary War," the extensive literature on the "Battle of Britain" in 1940; Tito's analyses of the circumstances of the Yugoslav partisans in World War II; Ernesto "Che" Guevara on the Cuban civil war, *Guerrilla Warfare* (New York: Monthly Review Press, 1961); Truong Chinh's *The Resistance Will Win* (Hanoi: Foreign Language Publishing House, 1960); and Vo-Nguyen Giap's *People's War, People's Army* (Hanoi: Foreign Language Publishing House, 1961).
16. See Ladislav Bittman, *The Deception Game: Czechoslovak Intelligence and Soviet Political Warfare* (Syracuse, New York: Syracuse University Research Corporation, 1972).
17. See Richard H. Blum, *Deceivers and Deceived: Observations on Confidence Men and Their Victims, Informants and Their Quarry, Political and Industrial Spies and Ordinary Citizens* (Springfield, Illinois: C. Thomas, 1972); A. George Gitter, "Hypocrisy as a Way of Life," Ph.D. dissertation, American University, 1963; David W. Maurer, *The Big Con* (New York: Bobbs-Merrill, 1940), ch. 4, "The Mark;" Heinz Henseler, "Zur Psychodynamik der Pseudologie," *Nervenarzt*, v. 39 (1968), pp. 106-114; Mohan C. Joshi and Beer Sing, "Neurotic and Psychopathic Tendencies of Habitual Liars," *Indian Psychological Review*, Vol. 6 (January 1970), pp. 113-117; John E. Meeks, "Children who Cheat at Games," *J. American Academy Child Psychology*, Vol. 9 (1970), pp. 157-170; and Gardner Murphy, "Experiments in Overcoming Self-Deception," *Psychophysiology*, Vol. 6 (1970), pp. 790-799; Stephen E. Berger, "The Self-Deceptive Personality," Ph.D. dissertation, University of Miami, 1971.
18. Dain, "Les cinq adaptations byzantines des 'Stratagèmes' de Polyen," *Revue des Etudes Anciennes*, Vol. 33 (1931), pp. 321-345.

19. Polyaeus' *Stratagemata*, the work of a Macedonian-born lawyer and rhetorician living in Rome in the 2nd century A.D., is probably the single most influential work on stratagem. Classical texts published in modern times include: Justus Vulteijs, Latin ed. of Polyaeus, *Strategica* (Basel, 1549); Isaac Casaubon, Greek ed. (Lyon, 1589); D. Lobineau, French translation of Polyaeus in 1738, along with P. d'Ablancourt's French translation of the *Strategematicon libri iii*, a collection of military stratagems from Greek and Roman history, prepared by the Roman soldier, Sextus Julius Frontinus (c. 40-103 A.D.), as *Stratagèmes*. Both Polyaeus and Frontinus are likely to have come to the attention of Napoleon and Frederick the Great. The *Stratagèmes de Guerre* of Carlet de la Rosière (1756), published after resurgence of the classical texts, may also have come to their attention. The better texts of Polyaeus' *Stratagemata* are found in editions of A. Coraës (1809, 1810), Woefflin (1860), Knott's *De fide et fontibus Polyaei* (1833), and most particularly in I. Melber's *Ueber die Quellen und Werth der Stratagemensammlung Polyäns* (1885, 1887), which republished a Florentine MS, the *Laurentianus LV*, based upon Polyaeus, and the *Stratagemata* of Byzantine Emperor Leo (II or VI). Since commanders who read the classical texts practiced stratagem in battle and were themselves the subject of doctrinal analysis—for example, Jomini writing on Napoleon—it is difficult to trace the exact role of the classical texts in the shaping of modern strategy. Sun Tzu's *The Art of War* is the subject of modern English translations (L. Giles, 1944, 1964; Ping-on Young, 1960; Samuel B. Griffith, 1963, 1971), scarcely reflecting that classical text's influence.
20. Oblivious to the deception organizations of World War I, Sefton Delmer, *The Counterfeit Spy* (New York & London: Harper & Row, 1972), ch. 2, "'A' Force—or *Ex Orient Lux*," states, "In all their essentials the deception techniques which defeated Hitler's staff during the spring and summer of 1944 had been invented and perfected between 1940 and 1943 at the Cairo headquarters of General Archibald Wavell and his successors" (p. 23). The British North African deception organization, 'A' Force, had been established in the autumn of 1940. In 1942 liaison was established with United States deception planners (pp. 27, 31). Upon Wavell's urging, the British Chiefs of Staff established a "Controlling Officer of Deception" in October 1941, in an attempt to integrate deception with "grand strategy." The so-called "W. Board" had supervised security service deception work since September 1940. See Masterman, *The Double-Cross System in the War of 1939 to 1945*, ch. 4, "Organization for Controlling the Double-Cross System," and pp. 158-162.
21. One example of the effect of the Six Day War is its pre-eminence in the official U.S. Army tactical cover and deception manual. U.S. Department of the Army, *Introduction to Tactical Cover and Deception*, Manual 31-151-2 (Washington, D.C.: U.S. Army, November 1970), pp. 4, 43, 45, 49. Also see unpublished Memo, W. R. Harris to Barton Whaley, 4 September 1967, Subject: "BARBAROSSA," pp. 3-7, esp. on "False Signals," pp. 5-7.
22. See Note 2 above.
23. Delmer, *The Counterfeit Spy* is the subject of litigation in England, resulting in withdrawal of many of the American copies and precluding English publication; Masterman, *The Double-Cross System in the War of 1939 to 1945* is

the subject of prepublication objections by Her Majesty's Government; Ladislav Farago, *The Game of the Foxes* (New York: Macmillan, 1972), is based upon MSS not entirely authorized for release.

24. See Section II. One analyst of the effects of technology upon the economics of defense, Pierre Sprey, introduced testimony before the U.S. Senate Committee on Armed Services, *Hearings on the Weapons Acquisition Process*, December 8, 1971, that since World War II the introduction of state-of-the-art technology has produced nearly exponential increases in unit cost, detrimental to overall mission efficacy, sometimes at reduced unit effectiveness. If intelligence organizations are particularly reluctant to operate with less than state-of-the-art technology, they may come to possess systems of data collection that flood analysts with data at the expense of predictive success.

II. THE EFFICACY OF DECEPTION

*The Words of his mouth were smoother than butter,
but war was in his heart. Psalms IV: 21*

Before the Whaley investigation of deception in 20th century warfare (1969) and publication of Sir John Masterman's account of *The Double-Cross System in the War of 1939 to 1945* (1972), the public literature regarding stratagem failed to convey the impression that strategic deception systems had converted adversarial warning systems into instruments of utmost danger to their sponsors.¹ The war movie fan will remember the unloading of a doctored corpse in *The Man Who Never Was*,² or provision of "chicken feed"³ through double agents in *The Eddie Chapman Story*.⁴ The literature of strategic deception does nothing to erase the impression of eccentricity, spontaneity, and absurdity. Many of the deception cases seem more imaginative than important: the British Special Operations Executive parachuting men, money, even tennis balls as a fictitious recruitment favor,⁵ upon request of the Gestapo in occupied Holland;⁶ German destruction of a German radio transmitter at Gleiwitz, as "proof" of a Polish "invasion" of Germany in 1939;⁷ Allied construction of a rubberized "fleet" as one of numerous devices misleading German intelligence before the June 1944 Normandy landings,⁸ or the appearance of a "double" General Montgomery in Gibraltar at the time of the Channel crossing.⁹

Many of the more colorful deception operations appear as adroit side-shows of war, and so they are treated, if at all, by most historians. Examples include the Soviets' Operation SCHERHORN, which lured German troops (of whom 2500 were captured) in an effort to "rescue" a non-existent detachment behind Russian lines;¹⁰ the passing of false rumors from London through a team of waiters in a Lisbon restaurant;¹¹ creation of false bombing targets, incendiary fires, and navigational guides for German bombers by "Colonel Turner's Department" in the British Air Ministry;¹² an imaginary aircraft carrier landing strip in the Mediterranean just off Crete for the "benefit" of German pilots in 1944;¹³ and a host of electronic deceptions in the struggle Churchill labeled "the wizard war,"¹⁴ and the mislabeling of street signs by Czech nationals during the Soviet invasion of 1968.¹⁵

Other cases of deception, whether successes or failures, appear less as side shows than as absurdities. The "Lavon affair" involved the Israeli secret service in a program to undermine U.S.-Egyptian relations in 1954 by systematic planting of false intelligence and the sabotage of private and official American installations in Egypt, supposedly on behalf of Arab extremists. Although partly successful, this

program's unexpected disclosures resulted in strained U.S.-Israel relations and a series of Cabinet crises in Tel Aviv.¹⁶ Journalists have reported that CIA-sponsored Nationalist Chinese paramilitary detachments in Burma, allegedly accompanied by CIA exaggeration of a Red Chinese threat, led to strained U.S.-Burmese relations in 1953, and that a "skillful" French deception of Viet Minh intelligence at Dien Bien Phu, Operation CONDOR, led the French command at the fortress in 1954 to anticipate reinforcements that were never intended to be sent, all with disastrous results.¹⁷ Further, a Soviet-coordinated Czech disinformation program in Indonesia convinced President Sukarno of imagined CIA mischief in 1964, played into pro-Peking hands, and resulted in a bungled *coup* attempt, then an anti-communist *coup d'état* in 1965.¹⁸

The successful Operation STAMPEDE, a joint SOE/OSS creation, involved a mythical Dutch resistance organization to draw attention from the Normandy beachheads. Reportedly the deception planners sanctioned the parachuting of *bona fide* Dutch patriots into the hands of the Gestapo. Even the importance of the mission does not remove the aura of tragic absurdity surrounding such an affair.¹⁹ Equally successful was the German *Abwehr* and *Sicherheitsdienst* control of the Soviet military intelligence network in World War II Europe. Most notable was the "Red Orchestra," a *Funkspiel* (radio game) played with such gusto, perhaps by Soviet penetration agents, that it fed the Soviets invaluable requested data.²⁰

These images of deception operations fail to convey the fact that strategic deception operations—a source of victory in antiquity and in the Napoleonic wars²¹—became a central facet of almost every strategic engagement since the onset of World War II and the midwife of strategic surprise.²² As national intelligence systems acquired additional sources of data transmitted by faster means, deception became an essential ingredient in the initiation of war, involvement of a new adversary, opening of a new front, and conduct of a battle or retreat. Politicians came to exploit deception techniques in the subsequent cold war environment as a means of accelerating the prospects of a *coup d'état*, as a technique of widening ruptures in an adversary's alliance system, and as a means of disguising small power versus great power conflicts during periods of small power vulnerability.²³

The public disclosures of deception operations scarcely reflect the underlying realities. In part the discrepancies are happenstance; in part they reflect the special attention to "deception security"—that is, the maintenance of security respecting the methods and substance of deception operations.²⁴

THE AURA OF SECRECY

When the scale, transparency, or duration of an endeavor requires the mounting of one or more deception operations, the unravelling of the deception plan may be worse than mounting no deception at all. The blown deception plan may reveal details of true intentions that passive security alone might have withheld. Therefore, deception security is vital to the achievement of surprise. Supplementing physical and personnel security measures, use of special code words, and rigorous reduction of "witting" participants raise the probability of maintaining deception security. Moreover, sophisticated deception planners working to protect vital operations

design their master deception plan, or stratagem, so as to compensate for varying degrees of deception insecurity. For example, the planners of the Allied stratagem to confuse the Germans as to the time and place of the opening of a second front, Operation OVERLORD, mounted dozens of feints or deception operations in 1943-1944. Some of these feints did not ring true to participants and observers. Most kept their mouths shut, but even those who were indiscreet were unable to pierce the security of the master stratagem because the unveiling of any one deception operation did not compromise its strategic relevance, even to deception participants. Most participants in major deception operations are ignorant of the strategic nexus affecting their work; the remaining few are, for the most part, deeply impressed by the importance of deception security.

After deception operations are completed, rigorous security persists for the protection of deception tradecraft. Whaley's systematic study of deception in 20th century warfare, supported by empirical findings, concluded that this concern for tradecraft security is based on the false assumption that such knowledge reduces vulnerability to foreign deceptions:

The deceiver is almost always successful *regardless* of the sophistication of his victim in the same art. On the face of it, this seems an intolerable conclusion, one offending common sense. Yet it is the irrefutable conclusion of the historical evidence.²⁵

It is my contention that the main reason for Whaley's "intolerable conclusion" is that counter-deception capabilities of the major intelligence and security services have remained at such primitive levels that knowledge of, even participation in, the tradecraft of strategic deception has little effect upon the predictive efficiency of the major intelligence services. Under this hypothesis, the preservation of deception security could prove decisive in the event that the major powers paid adequate attention to the development of counter-deception capabilities. It is perhaps ironic that one effect of the compartmentation and security pertaining to deception operations has been a general ignorance of the havoc wrought by past deceptions, accompanied by complacency among intelligence analysts, which precludes creation of an effective counter-deception system.²⁶

The curtain of secrecy surrounding deception tradecraft reinforces this complacency. Whaley's *Stratagem* may lead to some reexamination of the problem, but even his study probably underestimates the effects of strategic deception, partly as a result of deception security. He shows that of the 61 cases of strategic surprise in war during the period 1914-1968, 50 cases—or 82 percent—involved strategic deception. Moreover, 50 of the 57 strategic initiatives known to involve deception—88 percent of the cases—resulted in surprise.²⁷ Whaley demonstrates that deception enhances not only the likelihood of surprise but also the effectiveness of it.²⁸ But his prodigious researches did not involve access to official records of any major intelligence service. What cryptologic *Funkspiels* escaped his attention? What percentage of the intelligence "successes" involved the controlled dissemination of accurate intelligence as a means of accrediting deception channels for "play" at higher stakes?

Stratagem encounters quantitative and methodological problems. In the process of grouping sets of historical cases, it loses some of the qualitative variations that are more significant and alarming than the Whaley presentation suggests.

A REAPPRAISAL OF THE WHALEY DATA

To what extent do the Whaley data exaggerate the importance of deception? To what extent do his data minimize the importance of deception? First, it is worth nothing that *Stratagem* is the only extensive empirical study of strategic deception in the public literature. It is a monumental research effort, which resulted in significant findings. Whaley's is not the best of several studies, but unique, and so it is impossible to compare his findings with those of other studies. Until similar studies are undertaken—some, it is hoped, with full access to official records—evaluations of his findings cannot be cross-checked against other universes or other samples.

Whaley's analysis of 20th century surprises may contribute to an exaggeration of deception's role. Quite rightly, he has limited his set of strategic conflicts to cases in which the ingredients of surprise were fairly obvious: it was necessary to discover a major miscalculation of enemy intentions (go or no-go?), the time of attack, the place of attack, the strength of attack, or the style of operations.²⁹ But it is possible to have one element of surprise without having all elements. Thus, a case of partial surprise may be included in Whaley's set of surprises, although intelligence correctly predicted four of five modes of potential surprise. So far, this choice merely highlights the predictive difficulties of intelligence services, by cataloguing a variety of pitfalls and counting as surprise a failure on any count. Thus Whaley's study makes the predictive records of the major intelligence services look somewhat worse than they really are. Of 33 amphibious operations in the period 1914-1969, an astounding 85 percent involved at least one mode of surprise; of these cases, deception operations are known to have been associated with 28 landings, achieving surprise 89 percent of the time.³⁰ Of 134 land or air battles, of which 42 percent involved deception operations, 58 percent led to surprise in at least one mode.³¹ It might be supposed that a bad predictive record in World War I taints the averages in later years, as intelligence sources penetrate deeper and as organizations communicate faster. But according to Whaley, only 48 percent of land battles in World War I resulted in surprise, whereas fully 68 percent of those in World War II resulted in surprise. Whaley observes,

From this it could seem that surprise has become "easier" to achieve. In fact, the table also shows that this *could* be entirely accounted for by the parallel rise in the use of deception.³²

Because Whaley counts one or more of five modes of surprise as a case of surprise, he portrays a bleak track record. Parenthetically, if this technique can induce among intelligence professionals a greater sense of humility and greater recognition of their vulnerability to deception, it will have been most commendable.

So far, the breakdown of elements in surprise has emphasized intelligence failures but has not exaggerated the influence of deception (except insofar as the bad track record draws attention to everything, including deception, associated with it). When Whaley excludes cases of minor surprise, or when he omits most cases of technological surprise, he may indirectly exaggerate deception's importance, because his sample of cases is thereby skewed. Often, the small conflicts involving bad intelligence may not involve the malevolent hand of foreign deception, simply because security stands a greater chance of effecting surprise by itself.

The exclusion of minor cases, where the presence of deception is less likely,

probably increases the reported percentage of strategic surprises associated with deception (82 percent). Similarly, the exclusion of most cases of technological surprise, where unfamiliarity or flaws in the conventional wisdom may play a greater role than deception, may increase the percentage of Whaley's cases associating deception with surprise.³³

Still another aspect of Whaley's research suggests an overemphasis of deception's potency. Because almost all of his sources are secondary accounts prepared with hindsight, his data are particularly vulnerable to the selectivity of his sources. In fairness to Whaley, it should be noted that he has read and cross-checked an enormous range of sources, and that this monumental corroborative venture has minimized susceptibility to error. Nonetheless, the tendency of memoirists to select incidents that flatter their subjects is well known. Deception planners tend to recall those instances of strategic deception that hit their intended marks. What of the stray shots, the arcane deceptions that missed their targets, worse yet the ironic deceptions that back-fired and alerted the opposition? These are less likely to find their way into print, and thence into Whaley's quantitative analyses. Similarly, instances of self-deception are unlikely to be recorded in the majority of memoirs. Often we deceive ourselves without any assistance from our enemies, but we pride ourselves on the neutrality of our self-perceptions.³⁴ The first set of selective memories omits cases where foreign deception operations failed to have an effect or worked to the disadvantage of the sponsoring state. The second set of selective memories omits cases where the cause of surprise was self-deception, hardly a matter to be credited to the skill of foreign deception operations.

These considerations suggest that the Whaley study may overstate the role of deception in achieving wartime surprise. It is also possible that a study of strategic deception and surprise will fail to give proper weight to the successful warnings of attacks that were rescheduled as a consequence of successful warnings. Where enemy anticipation of military attack is grounds for the cancellation of that attack, accurate warning may become false warning. Indeed, some of Hitler's attacks were rescheduled because timely warnings were known to have reached intended victims. So the set of attack cases omits, without justice, surprise-dependent attacks that were foiled by timely, thus false, warning.

In view of these tendencies to focus upon cases of surprise and to exaggerate the role of foreign deception operations in achieving surprise, it might be supposed that strategic deception is not nearly so damaging, not nearly so effective in degrading enemy intelligence as Whaley leads us to believe. On the contrary, it is my belief that Whaley's 1969 edition of *Stratagem* understates the importance of strategic deception in the causation and exploitation of enemy surprise.

The same memoirists who are reluctant to admit self-deception are equally loath to admit deception at the hand of a skillful adversary. It is galling to be the dupe of an enemy deception operation, and many who will admit to surprise care not to probe its suspicious origins. It is one matter to play the puppeteer and another to play the puppet.

Pride may displace concern for security as the major inducement to the suppression of deception tales. Nonetheless, the aura of secrecy is powerful, and many cases of wartime deception do not survive the censor's stroke. Cryptologic deception is hardly a public subject, yet we can all imagine that a compromised channel of communications exploited for deception purposes could provide a larger volume of

disinformation than could dozens of controlled double-agents. There may be techniques of deception that have not found their way into the public record; if so, the incidence of deception in association with surprise may be somewhat higher than Whaley's data suggest. In sum, the incidence of deception in cases of strategic surprise may be even higher—excluding cases of technological surprise—than the astounding 82 percent found in Whaley's study.

Equally important, Whaley's analysis may understate the usefulness of deception, not merely its frequency. If we assume that a competent adversary will discount information from suspected channels of disinformation, then we should view most deception channels as fast-depreciating assets. In contrast, the basic techniques of deception may be used again and again (in the absence of serious counter-deception efforts) even against the very intelligence services that mount the most sophisticated deceptions; the channels, not the techniques, become quickly obsolete. Some of the deception assets may be regenerative, but others may be one-shot affairs (some quite literally, as players risk liquidation). Like a good poker player, the deception expert has learned not to bluff too often, nor to bluff over trivial stakes. As a consequence, he may aggrandize deception assets by passing true information over controlled channels, accrediting these for more crucial encounters.

If the Whaley data are accurate, deception operations—perhaps in conjunction with other factors—led to strategic surprise in 88 percent ($n=50$) of 57 deception attempts. Since deception assets had high discount rates, it was not possible to mount a full-blown deception program, or stratagem, with every major initiative. The incidence of surprise was substantially lower than 88 percent of major battles, but was it lower in the most crucial battles, when deception planners would expend their one-shot assets? Probably not.

The Whaley analysis does not provide the answer, though it suggests that deception operators played their best tricks when they thought the rewards to be greatest. It shows a higher frequency of deception and surprise in major than in minor battles. But Whaley's 1969 edition of *Stratagem* did not probe for cases of all-out deception where the simulated misallocation of resources spelled victory or defeat. Thus, *Stratagem* is less alarming than it ought to be, for it suggests that the estimative record of most intelligence services is poor without also specifying that the record is especially poor in the most critical cases. The net effect is to foster a degree of complacency, especially in the lull before the bigger storms or during the less important battles. In such cases the record of the recent past looks good—at worst, mediocre—and complacency leads to smugness, reinforcing dependence on past intelligence channels, styles of collection, and analysis. Such channels as are controlled by or known to foreign intelligence services are vulnerable to distortion and abrupt termination.

The following is an effort to examine the efficacy of deception when a full array of deception techniques is put into battle. First, I examine the Whaley data in an effort to evaluate cases of "grand deception," as distinct from "minor deceptions," involving more modest deception resources. Second, I examine the high-intensity deception initiatives in an effort to test their relationship to the probability and consequences of strategic surprise.

The Whaley study includes a partly satisfactory index of the degree to which deception assets were expended in the cases he considers. The index in question³ is an *unweighted* one, derived from the addition of the sums of the numbers of

deception efforts catalogued under various headings: continuation of misleading negotiations, misleading demonstrations, feints, fake documents, press "leaks," planted rumors, camouflage (both simulative and defensive), radio deception, and other modes. The index is inadequate on two counts: first, it fails to record a variety of still-classified deception techniques, and second, it fails to weight the sub-indexes in accordance with an approximate estimate of influence.

Despite its shortcomings, the Whaley "ruse" index is the best available indicator of "grand" and "minor" deception. If we wish to study those crucial cases in which a state draws heavily upon its scarce deception resources so as to maximize enemy surprise and misdirection, we can start with those cases at the upper end of Whaley's "ruse" index. The 68 cases studies are distributed along a "ruse" scale from 0 to 8, representing for each case the total number of deception schemes in all reported modes. The distribution, computed from Whaley's data, is shown in Figure 1.

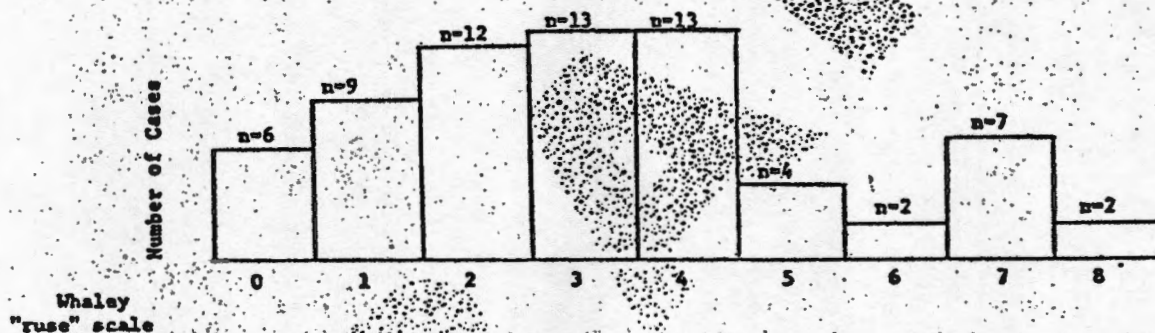


Fig. 1—Intensity of deception efforts: Distribution of 68 cases, 1914-1968 (n = 68, Mean = 3.5, Median = 3)

The average case has a "ruse" indicator level of 3.5, the median case a ruse indicator level of 3. Of the 68 cases, 28 have a ruse index level of 4 or greater. Taking these 28 cases of "major deception," constituting 41 percent of the 68 major deceptions and surprises analyzed by Whaley, we can test the effects of intensified deception efforts on enemy prediction and performance.

The 28 high-intensity deception cases (measured by the Whaley "ruse" indicator level > 4) are identified in Table 1. The most striking feature of the data is that at least 27 of the 28 cases of high-intensity deception resulted in strategic surprise. The Luzon case resulted in tactical surprise, and many of General MacArthur's supporters claim strategic surprise. If they are correct, then all of the 28 major cases of high-intensity deception resulted in strategic surprise. Moreover, all 15 of the cases (22 percent) with a Whaley "ruse" level of 5 or more resulted in strategic surprise. This record should be a cause of concern to intelligence analysts, arms control advocates, and military planners.

Table 1
 TWENTY-EIGHT HIGH-INTENSITY DECEPTION EFFORTS, 1914-1968

Whaley Cases	Date	Protagonists	Whaley Deception Index	Surprise	Whaley Surprise Index	Whaley Casualty Ratios (Defender/Attacker)
A2 Callipoli	25 Apr 1915	UK+Fr./Ger.+Turk.	4	yes?	1	0.5
A6 3rd Battle Gaza	31 Oct 1917	UK/Ger.+Turk.	7	yes	4	1.4
A8 St. Mihiel	12 Sep 1918	US/Germany	8	yes	3	2.3
A9 Megiddo	19 Sep 1918	UK/Ger.+Turk.	7	yes	2	13.2
A11 Dumlupinar	26 Aug 1922	Turkey/Greece	7	yes	4x	10.0
A16 Poland	1 Sep 1939	Germany/Poland	4	yes	3	15.1
A17 Denmark	9 Apr 1940	Germany/Denmark	4	yes	2	1.8
A23 Inv. of UK-Hoax	Sep 1940-42	Germany/UK	4	yes ^a	1x	--
A25 Sidi Barrani	9 Dec 1940	UK/Italy	7	yes	4	73.4
A28 Russia	22 Jun 1941	Germany/USSR	7	yes	2x	7
A30 Pearl Harbor	7 Dec 1941	Japan/US	5	yes	5x	30.1
A35 El Alamein	23 Oct 1942	UK/Germany	4	yes	3x	4.3
A38 Sicily	10 Jul 1943	UK/Italy	4	yes	2	5.0
A41 Anzio	22 Jan 1944	US+UK/Germany	4	yes	4x	1.54
A44 4th Btl Cassino	11 May 1944	US+UK/Germany	6	yes	4x	1.7
A45 Normandy	6 Jun 1944	US+UK/Germany	8	yes	4	1.3
A46 Belorussia	22 Jun 1944	USSR/Germany	6	yes	3	7
A47 Normandy break	25 Jul 1944	US+UK/Germany	5	yes	5x	7.0
A48 S. France	15 Aug 1944	US+Fr./Germany	5	yes	3	11.6
A49 Leyte Island	20 Oct 1944	US/Japan	4	yes	2	4.4
A52 Luzon	9 Jan 1945	US/Japan	4	no?	2	2.7
A53 Bavarian Redoubt	Jan-May 1945	Germany/US+UK	4	yes	1x	--
A54 Irrawaddy	14 Feb 1945	UK/Japan	4	yes	2	7
A59 Inch'on	15 Sep 1953	US/N. Korea	4	yes	3	7.4
A63 Sinai Campaign	29 Oct 1956	Israel/Egypt	7	yes	4x	11.6
A65 Bay of Pigs	17-19 Apr 1961	US/Cuba	5	yes	2	2.6
A66 Six-Day War	5 Jun 1967	Israel/Egypt+	7	yes	5x	17.3
A67 Czech Invasion	20 Aug 1968	USSR/Czech.+NATO	4	yes	3x	--

^aSignifies disagreement with Whaley's avoidance of judgment on this case. The "invasion of Britain hoax" was not technically a strategic surprise, since the non-event was not a surprise at any one moment. However, as Whaley observes (p. 234), the "threat" helped the British to misallocate up to 25 divisions for 18 months; I count this case as one of strategic surprise, since it caused critical misallocations of manpower.

x indicates that one mode of surprise was a mis-estimate of the general intentions of the enemy (no attack vs. attack).

Source: Whaley, *Stratagem* (1969 ed.).

Also of interest are the following statistics: First, the average magnitude of surprise in these 28 cases of high-intensity deception (using the Whaley index, adding the various modes of surprise in each case) is 3.0, well above the average for Whaley's remaining 40 cases, 2.37; second, 43 percent of these 28 cases (as opposed to 37 percent of the other 40 cases) involved the misjudgment of basic intentions (attack vs. no-attack), probably the most consequential and costly aspect of surprise; third, casualty ratios of target state to deceiving state in these "grand" deception cases (median = 4.8 to 1) were far more favorable to the deception-sponsoring state than in the average case of deception or surprise attack.

Assuming the data presented in Table 1 to be reasonably accurate, we are led reluctantly to the conclusion—omitting systematic counter-deception efforts of which there is little evidence—that the originator of a strategic initiative willing to expend substantial deception resources can expect nearly a 100 percent probability of achieving strategic surprise. Further, he can design a set of misleading indications so as to capitalize upon enemy surprise, by encouraging misallocation of enemy resources.

If some of the more diabolical deception operations are hidden from public view, the efficacy of deception may yet be understated. In critical cases, the estimated likelihood of surprise (0.96+) could not rise much higher, but new details of the misallocations that resulted might make the prospects of deception appear even more grim.

Reviewing 168 battles in 16 wars in the 20th century, Whaley found that of 59 battles fought without initial surprise only two percent exceeded the battle-initiating leaders' expectations, and 60 percent of these battles resulted in abject failure. In contrast, of 50 battles involving surprise 34 percent exceeded commanders' objectives and only two percent ended in failure.³⁶ These subjective evaluations are consistent with empirical data on battle casualty ratios. Whaley studied casualty ratios in battles undertaken with or without surprise (eliminating the upper and lower five percent of casualty ratio cases). Without surprise, in 45 battles, mean casualty ratios (attacker/defender) were 1 to 1.1; with surprise, in 79 battles, mean casualty ratios were 1 to 5.3, somewhat higher in tactical encounters (1 to 6.2), somewhat lower in major battles (1 to 4.5).³⁷

As might be expected, increasing intensities of surprise (counting five modes: go, no-go; time; place; strength; and style) produced more favorable casualty ratios: 1 to 11.5 with all five modes of surprise present (still not counting the five percent of cases with largest casualty ratios), higher absolute numbers of casualties by the surprised forces, lower absolute numbers of casualties and higher numbers of prisoners taken by the forces initiating surprise.³⁸

So far, we have seen that the incidence of surprise in 20th century warfare has been rising, with a higher incidence in World War II and the postwar period than in World War I. Of 61 cases of strategic surprise, 82 percent were found to involve strategic deception, and 88 percent of cases of strategic deception were found to involve strategic surprise. Crude measures of high-intensity deception indicated that the concentration of deception resources in key battles correlated with even higher incidences of surprise, 96+ percent. We have also seen that the infliction of high intensity surprise resulted in more favorable casualty ratios, reduced casualties for the surprise-initiating forces, more captured prisoners, much improved chances of attaining battlefield objectives, and a 34 percent chance of achieving objectives well beyond those anticipated.

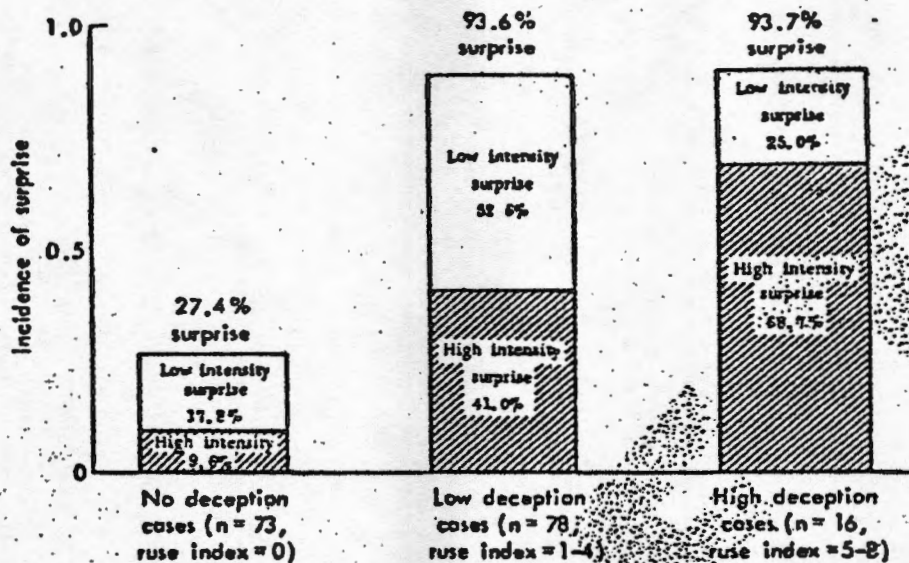


Fig. 2—Effects of intensity of deception upon surprise

STATISTICAL SOURCE: Whaley, *The Bodyguard of Lies*.

Given the imprecision of evaluations of what constitutes deception and what constitutes surprise I wish to treat with caution hypotheses linking the intensity of deception to the intensity of surprise. Figure 2 adapts data on the relationship between intensities of deception and surprise as recently reported by Whaley.³⁹ Initiation of at least a low-intensity deception operation correlates with substantially higher incidences of surprise in 20th century warfare than would result from attacks without associated deception efforts. Moreover, it appears that an increased deception effort, measured by the number of deception modes used, correlates with an increasing incidence of *high-intensity surprise* but not significantly increased prospects of achieving surprise. The shift is from low-intensity surprise to high-intensity surprise, which is more costly to adversaries.

Whaley's data, displayed in Figure 2, are not entirely consistent with my own data on the relationship between the *intensity* of deception and *probability* of surprise derived from the same Whaley case studies. Whaley's findings suggest, in effect, that switching from low- to high-intensity deception operations correlates with increases in the intensity of surprise but no significant increase in the probability of surprise.

As discussed earlier, my review of Whaley's case studies of surprise in strategic battles (mainly commencement of war, opening of new fronts) suggests that switching from low- to high-intensity deception correlates with increases in both the intensity and the probability of surprise. Thus, only 80 percent of 30 low-intensity strategic deception operations resulted in some degree of surprise (ruse index of 1-3; surprise index of 1-5), 96+ percent of high-intensity strategic deception operations (ruse index of 4-8) resulted in some degree of surprise, and all strategic deception cases with a ruse index ≥ 5 resulted in some degree of surprise.

My findings suggest that, in the absence of counter-deception systems, high-intensity deception in strategic operations should not only result in a higher incidence of high-intensity surprise but also in a reduced prospect of failing to achieve a significant element of surprise. If it is easier to obtain an element of surprise in tactical battles through low-intensity deception operations than is possible in strategic encounters (of more central concern to adversary analysts), then my findings and those of Whaley may be consistent.

Diverging conclusions might be important in estimating whether a nuclear attack were possible without a substantial risk of pre-launch disclosure of the attacker's intentions. If one concludes that high intensity deception can drive the probability of pre-launch surprise close to 1.0, rather than 0.8 to 0.9, one may reach different conclusions about defense postures required to assure nuclear deterrence. Without further research, however, we cannot assert that high-intensity deception operations can drive the probability of achieving surprise close to 1.0; and in any event, we are wary of applying the Bayesian data on conventional warfare to the probability of pre-launch warning of nuclear attack. Nonetheless, the empirical findings on the relationship between deception and surprise, and between high-intensity deception and high-intensity surprise, do not generate *a priori* confidence in the reliability of strategic war warning systems.

Relying upon unreinforced adversary preconceptions, operational security, or luck has yielded an incidence of surprise of only 27 percent.⁴⁰ Stated differently, the chances of failing to achieve any significant element of surprise without deception are almost 3 to 1. That deception has become part of the *modus operandi* of modern military planners is entirely understandable. It is less understandable that the vast public literature on intelligence forecasting has failed to address the challenges of counter-deception planning so as to provide more reliable strategic warning systems, and in the process to discourage would-be attackers.

What of asymmetries in strategic deception practices? In Section I, I suggested the same states that foster rational planning of intelligence collection may tend to appreciate potentials for deceiving adversaries through their intelligence systems. Those states that have succeeded in penetrating the security of adversary systems, placing agents well, decoding high-level communications, or controlling adversary intelligence systems have also gained insights into the decision styles of their adversaries, the concerns, prejudices, assumptions, inference processes, channels, and substance of information that are ripe for misdirection.

The preceding statistics tell us that even the disadvantaged have opportunities for surprising their adversaries. The incidence of surprise has been high between large nations and small and between rich and poor. Deception is one of the equalizers of international conduct; it humbles all and affects those who are not its targets but who fear its consequences. Available statistics do not convey the effects of asymmetrical resources. We may suspect, but cannot as yet prove, that those states with advantages of intelligence or control of adversary intelligence systems may manage to convert more cases of what would be low-intensity surprise into cases of high-intensity surprise. The opportunities for either massive deception or sharpshooting deception allow greater opportunity for the kinds of misdirection that are especially costly to an adversary. Without more detailed public evidence, the data base does not allow empirical study of the consequences of intelligence asymmetries.

Asymmetries have existed and have tempted exploitation. Sir John Masterman explains of the British-German counter-espionage duel of World War II:

Not only have double agents been run on a long-time basis but they have been run so extensively that we can think not in terms of a number of isolated cases but in terms of a double-agent system. . . . *We actively ran and controlled the German espionage system in this country.*⁴¹

If we assume a significant disparity between the deceiving state's intelligence resources and those of the deception target, with the imbalance favorable to the deceiving state, we can probe stratagemic vulnerabilities in their most virulent form. Deception operations mounted without the assistance of "magic" (cryptologic intelligence) or well-placed agents are a gamble. When supported by magic and a patiently cultivated network of double agents, deception is almost a sure winner, with gigantic payoffs. The deception planner's ultimate windfall involves access to two particular varieties of magic: first, access to the codes and ciphers of the opposition's intelligence services; second, access to the command decisions as transmitted. The first reveals the collection patterns, inferences, preconceptions, and fears of the enemy; the second reveals the susceptibility of commanders to particular packages of "signals" and to the channels by which they are transmitted. When the deception planner has at his disposal well-placed networks of double agents, he has ready access to the collection system of his target. If he is careful, he will cover the other sensing systems as well.

This imbalanced situation is the stratagematist's equivalent of "pay TV." The adversary pays for the opportunity to view any of several images, transmitted to him over various channels designed by the stratagematist. With access to the preconceptions, values, and channel preferences of his viewer, the stratagematist designs a series of programs that will satisfy the customer. (The customer may be misled, but until he perceives the incongruities he will be satisfied.) Where the stratagematist has access to the internal channels of his adversary's intelligence, he is able to learn when his target audience is not interpreting the various images as they were meant to be read. If he can adapt his programs in mid-course, the stratagematist can almost guarantee that the audience is both satisfied and convinced. In short, with "magic" and double agents the stratagematist can even control the "fine tuning" of his audience's perceptual patterns.

Hugh Trevor-Roper tells us that the British decrypted *Abwehr* ciphers almost straight through World War II.⁴² Can we believe that at 10:00 a.m. an interdepartmental deception committee discussed the "fine tuning" of deception programs in the light of intercepted *Abwehr* intelligence? Certainly we can. And we should not be surprised to learn in Whaley's *Stratagem* that *Abwehr* intelligence was not only wrong in most of the critical cases but also wrong in the costliest of directions.

The intelligence service that points to its estimative record with pride usually has not existed during critical wartime threats or else it prefers to skip over "quirks" when totaling the batting averages.⁴³ The fact that most intelligence services are badly deceived at just the time when they are most needed is not a valid argument for their demolition. The smaller, less sensational successes may entirely justify the investments; further, development of some counter-deception capabilities may at least ameliorate the rather poor track record in the most important cases. Deception security assures that the track record, though obviously bad, is ascribed to fortuitous circumstances, random developments, poor luck, the inherent unpredictability of most situations, and a host of other circumstances.

MODELS OF ERRONEOUS INTELLIGENCE

Omitting the visibility of deception planners, the predictive records of intelligence services still look bad (for the evidence of resource misallocation is often blatant) but their rational exegesis seems nigh impossible. The evidence is ambiguous, the warnings hidden or late in arriving. (How many a deception operator can remember passing a correct warning just before the battle, too late for its exploitation by the enemy but sufficiently early to accredit the sending channel for later play?)

The most persuasive model of this discouraging state of affairs is one that accepts this abysmal record as the natural if disordered circumstance of intelligence work. With hindsight, the inferentially valuable data are identified as a group of signals, the troublesome and misleading are identified as noise. With such a model, post mortems of almost any of the major turning points in 20th century warfare lead to the conclusion that separation of crucial signals from the ambient background noise is extraordinarily difficult, that potential improvement is highly restricted, and that the possibility of calamitous surprise is ever present.

The outstanding case study of this genre is Roberta Wohlstetter's *Pearl Harbor: Warning and Decision*.⁴⁴ A study that followed Mrs. Wohlstetter's in merging the deception data with background noise is Holst's analysis of the German surprise attack on Norway in April 1940.⁴⁵ In the case study on *Operation BARBAROSSA* that led to his monograph on *Stratagem*, Whaley included the signals in a draft chapter on noise until he realized that most of the noise was manufactured in Germany, with specifications designed to penetrate Soviet intelligence filtration barriers.⁴⁶ David Walker's *Lunch With a Stranger* notes that it was the British practice in World War II to call the output of controlled rumor networks "sibs," slang for sibilliance.⁴⁷ Thus, the very operators of deception networks conceived of their work as the production of background "hissing."

Although the artful deception operator may blend his disinformation products with the natural background noise, our failure to segregate the spurious signals—what I call *sprignals*—from the background noise leads us to underestimate the importance of these sprignals and denies us the opportunity to design counter-deception systems.

A more helpful model of erroneous intelligence would segregate genuine *signals*, unintended clues of future events; *sprignals*, intended clues to nonexistent capabilities or intentions; and *noise*, the background data and random confusion inherent in the intelligence picture. Whaley's revised *Codeword BARBAROSSA* adopts this mode of analysis, suggested in 1967-1968.⁴⁸ So do his less rigorous but comparative case studies in *Stratagem*.

An evaluative model reflecting the devastating effect of deception and seeking to isolate deception parameters encourages the search for effective countermeasures. Many of the insights in Wohlstetter's masterful *Pearl Harbor* study are still pertinent: the problems of compartmentation, of overzealous security, of varying perspectives, of wishful thinking, of tangled jurisdictions, of sheer overwork, and of the ambient background noise. These contributions to error becloud the role of strategic deception, but they should not deflect attention from the search for countermeasures to what appears to be the most degrading factor of all, stratagem, the orchestration of deception measures by a skillful adversary.

One may look with skepticism upon a "rational model" of decisionmaking⁴⁰ while acknowledging that amidst the noise, amidst the bureaucratic politics, amidst the irrational and the confusing, there lurks the hand of rational deception—admittedly a hostile hand, taking advantage of irrationality, of preconception, of confusion. By misdirecting the apparent thrust of policy, deception can facilitate the misdirection of resources; by enlarging or prolonging the appearance of multiple options, deception can force the rational adversary and probably the scared, irrational adversary to spread his resources thin.

In many cases there may be no perfect countermeasure, but surely we ought to avoid surprise in more than 4 percent of the major deception cases.⁴¹ It is merely contended that a modest investment in a counter-deception system would be highly cost-effective should such a system manage to counteract even a minority of deception operations aimed at decisionmakers through the eyes and ears of U.S. intelligence. Even a low probability of timely forewarning may discourage the prudent; those who are bent upon warning-free attack may yet be dissuaded by the production of timely strategic warning; and those who face enhanced prospects of alerted, protected retaliatory forces may be further discouraged from high-cost procurement of weapons to attack alert-dependent retaliatory systems.

Although enhancement of warning reliability is a valuable objective, the record of past warning failures confirms the wisdom of procuring weapons systems that are not warning-dependent, even at high cost. But even those systems designed to survive a surprise attack may depend upon targeting intelligence, which may also be subject to deception. Minimizing dependence upon timely warning is not enough; sensible planning requires sensitivity to the possibilities of adversary deception, and adoption of prudent countermeasures.

SPECULATIONS ON THE VULNERABILITY OF ARMS CONTROL AGREEMENTS

Professor Whaley's empirical data on deception and surprise in 20th century warfare lead us to the unpleasant conclusion, qualified by the predictive limits of Bayes' Theorem,⁴² that it is possible to deceive the intelligence services of the major powers in most strategic military initiatives; and in the most critical cases, where one-shot deception "assets" are expended, the probabilities of high-intensity surprise are alarming. The implications for arms control negotiations are serious, but before turning to them, we should attach three caveats to this pessimistic prediction of intelligence capabilities.

First, although the Whaley data count any one of five modes of surprise (go, no-go; time; place; strength; style) as an intelligence failure, accurate predictions of military capabilities may suffice for many arms control purposes. Second, empirical evidence from historical cases may not validly predict future cases where conditions of causality are altered; development of effective counter-deception systems would constitute such an altered condition and invalidate the Bayesian utilization of Professor Whaley's data.⁴³ Third, it is not clear that the set of 114 cases in the Whaley study and the set of probable arms control verification cases are subsets of the same universe; some of the arms control verification cases may not involve

assessments of enemy intentions and resource allocations, which have led to such a poor predictive record in warfare. Thus, deception of verification systems may not be an insuperable obstacle to arms control agreements, though it should worry any thoughtful planner.

After studying the pernicious effects of deception upon predictive performance, one may conclude that the greatest test of intelligence systems is distorted light, not darkness.⁵³ For the intelligence analyst ignorance *is* bliss, at least in contrast to the deceptive reinforcement of preconceptions.⁵⁴ The "shotgun" approach to intelligence collection will yield a few clues sooner or later, probably sooner, but if these clues are misdirected, the accumulation of dissonant information may not stimulate attitude change and production of sufficiently unequivocal, timely warning.⁵⁵

Enthusiasts of arms control agreements sometimes pose hypothetical verification "challenges" of the pure "darkness" variety; naturally, there is sufficiently penetrating light to conclude that mere security or passive camouflage cannot hide most major weapons developments. Jeremy J. Stone, in his article on ABM detection, "Can the Communists Deceive Us?" claims that they cannot.⁵⁶ He predicts that the Soviets could not develop and deploy a new generation ABM system without U.S. intelligence having timely warning well before the ABM system became operational. Stone cites development of multi-sensor, multi-spectrum reconnaissance systems as proof that camouflage would not be an effective shield. And clandestine agent reports are seen as another mode of advance warning.⁵⁷

But what of an ABM deployment that consists of the selective improvement of a sophisticated air defense system, such as the TALINN Line;⁵⁸ ABM deployments along the Sino-Soviet border with residual capabilities against U.S. strategic missiles; or experimental stations used in space exploration? Can we be sure that we would not misperceive the available technical intelligence data, partly as a result of clever leaks, indiscretions, and camouflage? Should we regard the bulk of our clandestine agent channels as alternative modes of warning or as reinforcing channels of deception? Perhaps with expensive ferret satellite investments we have reassured ourselves about the present limitations of the TALINN air defense system, but the generic problem of deception remains: Reassurance costs are high, opportunities for miscalculation are recurrent.

How vulnerable are arms control agreements to strategic deception? In candor, we should admit that we do not know the answer. Fortunately, the vulnerabilities Whaley studied are not always central to problems of planning, negotiating, and living with arms control agreements. For formal or tacit arms limitations, assessment of the present military capabilities and technological resources of the major powers may provide much of the required intelligence. Here, at least, a set of existing conditions is the subject of intensive search; deception planners may present false pictures, but the underlying realities may be glimpsed from varying perspectives. Contradictory evidence may exist at the outset of the analytic process, or it may arrive in a subsequent stage; but there is an objective reality, and viewed in enough lights this reality will probably reveal the contradictions within deceptions.⁵⁹ In contrast, the wartime intelligence predictions in *Stratagem* involved five parameters, four of which did not exist at the moment of prediction. Whaley's categories of surprises included the future intentions of the adversary, attack or no attack; a future time of attack; a place of attack, perhaps undetermined and as yet unassaulted; and the style of future operations. The strength of forces, Whaley's fifth param-

ter, involved estimates of future choices among alternative resource allocations. Thus, Whaley's cases of surprise involve many of the hardest predictive problems.

Fortunately, the intelligence requirements of strategic arms negotiations are weighted with appraisals of existing realities. These are not impossible but difficult to falsify; deceptions that succeed for a time may be discovered in the comparative evaluations of perceived realities.⁶⁰ Present military capabilities, technological resources, even political interests and incentives may be gauged. But future capabilities, goals, incentives, and resources must be judged as well, and here the poor predictive record of the *Stratagem* cases should be borne in mind. With no existing reality to serve as a yardstick for evaluation, these estimates of the future may be as vulnerable to strategic deception as those in Whaley's wartime cases. Is substantial arms control verification the panacea? Hardly, for verification implies that there is an objective reality serving as a standard for authentication. Verification will help to confirm the realities of the present, but the main vulnerabilities of intelligence services lie in their predictions of the future. For future projections there can be no verification; inspection, or licit intelligence collection, may provide clues to the future, but these clues may be more susceptible to deception than those that contradict evidence of the physical presence. On-site inspection, if properly safeguarded against deceptive "plants," may reduce the susceptibility to deception, but it cannot eliminate deceitful projections of the unverifiable.

In conclusion, we do not have any precise means of gauging the vulnerability of strategic arms limitations agreements to deception. We have reason to hope that the predictive records of the major intelligence services will be better than their performance in 20th century warfare. We have reason to fear that in the most important cases, particularly those involving unverifiable future choices, there is a high probability that strategic deception could yield surprise and advantage. We have reason to believe that various arms limitation programs could be designed so as to reduce the importance of deceptively induced surprise. And we have reason to believe that some strategic postures (e.g., those involving substantial advantage to the initiator of a first strike) would accentuate the importance and likelihood of deceptively induced surprise. Rather than emphasize "verification" of the national intelligence or international inspection varieties, we should concentrate upon developing counter-deception methodologies and systems.

Strategic deception, in modest doses, has been associated with distressingly high incidences of surprise in war. High-intensity deception has been associated with high-intensity surprise and an incidence of surprise of 96+ percent. Given the multiplicity of challenges in intelligence forecasting, deception is not the main impediment to accurate war warning; but methods for the reduction of vulnerability to adversary deception may contribute to enhanced warning reliability. And the past "track record" of warning reliability should stimulate a quest for better pre-attack warning methodologies.

NOTES TO SECTION II

1. Bittman's *The Deception Game* is the first public exposition of a covert political deception system at work.

2. Ewen Edward Samuel Montagu, *The Man Who Never Was: The Story of Operation "Mincemeat"* (London: Evans, 1953).
3. Chicken feed is false information, or true but relatively harmless information.
4. Neither Frank Owen's book, *The Eddie Chapman Story*, nor Eddie A. Chapman's *The Real Eddie Chapman Story* (London: Library 33, 1966) more than hints at the deceptive exploitation involved. Only the preface in the latter work is of much assistance.
5. R. V. Jones, "The Theory of Practical Joking—Its Relevance to Physics," *Bulletin of the Institute of Physics* (June 1957), p. 195. Amrom H. Katz brought this article to my attention.
6. Operation NORTH POLE: See, among others, E. H. Cookridge, *Inside SOE* (London: Barker, 1966), esp. ch. 8; "Prosper," pp. 195-214; ch. 9, "Pacts with the Gestapo," pp. 215-243; ch. 11, "The Balance of Treason," pp. 280-306; ch. 14, "Dutch Tragedy," pp. 390-407; ch. 15, "The Broken Code," pp. 408-432; ch. 16, "The Great Impersonation," pp. 433-458; ch. 17, "In Defeat-Defiance," pp. 459-486; ch. 18, "Dutch Epilogue," pp. 487-502. M.R.D. Foot, *SOE in France* (London: HMSO, 1966), esp. pp. 105-110, 307-309, 312-314, 321-322, 326-349, 350-351, 368, 375-376, 380, 386-388. Philippe Ganiér-Raymond, *The Tangled Web* (New York: Pantheon, 1968). Herman J. Giskes, *London Calling North Pole* (London: Kimber, 1953). Joseph Schrieider, *Das War das Englandspiel* (München: Stutz, 1950).
7. Jacques Mordal, "La ténébreuse affaire de Gleiwitz," *Miroir de l'histoire* (October 1962), pp. 469-478, and *La guerre a commencé en Pologne* (Paris: Presses de la Cité, 1968). Gunter Peis, *Naujocks, l'homme qui déclencha la guerre* (Paris: Arthaud, 1961); E. Aleksander, *Tu Radio Gliwice* (Warszawa: Wyclawan Min. Oborony, 1967). Senator George A. Smathers suggested to President-elect Kennedy a similar deception operation: the mounting of a faked "incident" at the U.S. naval base at Guantanamo Bay as an excuse for a U.S.-supported invasion of Cuba. Transcript of Interview, George A. Smathers, Kennedy Oral History Project (March 31, 1964), cited in Henry Rayment, "Kennedy Archives Illuminate Cuba Policy," *The New York Times* (Aug. 17, 1970), pp. 1, 16.
8. A Cecil Hampshire, *The Phantom Fleet* (London: Kimber, 1960), p. 208.
9. M. E. Clifton James, *I Was Monty's Double* (London: Rider, 1954); Bernard Dennelle, "Le sosie de 'Monty,'" *Historia* (February 1960), pp. 201-204; Stephen Watts, *Moonlight on a Lake in Bond Street* (London: The Bodley Head, 1961); "I Was Monty's Double Once Removed," pp. 158-173. Various associated deception operations, real and imagined, are described in the unreliable work by Gilles Perrault, *The Secrets of D-Day* (Boston: Little Brown, 1965).
10. Dieter Sevin, "Operation Scherhorn," *Military Review*, 46 (March 1966), pp. 35-43.
11. David E. Walker, *Lunch with a Stranger* (London: Wingate, 1957, New York: Norton, 1957), esp. pp. 152-155, 160-223. See also the "Morale Operations" of OSS operative Elizabeth P. MacDonald, *Undercover Girl* (New York: Macmillan, 1947), esp. pp. 2, 7, 8, and 20. Some peacetime examples of disinformation are found in: U.S. Senate, Committee on the Judiciary, Internal Security Subcommittee, *Communist Forgeries, Hearings, Testimony of Richard*

- Helms, Assistant Director, Central Intelligence Agency* (Washington, D.C.: 1961), p. 121; Thomas Whiteside, *An Agent in Place—The Wennerström Affair* (New York: Viking Press, 1966), pp. 144-147, as "Annals of Espionage, An Agent in Place—III," *The New Yorker* (April 9, 1966), pp. 149-150; Peter Sager, *Moskaus Hand in Indien* (Bern: Schweizerisches Ost-Institut, 1966); as *Moscow's Hand in India* (Bern: Swiss Eastern Institute, 1966; Bombay: Lalvani Pub. Co., 1967); and Ladislav Bittman, *The Deception Game*, (Syracuse, New York: Syracuse University Research Corporation 1972).
12. Peter Wykeham, *Fighter Command: A Study of Air Defense, 1914-1960* (London: Putnam, 1960), esp. pp. 164-165, 167, 168, 171, 175, 177, 227-228, 239-240, 246, 254.
 13. N. Gordeyev, "Operational Camouflage in Naval Landing Operations," [in Russian] *Voyenno-Istoricheskiy zhurnal Moscow* (April 1969), pp. 41-51; trans. JPRS No. 48,346 (July 3, 1969), p. 32.
 14. The best single study of electronic deception in World War II focuses upon British accomplishments: Alfred Price, *Instruments of Darkness* (London: Kimber, 1967), p. 254, esp. ch. 1, "Doctoring the Beams," pp. 19-51; ch. 5, "Doubts, and Decisions," pp. 111-130; ch. 6, "The Rude Awakening," pp. 131-149; ch. 7, "Gomorian and After," pp. 151-177; ch. 8, "The Climax," pp. 179-198; ch. 9, "In Support of Invasion," pp. 199-211; ch. 10, "The Last Round," pp. 213-247, including reference to the following code names: ASPIRIN, BENJAMIN, BROMIDE, CIGAR, DOMINO, DUPPE, FILBERT, HEADACHE, JOSTLE IV, MADREL, MOONSHINE, TINSEL, TITANIC, and WINDOW; also STARFISH and "Col. Turner's Department." See also: Paul Brickhill, *The Dam Busters* (London: Evans, 1951), pp. 190-196; David Irving, *The Destruction of Dresden* (London: Kimber, 1963); R. V. Jones, "Lees Knowles Lecture III: Command and Intelligence," Cambridge University, 1968, pp. 23, 24-26, 29; James DeRocher and William Huse, "EW Support to Tactical Cover and Deception," *Electronic Warfare 3* (Convention Issue, 1971), pp. 16-17+.
 15. *Sedm Pražských Dnů: 21.-27. srpen 1968 The Seven Days in Prague* (Praha: Inst. of History, Czech Academy of Science, 1968), abridged and ed. Robert Littell, *The Czech Black Book* (New York: Praeger, 1969). Donald E. Fink, "Prague Invasion: Vanguard Used Aeroflot; Russian Civil Carrier Flew Two Secret Police Teams into Ruzyně Airport to Spearhead Air Assault, Seize Czech Party Headquarters," *Aviation Week & Space Technology* (Sept. 30, 1968), pp. 16-18; Bittman, *The Deception Game*, pp. 167-215. The best public survey of this case is Barton S. Whaley, *Public Diplomacy Aspects of the Soviet Invasion of Czechoslovakia in 1968* (Medford, Mass.: Fletcher School of Law and Diplomacy, Dec. 1, 1969), ch. 5, "Invasion! Deception as the Key to Surprise," pp. 31-49, revised edition in Gregory Henderson (ed.), *Public Diplomacy and Political Change*, (New York, Praeger, 1973).
 16. Yehoshna Ariel, *Ha-kenanyah* (Tel-Aviv: 1965). David Ben-Gurion, *Devarim kahavayotam* [Things as They Are] (Tel-Aviv: Am-Hasepher, 1965). E. Hasin and D. Horowitz, *Ha-Parashah* [The Affair] (Tel-Aviv: Am-Hasepher, 1961). Hagi Eshed, "Ha-Parashah" [The Affair] *Ha-Aretz* (February 19, 1965); Kenneth Love, *Suez: The Twice-Fought War* (New York: McGraw-Hill, 1969), pp. 48, 52, 73-80; Amos Perlmutter, *Military and Politics in Israel* (London: Frank Cass, 1969), "The Era of Consolidation: The Lavon Affair, pp. 80-91.

- 102-104; Howard M. Sachar, *From the Ends of the Earth: The Peoples of Israel* (New York: World, 1964); J. L. Talmon and Ze'er Katz, "The Lavon Affair—Israel Democracy at the Crossroads," *New Outlook*, 4 (March-April 1961), pp. 23-32.
17. In re Burma, see Stanley Karnow, "Record of CIA in Southeast Asia Places U.S. Name in Disrepute," *Providence Journal* (Sept. 7, 1965); *Congressional Record* 111, pt. 17 (Sept. 13, 1967), 23486-23487; as "Espionage Attempts in the 1950's Recalled; U.S. Image in Southeast Asia Suffers From Clumsy Intrigues of Agents," *The Washington Post*, (Sept. 7, 1965), in *Congressional Record*, 111, pt. 18 (Sept. 20, 1965), 24421-24422. In re Indochina, see Bernard B. Fall, *Hell in a Very Small Place: The Siege of Dien Bien Phu* (Philadelphia & New York: Lippincott, 1966), pp. 41-43, 49, 76, 228, 317-318, 342. David Walker, *Lunch With a Stranger*, mentions the problem of deceptive feedback interfering with one's own intelligence estimates, in SOE vernacular the problem of "sib" comebacks.
 18. Ladislav Bittman, *The Deception Game*, pp. 109-122.
 19. William Eliscu, *Count Five and Die: How Allied Resistance Leaders Were Deliberately Sacrificed to Gestapo Torture—The True Story of Our D-Day Deception Plan, "Operation STAMPEDE"* (New York: Ballantine, 1958). The official SOE historian, M.R.D. Foot, is less than candid when he observes, in *SOE in France* (London: HMSO, 1966), p. 464: "There is nothing in the files to show that this is anything but fiction." Professor Foot tells elsewhere (1966 ed., p. 450) of the mysterious loss of SOE deception files, and explains their unavailability (1966 ed., p. 451) for his history. Thus, his evaluation is built on a shaky, undisclosed foundation.
 20. Gilles Perrault, *The Red Orchestra* (New York: Simon & Schuster, 1969), pp. 131-151, 156, 187-188, 198, 205, 210. This unreliable account is the subject of a critical review by Christopher Felix, *The New York Times Magazine* (August 3, 1969), pp. 3, 18.
 21. Antiquity: Sun Tzu, *Sun Tzu Ping Fa* [The Art of War], ca. 510 B.C.; Sextus Julius Frontinus, *Stratagemata*, ca. 90 A.D.; Carlet de la Rosière, *Stratagèmes de Guerre, 1756*. On Napoleonic deception: David G. Chandler, *The Campaigns of Napoleon* (New York, Toronto & London: Macmillan, 1966), pp. 74, 78-84, 146-147, 151-155, 180-181, 186-189, 196-199, 214-216, 276, 278, 280-281, 289-291, 384, 386-387, 389-390, 394, 396-397, 405-406, 409-433, 436n, 528-530, 604-605, 711-717.
 22. See the authoritative study of strategic deception and surprise, Whaley, *Stratagem*. Whaley's study is, in my opinion, the most significant public work on the theoretical aspects of intelligence activities published in the 1950s or 1960s. Whaley weighs the relative importance of security, camouflage, cover, and deception in enlarging the probability and usefulness of surprise in "The Coincidence of Surprise with Deception," pp. 163-169; "The Causes of Surprise," pp. 170-188; "The Varieties and Intensities of Surprise and Deception," pp. 210-223; "The Economics of Stratagem," pp. 232-244.
 23. The CIA's involvement in the Guatemalan *coup d'état* of 1954 has been generally acknowledged, but the operation's adoption of a psychological deception/communications strategy has been only rarely perceived. See Tamotsu Shibutani, *Improvised News: A Sociological Study of Rumor* (In-

dianapolis & New York: Bobbs-Merrill, 1966), p. 194. More recently, Ernst Halperin has outlined the psychological deception program that stimulated the *coup* in Guatemala and the similar program, intended to precipitate a *coup d'état* at the time of the Bay of Pigs invasion of Cuba, April 1961. Halperin's study is the only one that places the paramilitary landings at *Playa Giron* in perspective, as a diversionary and psychological instrument. The same study analyzes the psychological deception program of Castro in 1956-1958. See Ernst Halperin, *The National Liberation Movements in Latin America*¹ (Cambridge, Mass.: Center for International Studies, M.I.T., June 1969), pp. 13-14, 18-45, 53-67. For a propagandistic rendition of the Havana *coup* that never was, see Gunter Schumaker, *Operation Pluto: die Geschichte einer Invasion* (East Berlin: Deutscher Militärverlag, 1966). Cases of political deception are detailed in Bittman, *The Deception Game*; and in Curtis D. MacDougall, *Hoaxes* (New York: Dover, 1958), ch. 13, "Governmental Hoaxing," pp. 178-193.

24. Whaley, *Stratagem*, p. 244.

25. *Ibid.*, p. 146.

26. For other examples of this phenomenon, see R. V. Jones, "Irony as a Phenomenon in Natural Science and Human Affairs," *Chemistry and Industry* (1968), pp. 472-473.

27. Whaley, *Stratagem*, p. 163.

28. *Ibid.*, esp. pp. 189-196, 232-244.

29. *Ibid.*, pp. 210-212.

30. *Ibid.*, p. 202. Of 33 cases, 28 involved surprise and deception. But only 25 of the surprises have been associated with deception operations, and three deception operations failed to yield surprise. Considering that suitable amphibious landing areas are generally both obvious and few, the achievement of surprise in 85 percent of landings and in 89 percent of those associated with deception deserves explanation. A landing force isolated on naval vessels may be briefed with reduced risks of insecurity and may proceed by sea with less risk of detection than in overland transit. But equally important is the factor of *planning time*. Amphibious landings require exact coordination of more than one military arm. Thus amphibious operations require longer lead times and provide deception planners sufficient notice to launch their full arsenal of deceptions. I am indebted for this suggestion to a World War II stratagematist, Maj. Gen. William A. Harris, USA (Ret.).

31. *Ibid.*

32. *Ibid.*, p. 204.

33. *Ibid.*, pp. 212-213. Whaley discusses only a few cases of technological surprise. Even though we may assume that the incidence of deception in technological surprise is well less than 82 percent, we would be foolish to dismiss the role of systematic deception. A study of technological surprise might demonstrate the crucial role of deception in scientific and technical intelligence. Cf. sources cited in Note 13 above and R. V. Jones, "Irony as a Phenomenon in Natural Science and Human Affairs," *Chemistry and Industry* (1968), pp. 472-473; R. V. Jones, "The Theory of Practical Joking—Its Relevance to Physics," cited in Note 5, pp. 196-199. Even the theoretical vulnerability to technological deception can have serious ramifications. See Albert L. Latter *et al.*, *A Method*

for Concealing Underground Nuclear Explosions, RM-2347-AFT (Santa Monica, Calif.: The Rand Corporation, 1959). A career Scientific and Technical Intelligence officer, Col. Frank L. Schaf, writes: "The large scale deception of technological espionage devices would be somewhat costly and quite bothersome. The impetus to deceive would, therefore, be determined by the success of the technological collection systems, and by the credence put on the results of collecting with these systems. . . . The more successful these systems, the more it would profit the opposition to instigate large scale deception, both as a defensive measure and as a possibility for misleading and planting misinformation." F. L. Schaf, Jr., "The Evolution of Modern Strategic Intelligence," Thesis, U.S. Army War College, (Carlisle Barracks, Pa., May 1965), MS, p. 679.

34. See Arnold M. Ludwig, *The Importance of Lying* (Springfield, Ill.: Thomas, 1965); A. George Gitter, "Hypocrisy as a Way of Life," Ph.D. dissertation, American University, 1963; Hugh Hartshorne and Mark A. May, *Studies in Deceit* (New York: MacMillan, 1930). Low self-esteem is correlated with a self-deceptive tendency in a study of cheating on tests when only the test-taker knows the test results, in Stephen E. Berger, "The Self-Deceptive Personality," Ph.D. dissertation, University of Miami, 1971.
35. Whaley, *Stratagem*, (1969 ed.), pp. B9, B15, B23.
36. *Ibid.*, p. 6.
37. Barton Whaley, *The Bodyguard of Lies*, Adelphi Paper (London: Institute of Strategic Studies, forthcoming, 1973), esp. pt. II, "The Values of Surprise."
38. *Ibid.*
39. *Ibid.*, pt. III, "Causes of Surprise."
40. *Ibid.*
41. Masterman, *The Double-Cross System in the War of 1939 to 1945*, p. 27.
42. Trevor-Roper, "The Philby Affair," *Encounter* (April 1968), pp. 18-19; also *The Philby Affair* (London: Kimber, 1968), p. 116, for the claim that all *Abwehr* hand ciphers were read from 1940 and machine ciphers from 1942 onward.
43. Most intelligence services can produce *post mortems* of their estimative history that support claims of estimative success; close examination of each case may lead to more pessimistic conclusions, especially when cases are weighted for their importance.
44. Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, Calif.: Stanford University Press, 1963). The shadows of Japanese deception planning are visible even through this account. See pp. 42-43, 43-88, 379-380, 393-394. More directly, see Whaley, *Stratagem*, pp. A244-276. Mrs. Wohlstetter's model reflects pioneering work of Fechner, Shannon, and others in developing "information theory." Cf. W. W. Peterson, T. G. Birdsall, and W. C. Fox, "The Theory of Signal Detectability," *Transactions of the Professional Group on Information Theory*, PGIT-4(1954), pp. 171-212.
45. Johan Jørgen Holst, "Surprise, Signals and Reaction; The Attack on Norway April 9th 1940—Some Observations," *Cooperation and Conflict; Nordic Studies in International Politics*, n. 1 (1966), pp. 31-45. An earlier version, begun in the year that Mrs. Wohlstetter's book was published, is available as *Arms Stability in the Cold War* (Kjeller, Norway: Norwegian Defense Research Establishment, 1964?), pp. 59-91, 92-112. But see Whaley, *Stratagem*, pp. A177-183.

46. *BARBAROSSA: A Case Study of Soviet Strategic Information Processing Before the German Invasion*, Ph.D. dissertation, M.I.T., 1969 (Cambridge, Mass.: Center of International Studies, M.I.T., 1969).
47. Walker, *Lunch With a Stranger*, especially, pp. 163-171.
48. Memo, W. R. Harris to Barton Whaley, 4 September 1967, Subject: "BARBAROSSA," on "False Signals"; William R. Harris, *Intelligence and National Security: A Bibliography with Selected Annotations* (Cambridge, Mass.: Center for International Affairs, Harvard University, 1968) pp. I, xxvii, xxxi. Whaley's *Operation BARBAROSSA* undertakes a more elaborate criticism of the "Wohlstetter model" along similar lines (1969), as does his *Stratagem* appendix (1969), Case A30, on Pearl Harbor.
49. Graham T. Allison, Jr., *Policy, Process, and Politics: Conceptual Models and the Cuban Missile Crisis*, Ph.D. dissertation (Cambridge, Mass.: Center for International Affairs, Harvard University, January 1968); revised as *The Essence of Decision* (Boston: Little Brown, 1972).
50. See Table 1 and subsequent discussion.
51. Thomas Bayes, "An Essay Towards Solving a Problem in the Doctrine of Chances," *Philosophical Transactions of the Royal Society, London*, Vol. 53 (1763), pp. 370-418. Bayes' Theorem provides a basis for prediction on the basis of *a priori* probabilities. The probability p , derived from analysis of *N* events, can be applied to the $N + 1$ event, should that event be in the same universe. For a brief introduction see Jack Zlotnick, "A Theorem for Prediction," *Foreign Service Journal*, v. 45 (Aug. 1968), pp. 20-21, 40-41. See also Ward Edwards, *Non-conservative Probabilistic Information Processing Systems*, Report ESD-TR-66-404 (Ann Arbor, Mich.: Institute of Science and Technology, University of Michigan, December 1966); C. R. Blunt *et al.*, *The Role of Plausible Reasoning Within Military Intelligence: An Application of Bayes' Theorem as a Model for Problem Solving* (HRB-Singer, Inc.: May 1967); and David A. Schum, *Inferences on the Basis of Conditionally Nonindependent Data* (Columbus, Ohio: Laboratory of Aviation Psychology, December 1965), AD No. 630-662. I am indebted to Mr. Zlotnick for the last three references.
52. Whaley, *Stratagem* (1969), pp. v-vii, specifically denies any claims of statistical significance. This cautious modesty overlooks the applicability of Bayes' Theorem to Whaley's *open-ended* universe of "Type A" surprises.
53. W. E. Moore and M. M. Tumin, "Some Social Functions of Ignorance," *American Sociological Review*, v. 14 (December 1949), pp. 787-795.
54. Whaley has distinguished deception plans that *reinforced* adversary preconceptions from those that *overcame* adversary preconceptions. Where possible, deception planners prefer to *reinforce* preconceptions, in part because, as one World War II British deception planner recalls, "experience had shown 'A' Force [British deception unit in North Africa, 1940-1943] that even the most plausible information would be rejected by the enemy if it did not fit in with his own previously conceived intelligence picture." Delmer, *The Counterfeit Spy*, p. 26. In 33 of 50 identified cases (66 percent) deception planners *reinforced* adversary preconceptions, rather than attempting to overcome them. See Whaley, *The Bodyguard of Lies*. Overconfident commanders may tend to interpret adversary mobilizations as anxious defensive preparations when they are preludes to attack. Examples in the 20th century include: Soviet

perceptions of German mobilization before *Operation BARBAROSSA* in June 1941, reported in Barton Whaley, *Codeword BARBAROSSA* (Cambridge, Massachusetts: M.I.T. Press, 1973), pp. 189-221; U.S. perceptions of German mobilization before the Ardennes counteroffensive in December 1944; U.S. perceptions of the Chinese Communist Manchurian mobilization in the summer of 1950; and Indian perceptions of Chinese mobilization in September 1962. Of this last case, one account states, "Curiously, the confidence that no strong Chinese reaction need be feared overrode even the [Indian] Intelligence Bureau's own reports of mounting concentrations of Chinese troops at points just behind the McMahon Line; and certainly helped to close the ears of Nehru and his official advisers to the explicit and repeated warnings in diplomatic notes from Peking that China *would* react. . . . [The head of the Intelligence Bureau] was telling Nehru and his colleagues exactly what they wanted to hear." Neville Maxwell, *India's China War* (New York: Random House, 1970), p. 311. A 19th century example of overconfident assessment of pre-attack mobilization involved Union Forces in Tennessee, awaiting reinforcements and planning an attack on Corinth, Mississippi. Detailed warnings of a preemptive Confederate attack on Union positions fell on deaf ears. See William J. McCaffrey, *Shiloh: A Case Study in Surprise*, M.A. Thesis, U.S. Army Command and General Staff College, Ft. Leavenworth, Kansas, 1970. AD No. 733-391. Less frequently, the converse preconception may be reinforced, when a mobilization presumed to be preparatory to an offensive covers retreated or withdrawal plans. An example not included in the Whaley statistics is reported by Chef de Bataillon LeMaitre in "La déception dans les opérations de guerre en surface milieu hostile; Un cas concret historique, L'Opération Auvergne (Indochine: Juin-Juillet 1954)," *L'Armée* [Paris] No. 5 (1960), pp. 41-52; No. 6 (1960), pp. 48-57. Experimental psychologists have noted that the sequence in which perceptual patterns are presented affects attitudinal consequences; early patterns are favored in hypothesis testing. Wesley M. DuCharme and Cameron R. Peterson, "Intuitive Inference About Normally Distributed Populations," *Journal of Experimental Psychology*, 78 (1968), pp. 269-275.

55. The literature on cognitive consistency and attitude change is vast. See, among others, Leon Festinger, *A Theory of Cognitive Dissonance* (Stanford, Calif.: Stanford University Press, 1961); William J. McGuire, "Cognitive Consistency and Attitude Change," *Journal of Abnormal and Social Psychology*, v. 60 (1960), pp. 345-353; Milton Rokeach, *The Open and Closed Mind* (New York & London: Basic Books, 1966); J. Stacy Adams, "Reduction of Cognitive Dissonance by Seeking Consonant Information," *Journal of Abnormal and Social Psychology*, v. 62 (1961), pp. 74-78; Seymour Rosen, "Post-decision Affinity for Incompatible Information," *Journal of Abnormal and Social Psychology*, v. 63 (1961), pp. 188-190; Jack W. Brehm and Arthur R. Cohen, *Explorations in Cognitive Dissonance* (New York & London: Wiley, 1962); Judson Mills, "Avoidance of Dissonant Information," MS (Columbia, Mo.: Social Psychology Laboratory, University of Missouri, 1964); J. L. Freedman, "Preference for Dissonant Information," *Journal of Personality and Social Psychology*, v. 2 (1965), pp. 287-289; Shel Feldman (ed.), *Cognitive Consistency: Motivational Antecedents and Behavioral Consequents* (New York & Lon-

- don: Academic Press, 1967); Milton E. Rosenbaum and Irwin P. Levin, "Impression Formulation as a Function of Source Credibility and Order of Presentation of Contradictory Information," *Journal of Personality and Social Psychology*, v. 10 (October 1968), pp. 167-174; Robert P. Abelson (ed.), *Theories of Cognitive Consistency: A Sourcebook* (Chicago: Rand-McNally, 1969).
56. Jeremy J. Stone, "Can the Communists Deceive Us?" in Abram Chayes and Jerome B. Wiesner (eds.), *ABM: An Evaluation of the Decision to Deploy an Antiballistic Missile System* (New York, Evanston & London: Harper & Row, 1969), pp. 193-198.
 57. *Ibid.*, pp. 195-199.
 58. For worries about TALINN upgrading, see John W. Finney, "Dispute on Soviet Missiles Hampers U.S. Arms Stand," *The New York Times* (January 11, 1970), pp. 1, 2.
 59. Jones, "The Theory of Practical Joking."
 60. David Kahn's forthcoming book about World War II German military intelligence, tentatively entitled *Ignorant Armies*, supports the hypothesis that tactical battlefield deception is less likely to succeed than is strategic deception of governmental leaders. Repeatedly stumbling across physical realities of adversary activities, commanders in tactical encounters are less likely to let illusion deceive them. Similarly, evidence of deployed military forces and weapons may limit our misestimation of adversary capabilities.

III. COUNTER-DECEPTION PLANNING: METHODOLOGIES

There is hardly an adequate theory of deception, much less a theory of counter-deception. In addition to Barton Whaley's *Stratagem*, which organizes conclusions from the empirical data in his appendixes, and which draws upon strategic concepts of the late B. H. Liddell-Hart,¹ there are two stimulating pieces by R. V. Jones of the University of Aberdeen: "The Theory of Practical Joking—Its Relevance to Physics," *Bulletin of the Institute of Physics* (June 1957), pp. 193-201, and a lecture on "Irony as a phenomenon in natural science and human affairs," *Chemistry & Industry* (1968), pp. 470-477. I provide these references in the text because they are seminal pieces, printed in journals to which not everyone subscribes.

THE NATURE OF A COUNTER-DECEPTION SYSTEM

Counter-deception planning, as I see it, involves three related concepts: (1) *detection* of adversary deceptions; (2) the adoption of *countermeasures* that reduce the likelihood and adverse consequences of these deceptions, and that may involve counter-deception deception operations, which for simplicity we will call *counter-stratagems*; and (3) the coordination of *detection* and *countermeasure* programs in a *counter-deception system*.

This section focuses upon the interrelated problems of *detection* and *countermeasures*; those who read between the lines may identify organizational implications for a *counter-deception system*.

It is worthwhile to distinguish between a *counter-deception system* and seat-of-the-pants counter-deception efforts. The latter generally consist of uncoordinated, perhaps sporadic efforts to detect and outwit foreign deception operations. The seat-of-the-pants method may involve overconfident intelligence analysts who know something about deception methods and who serve as self-appointed *detection* specialists. It may also involve the production of uncoordinated² analyses of particular components of a deception package—for example, a report on the design and apparent objective of various camouflage or "dummy" configurations; a content analysis of a channel of cryptologic intelligence, when one suspects one's adversary has identified the cipher insecurity; or a content analysis of data transmitted by enemy-controlled double agents for a particular circuit or period of time. The analysis of

possible components in deception packages does not constitute a counter-deception system; such efforts are, however, ripe for organization into such a system.

SEAT-OF-THE-PANTS COUNTER-DECEPTION METHODS

Section II is intended as an argument against the seat-of-the-pants approach to counter-deception planning, in which every analyst serves as his own counter-deception expert.³ This method simply does not work. Those who are still unconvinced should read Barton Whaley's *Stratagem*. Even those who are already convinced could profit from *Stratagem*, for they would see that the very intelligence services and operations planners who excelled at strategic deception were also suckers at their own game without a counter-deception system.

The British were probably the outstanding experts at deception in World War II, yet they fell for the "threat" of a cross-channel German invasion (SEA LION) months after Hitler had terminated the program, leaving only enough traces to deceive the Soviets before Operation BARBAROSSA.⁴ Similarly, although a frightfully clever British deception program consistently misled *Abwehr* intelligence in North Africa (1942-1943), the Germans controlled a British sabotage-intelligence network in Europe (Operation NORTH POLE). And when the British realized, after more than a year of being duped, that the entire NORTH POLE system was operating under German control, they in turn misled the Germans into believing that this was the only British sabotage network in Holland.⁵

As previously calculated (in Section II), patient development of deception capabilities can lead to the near-certainty of obtaining misestimates of intentions, given sufficient planning time and expenditure of substantial deception assets—without a counter-deception system. Those who still cling to the hope that the "well-rounded" intelligence professional can, by the seat-of-the-pants method, reverse the tide of deceptively induced misestimates should digest the following data from *Stratagem*:

Among 114 cases of deception or surprise, Whaley found 10 cases in which the victim of attack received detailed documentation respecting supposed enemy plans well before the attack itself. Of the 10 sets of enemy "plans," five were carefully designed disinformation packages and five were genuine breaches in security. All five of the false sets of enemy plans were accepted as genuine by the intended victim, and four of the five genuine plans were dismissed as unreliable.⁶

Is there no justice in intelligence estimating? It would appear that amateur counter-deception efforts are counter-productive. Had these analysts chosen to flip coins instead of trusting to their judgment, in 99 percent of the cases they would have correctly identified more than one of 10 sets of documents.⁷

DETECTION OF DECEPTION: THREE THEORIES

There are at least three techniques for the detection of deception operations and the identification of underlying verities. The three methods are interactive—one

method may assist in the exploitation of another method, and vice versa. For convenience I label these methods with three shorthand designations: (1) reconstructive inference; (2) incongruity testing; and (3) vulnerability assessment.

RECONSTRUCTIVE INFERENCE

The reconstructive inference method involves attention to the *sprignal* patterns transmitted by one's deception adversaries. Mrs. Wohlstetter's *Pearl Harbor* study demonstrates how difficult it is, without hindsight, to differentiate the signals from the noise. It is with some trepidation that one would venture to separate signals, sprignals, and noise, all at the same time. It is probably best first to concentrate upon the separation of sprignals from signals, recognizing that a bit of random noise or just plain junk will find its way into both categories.

To identify sprignals, one must guard against intelligence collectors who value their cleverness as analysts and who consequently throw out or block transmission of identified sprignals. It would be helpful to have a community-wide review of data collection—both intelligence and counter-intelligence. It may be that most of the agencies make at least a minor effort to collect what appear to be sprignals. Do all of the collectors and interim analysts know how important it is to collect sprignals as well as signals or to indicate all of the danger signs that may be a tip-off a seeming signal is really a sprignal? Do the important personnel have much idea of the past track record of predictions? Have they read Whaley's *Stratagem* or a fuller equivalent based upon still-classified records? Do they know of an agency center for the transmission of sprignals, suspected sprignals, or danger signs, or do they just send along their suspect information with all of the rest, risking its loss in the massive flow of data?

When a cipher is broken too easily (perhaps with the assistance of a too-easily placed clandestine agent), when sophisticated camouflage is discovered, or when a double agent is found to be under the "control" of the opposition, are the proper steps taken to identify the spurious signals and to segregate those perhaps designed for our "witting" collection as opposed to those designed for our unwitting collection? In short, is there a collecting and coordinating program to distinguish the sprignals from the signals, and the intentionally obvious sprignals from the others? One must be prepared to throw out obvious "cover plans" so as to concentrate upon more sensitive deceptions, which may yield inferential clues.

To distinguish the patterns of deceit aimed at policy élites from those aimed at more diffused targets is not an easy task. The problem of differentiating strategic deception from propaganda comes immediately to mind. We can begin with F. M. Cornford's definition of propaganda: "that branch of the art of lying which consists in very nearly deceiving your friends without quite deceiving your enemies."

If the usual run of propaganda operations is somewhat dissociated from strategic deception programs, those who reconstruct foreign deception patterns may be led astray, particularly as to "black" propaganda, which is as likely as not to come through clandestine agent sources.

One deception planner of World War II sheds light on this problem in a back-handed way, revealing the possibility that inconsistencies in propaganda and decep-

tion patterns might unveil genuine intentions, at the same time implying that "black" propaganda may be a poor index to the purposes of deception planners themselves:

The biggest damn nuisance in our experience was the truly silly black and grey propaganda people on one's own side. They had a low security classification (so they never knew anything), they had high intelligence, enormous energy, quite a lot of resources, a great desire to win the war single-handed (thus they shot off in all sorts of private directions) which seemed to us to compromise what we were doing. They confused a target of the general enemy public (or his troops) with our target, the enemy commander *through* the intelligence system.¹⁰

The above confirms what we already expect: that there is noise in the collection of sprignals just as there is noise in the collection of signals. One should not neglect the noise from the intelligence of various profiteers, who foist their imagined data upon any willing buyer. Reconstructive inference can yield no helpful clues here, except perhaps as to the mental state of the involved entrepreneur. Another form of noise may involve low-level cover and deception plans, which scarcely lead to useful inferences. Again from World War II experience:

Actually a lot of fairly obvious things [in a deception program] were really a cover for one's own "unwitting" people who were not to know that other more complex and more "classified" operations were going on to really get to the enemy command decisions. This is not to gainsay that routine cover and deception operations of this sort were not done to connect with all enemy intelligence systems.¹¹

The foregoing suggests that it may be considerably easier to collect sprignals than to separate them from associated signals and noise.

TESTING FOR SIGNALS AND SPRIGNALS

Some sprignals may be self-identifying; if so, we may search for confirming data or channels that may yield already anticipated sprignals at some later date. A group that is sufficiently lucky—or successful in penetrating foreign deception systems—will learn of deception efforts from "agents in place," or from modes of collection "by technical means." A somewhat less well-established group will work out their incomplete jigsaw puzzles until some of the pieces fall into place inferentially. They will debrief defecting stratagematists with unusual care, reconstruct the sources of "bum" intelligence in past encounters, and seek to eliminate the circumstantial noise while labeling and watching the suspicious channels. They will emphasize the sprignal identification missions of the counterintelligence community. They will prod security experts for more pessimistic evaluations that identify those sources of insecurity that may have been turned against them. And they will watch those sources carefully.

The incidence of signals and sprignals may be gauged, in part, from analysis of past patterns of deception. A politician who deceives his compatriots (even in pursuit of "national" objectives abroad) may not enhance his esteem. It should not be

surprising that most of the literal statements of leading statesmen are at least technically truthful, or at least so intended. The implications of tendentious remarks may be far less reliable—as with the implications of Khrushchev's boasts of growing Soviet missile production in 1957-1959.¹² And the literal or implied meaning of "background" statements not linked to a source whose credibility is highly valued may be of lessened reliability. So too with official press statements, as with the indirect TASS denial of September 11, 1962 that nuclear missiles would be sited in Cuba.¹³

The careful analyst may wish to distinguish the past reliability of literal statements, of inferences from tendentious remarks ripe for the plucking, of "background" interpretations, and official but anonymous press releases. One analysis of perceived mendacity in and around Washington, D.C. is consistent with observations of foreign statesmen. Although infrequently finding "the flat lies... and petty mis-truths," Anthony Lake reports:

There have been still more misleading statements—not quite lies, but partial revelations of the truth deliberately designed to fool the public into believing what the government wants it to believe. These must be considered the functional equivalent of lies. ... The public does not read the fine print in government statements, and when it is fooled the result is the same loss of confidence which follows a flat lie.¹⁴

The counter-deception analyst will learn to differentiate the literal from the implicit, the flat from the ambivalent lie, the deceived from the deceiving spokesman.¹⁵ Further, by cross-checking deep penetrating technological sensors (by the "incongruity testing" method to be discussed shortly) it may be possible to establish with high confidence that a source or channel of data is indeed a stratagemic producer and not a source of signals or noise. If the exotic sources of the past have been the favorites of deception planners precisely because they were the ones that received top-level attention, these "special" sources will not be adopted as arbitrary standards against which potential sprignals will be tested.

It is equally important to guard against the temptation of resorting to a test standard derived from "traditionally reliable sources." Over extended contests between intelligence and counter-intelligence adversaries, both sides tend to develop an understanding of what an adversary views as reliable, and deception planners target those channels. Data that appear "reliable" are likely to conform to preconceptions or shared expectations, and deception planners like to reinforce these vulnerabilities. Thus, traditionally reliable sources and data cannot be segregated as an automatic standard against which to test new sources or new data.

Separating truth from deception and noise involves more than a comparison of the unknown with a subset of the "traditionally reliable." It is more prudent to assume that all channels of information are unreliable in varying degrees and to concede the role of chance in strategic forecasting. By conceding the hazards of the intelligence business, one is more likely to embark upon an ongoing sifting and resifting effort: identifying tentative subsets of signals and sprignals, or inconsistent clusters of data, that demand critical and recurrent appraisal.

If the processes of stratagemic analysis are coordinated with the aid of computers, it may be possible to generate data banks and analytic specialists familiar with the styles of unseen adversaries. Having collected and identified a mass of sprignals but not all of those available, and having recognized that this collection is cluttered

with residual noise, we will want to obtain a set of sprignal patterns or relationships, and by inference from this universe of data to fathom the ulterior purposes and strategic links that may unite the strands.¹⁶

Reconstructive inference testing has more limitations than those resulting from the ambivalence associated with residual noise. It is important to recognize that the inferences drawn from perceived deception plans are sensitive to both time and context. If a pattern of sprignals is stale, it may provide clues to the last encounter, not the next one. One World War II operator, H. Wentworth Eldredge, reflects that "some of the best C. & D. operations (after an initial plan) were played by sensitive and daring men acting pragmatically." Detection of an initial strategic plan may not prepare sprignal analysts for the fluidity that follows. Similarly, as with women's fashions of recent years, one may be expected to see through more than what immediately meets the eye, and if one enjoys the phenomenon one may not worry about its design.

Stratagematists are at least as bright as lingerie designers. For example, in the Italian campaign of World War II General Alexander once changed his mind about the optimal place of attack only to discover that his deception staff had already encouraged the German command to concentrate resources at this newly chosen sector of the Front. A solution was found: intelligence was "leaked" to the Germans that the original deception target was just that, and information on the preliminary build-up at the now abandoned assault area convinced the Germans of the "real" target. A new deception plan reinforced the German smugness at their "discovery" of the prior stratagem, and General Alexander's forces attacked with surprise in the area of the initial deception target.¹⁷

Despite its limitations, reconstructive inference testing on the basis of sprignal configurations deserves a more systematic effort and higher priority than the public literature suggests it has received. Upon occasion we may surprise ourselves with the success of our inferences. After all, most deception plans are conceived on the basis of fairly full knowledge of actual plans. What oversight or subconscious slip finds its way into the final stratagemic product may not be apparent until it is detected by the adversary. Such irony, which R. V. Jones defines as "a contradictory outcome of events as if in mockery of the promise and fitness of things,"¹⁸ is a faithful companion of history, and it should not be surprising if stratagems are uncovered that reveal far more than they need have done.

From the stratagematist's perspective, "We were simply scared to death *always* that the cover plan would be blown indicating the true plan with great loss of many real human beings; it was a soul-shattering experience to be the mirror image of a 'great captain.'"¹⁹

Once the importance of analyzing sprignals is more generally understood, a counter-deception group may be willing to pay a higher price to receive a good selection of such data, provided of course that it has high confidence in the tentative channel identifications. It may be willing to suffer the inconvenience and possible sense of injustice in retaining on its payrolls an unseemly collection of identified double agents. It may continue to digest cryptologic or electronic sources at substantial cost, although particular channels are likely to be carrying "chicken feed." I am not suggesting that responsible officials do not recognize that in sprignals there is some utility. I would expect that monitoring of the types mentioned already takes place. But are the relevant officials aware of the usefulness of collecting enough

sprignals, sufficiently well coordinated and analyzed, to enhance predictive performance in the critical cases? Obviously there are limits as to what should be spent on the collection of misleading information.

As with any intelligence system, a sprignal collection and analysis network must be safeguarded against system "overload." According to the former Deputy Chief of the Czech "Disinformation Department," Ladislav Bittman, the Czech secret service alone mounts over 100 disinformation campaigns per year against Western targets. Of these, a good number are coordinated by the Soviet counterpart in Moscow (Department "D" of the First Chief Directorate, KGB) and orchestrated with supporting operations on the part of other East European services. It would be a mistake to add the number of annual operations of each of the East European secret services, since we would be recounting aspects of the same Moscow-coordinated operations in many cases—especially in the years since 1963-64 when most of the East European services established counterpart Department "D"s for liaison with the Soviet mother department. Nonetheless, we can assume that there are at least several hundred disinformation programs per year targeted against Western audiences. This number of operations could completely occupy the efforts of a counter-deception system. Bittman's book, *The Deception Game*, indicates that most of these East European "special operations" are propaganda operations, mainly "black" operations and often involving exploitation of clandestinely obtained documents. Although influential Western audiences are the main targets, these operations are mainly disinformation programs rather than strategic deception operations seeking to have a direct influence on decisions of governments. A counter-deception system would do well to leave the analysis, detection, and mounting of counter-operations to those segments of psychological warfare agencies specializing in these subjects.

Those who man the counter-deception system that guards governmental decisionmakers and their intelligence services from the strategic deceptions of their adversaries should protect their system from the deluge of relatively trivial problems associated with these disinformation programs. It would be more helpful, for example, to identify the channels than the contents of these disinformation programs. The same wire services, reporters, clandestinely influenced or owned newspapers, magazines, publishing houses, and the like that peddle disinformation packages are likely to be available for strategic deception in critical encounters. Detailed content analysis, refutation, and design of counter-operations should be left to psychological warriors. If for no other reason, counter-deception specialists should avoid detailed involvement so as to preserve their attention span and peace of mind for more critical contests.

There are three basic filtration barriers that can protect a counter-deception system from sprignal overload. The first is a feedback system that encourages the entire intelligence community (and its foreign liaison agencies) to restrict its collection of sprignals. Some reduction in the volume of incoming data and more rigorous quality control would ameliorate the problem at the outset. Even so, the collectors' judgment should not be trusted as to which sprignals are likely to provide the most helpful inferences; further, those agencies or segments of agencies that specialize in psychological operations will demand the collection of many sprignals that are of trivial consequence from the perspective of the counter-strategematist. The counter-deception system must be equipped with a feedback and filtration system of its own, within the broader intelligence and counter-intelligence communities. This set of

barriers should be complemented by the allocation of effort among the myriad clusters of sprignal packages available within the counter-deception system's data pool.

One of the reassuring aspects of Whaley's *Stratagem* is the disclosure that the same old bag of tricks that worked in World War I was tried with a few new wrinkles in World War II and afterward. Once counter-deception systems enter the picture, deception planners will adapt, but they too have their problems. If deception planners mount only small stratagems so as to avoid detection by the analysts of sprignals, they run the risk that their adversaries' penetrating intelligence will lead to accurate forewarning. If they mount moderate level stratagems along only a few channels, they run the risk that their adversaries' "incongruity testing" will unravel inconsistencies and unmask the underlying plans. If they mount "grand" stratagems they may reduce the risk of detection by "incongruity testing," but they enlarge the risks from reconstructive inference while jeopardizing many of their deception assets. If nothing else, a system for the detection of stratagems can increase the rate of depreciation of deception assets. One may still deceive, but less often, and with fewer undetected sprignal channels for play in later encounters.

INCONGRUITY TESTING

Incongruity testing involves alternative pattern matching and testing for internal and inter-pattern consistency.²⁰ It is no accident that many deception planners are great practical jokers as well, for both specialties thrive upon the same fertilizer, incongruity. Since incongruity testing is the guts of intelligence analysis, the Achilles' heel of deception, and the essence of joking, I cannot recommend too highly Jones' previously cited paper, "The Theory of Practical Joking."

Simple incongruities, direct or inverted, can be humorous enough, but the more advanced jokes usually involve a period of preparation and induction, sometimes elaborate, before the incongruity becomes apparent. They are then called hoaxes.²¹

The induction of incongruity in the perceptions of an adversary constitutes a stratagem or deception. At least theoretically, this induced incongruity could be discovered, given sufficient data and hypothesis testing. The contradictions inherent in the simultaneous presence of "reality" and a false image of that reality are amenable to both inductive and deductive testing. But as Klaus Knorr notes of "the inductive fallacy,"²² one cannot assume, as some historians and intelligence analysts would like to believe, that "the facts speak for themselves." In his survey of predictive failures Benno Wasserman observed a tendency to postpone induction until "all the facts are in"—that is, until it is too late to provide useful warning.²³

If an adversary provides the facts and perhaps a set of inferences sustaining one pattern of inductive reasoning, an analyst must overcome the natural inertia that prevents him from generating alternative hypotheses.²⁴ The human mind is not especially well suited to the task of generating alternative hypotheses and of juggling them all at the same time. This judgment leads me to a small difference with R. V. Jones with respect to the ideal intelligence organization. In a classic lecture on "Scientific Intelligence" in February 1947 Jones remarked:

An Intelligence organization, despite the *Encyclopedia Britannica* dig about there being three kinds of Intelligence—human, animal and military, resembles in fact a human head very closely. The sources of Intelligence correspond to the sense organs of the head; the detailed resemblance here is in some cases remarkable, with photographic reconnaissance as the eyes and the radio listening service as the ears. The senses pass observations to the brain, where they are correlated, and a particular sound is associated with a particular visual object. In Intelligence, information from the sources is likewise fed to a collating centre, corresponding to the brain; and while the brain, to be successful, must have a good memory, an Intelligence organization must also have a good memory built up of the individual memories of its staff and its filed records. So far no machine has been found to perform these functions nearly so well as a good human mind, and the design of an Intelligence organization must be such as to make it resemble a single perfect human mind as closely as possible. It follows from this that the most successful Intelligence organization is likely to be that which employs the smallest number of individual minds each of the greatest possible ability.²³

In seeking to separate signals and sprignals by incongruity testing, a counter-deception system should compensate for the vulnerability of conservatism in human data evaluation. Carl Kaysen has run into the problem of cognitive rejection, when fresh data do not mesh with existing perceptual patterns:

Many individual items of intelligence information must be rejected as unreliable, false, irrelevant, useless, and so on. The judgment on which rejection is based is often a consistency judgment. Rejection depends on whether a particular piece of information seems reasonable in the light of a large number of other pieces of information, or whether it contributes anything which is useful in the light of such other information. If the officers responsible for analysis were deprived of the opportunity of making such consistency judgments, extending over the whole range of intelligence materials, then their judgments would necessarily be less good than they might be.²⁴

This natural rejection cycle, the removal of the "odd" bits before cooking up a *purée* of consistent data, is pernicious. Analysts should *not* assume that non-access to "the whole range" of intelligence materials will "necessarily" impair intelligence judgments. On the contrary, computers that suppress segments of the data base from consideration may be beneficial. By using techniques of sequential analysis, analysts may be able to compensate for the weaknesses in human cognitive rigidity, screening out initial perceptual patterns and preconceptions.

Machines have one advantage over the human mind: the capability to forget on a temporary basis. In this respect, a computer-assisted intelligence system has a distinct advantage over the organization Professor Jones has commended, one using "the smallest number of individual minds each of the greatest possible ability."

Instead of "rejecting" data, a counter-deception system may seek to place such data in alternative perceptual patterns. It may turn out that in the last analysis (by which the humble mean not the best but the last analysis before events overtake them), analysts will reject the first consistent patterns in favor of another one. Since stratagematists often reinforce pre-existing or early patterns, they should resist the temptation to think that they were "right all along," unless the retesting of hypotheses provides frequent reassurance.

The human mind may repress valuable stored data, or dwell upon obsolete images. Fusing recalled experience and wishful thinking, the human mind assigns

a priori probabilities and only reluctantly shifts these judgments. Small group experimentation suggests a tendency to underestimate low probability events and a tendency to overestimate high probability events, hence susceptibility to deceptive reinforcement of the "conventional wisdom," and undue disregard of rare events.²⁷ Vulnerability to prejudice, preconception, and disregard of low probability events is reinforced by the conservative memory system of man. Given new information, the conservative system of human cognition tends not to change *a priori* probability assessments as much as the new evidence should encourage. Having recognized his own weaknesses, man can delegate some analytic functions to nonconservative probabilistic information systems.²⁸

By testing alternative hypotheses—both inductive and deductive—sometimes with the "assistance" of memory and sometimes without this burden, one can identify a set of plausible alternatives, eliminating enough of the hypotheses to provide sufficiently unequivocal warning of most critical events. There is a beneficial interaction between analytic method (1), reconstructive inference, and analytic method (2), incongruity testing. The set of possible sprignal patterns derived by method (1) can be tested against the broader mass of data analyzed by method (2). If the data are still ambiguous, "crash" intelligence collection (counter-deception intelligence) could resolve the doubts or at least lead to helpful probability refinements. Moreover, conclusions from incongruity testing would help in discerning patterns and purposes of deception. Patterns of data may be identified as inconsistent with either a high-confidence expectation or a high-confidence post mortem. These patterns may be disaggregated and the component data and channels of data "tagged" with a conditional probability of being sprignal resources. Over time, various potential sprignal resources can be tested and the conditional probabilities adjusted upward or downward as necessary.²⁹ Clusters of high- or low-probability sprignal data should assist in evaluating alternative theories.

Computer-aided incongruity testing offers substantial hope of predictive enhancement, but, like other analytic techniques, incongruity testing has its limitations. The two central limits of incongruity testing involve what might be called disjointed incongruities and false incongruities. Disjointed incongruities involve inconsistencies that have become, in the perceptions of the viewer if not in fact, separated or mis-matched. In simplest terms, a disjointed incongruity is one that is not recognized because the sets of inconsistent patterns are never paired. In contrast, a false incongruity involves the pairing of two or more apparently inconsistent patterns that represent a consistent underlying reality. Incongruity testing involves risks of both sorts of errors. False incongruities clutter our task of identifying and choosing among genuine incongruities in two ways: Some of these apparent but unreal incongruities are a matter of different perspectives and some are a consequence of the random distribution of noise in perceptual systems. The design of disjointed incongruities is, in fact, the design of stratagems. Induction of such incongruities is labelled in Jones' paper on "The Theory of Practical Joking" as the "Theory of Spook." Since disjointed incongruities represent the primary headache in counter-deception planning, we should explore the two main varieties, clandestinely disjointed incongruities and mutually disjointed incongruities.

Clandestinely disjointed incongruities are discussed, but not labelled, by Amrom H. Katz:

It is perhaps tautological to suggest that we have never found anything that the Soviets have successfully concealed. This is a self-contained proposition. But because we have indeed found many things that the Soviets have built and deployed, it is possible that a certain kind of self-congratulatory smugness has crept into our intelligence system.³⁰

Some of the most dangerous stratagems in peacetime, and in arms-control environments in particular, may involve such clandestinely disjointed incongruities. Until analysts are able to pair and test the inconsistent patterns, they are unlikely to identify even that an incongruity exists.

Incongruities whose preliminary foundations are being laid by stratagematists are a special case of clandestinely disjointed incongruities. Here the problem is more difficult than that of penetrating the security of clandestine behavior, assuming that there is no special access to the future intentions of foreign stratagematists. Where foreign stratagematists have been cultivating access to our intelligence systems and where they have been "chicken feeding" these systems with generally truthful data of a consistency similar to what we would obtain by our own efforts alone, there is only one slender present incongruity to detect—that the channels of reception are either controlled or known and targeted by our stratagemic opponents.

Since analysts are unlikely to detect such slender incongruities, they can at least take steps to accelerate the detection process once their adversaries begin to feed these channels with more broadly incongruous data. They may find that the background collection of "chicken feed" will drown out the substitution of sprignals designed to mislead them at critical junctures. Masterman insists upon "the prime necessity for truth whenever truth is possible. A lie when it is needed will only be believed if it rests on a firm foundation of previous truth."³¹ Masterman also believes that "the force of this [misinformation] depends upon the reputation of the sender and that a long period of truthful reporting is usually a necessary preliminary for the passing over of the lie."³²

If counter-deception analysts have some conception of the behavioral changes they should expect to encounter, through the use of sequential statistical analysis they may be able to reduce the detection time for a set of incongruities.³³ Thus, they may be able to identify sets of sprignals and noise in combination, which with sequential analysis will allow them to disaggregate the two over time. Then, more refined sets of sprignals may be subjected to incongruity testing until, it is hoped, a set of meaningful signals emerges.

Adversary deception planners are not attempting to facilitate easy matching of these incongruities. Masterman notes "the obvious fact that cover schemes ought to be as near the 'real thing' as was safely possible."³⁴ This places the deception planner in a bind. On one hand, he wishes to establish a deception program sufficiently close to reality that detection of incongruities will be retarded. On the other hand, he wishes to establish a deception program in accord with the preconceptions of the intended victims. As an *Abwehr* officer explained, "On the German side we only attached importance to the reports of agents insofar as they fitted in with our own conceptions of the situation."³⁵

The deception picture that is compatible with an adversary's preconceptions may be highly incompatible with what one intends to do. Consequently, the deception planner must choose between a deception plan that will be readily swallowed and one that is minimally incongruous with the planned operations. So, the incon-

guity of two or more patterns may emerge sufficiently early that inconsistent patterns can be identified and matched.

The second form of unidentified incongruities involves a set of *mutually disjointed incongruities* (which R. V. Jones terms just "mutual incongruities").³⁶ Instead of seeing situation A as perception A, one observer, B, holds perception B and another, C, perception C. It may be that perceptions B and C are, from different perspectives, representations of the same situation, but this situation is *not* situation A. Both B and C share misleading conceptions of the true situation, A.

Jones describes a situation in which neither B nor C is likely to learn of his perceptual error:

Induced incongruities mutual to two victims are possible. Each victim is led to believe in a false world-picture which is nevertheless consistent with and complementary to the false world-picture of the other victim. A simple example is the device of privately telling each of two people whom one is about to introduce that the other is a good fellow who has, however, been going through a severe nervous strain, and who is therefore apt to get both irritable and rude if contradicted. It is therefore advisable to humor him by agreeing with all that he says. The two victims then go to great lengths to agree with one another, and separate in the conviction that each has handled the other extremely well.³⁷

Another set of mutually disjointed incongruities occurred during a "real" civil defense attack warning in the western United States, which lasted for some seven minutes on May 5, 1955. An Air Force warning through civil defense channels, a *warning yellow* ["enemy attack is probable"], resulted in 67 of 77 sampled California civil defense districts failing to start public sirens after verifying the validity of the warning. The failure of operators to follow instructions was in part the result of the mutual reinforcement of cognitive templates: civil defense operators did not start the sirens in part because radio stations had not adopted CONELRAD broadcasting on specified frequencies; radio broadcasters didn't hear the sirens. One siren operator explained that

he does not want to be the first person to set off the siren switches—that if he heard sirens in other areas blowing then he wouldn't mind following them; and that even if he had received no alert signal he would set his sirens off if he heard others blowing.³⁸

In this case, those who did not alert the public were right; there was no attack; but most were wrong in assuming they had not received a "real" Air Force warning and were affected by the mutual consistency of their perceptions and those of other warning system personnel. Mutual inaction bred reassurance. But the same result in an actual attack would result in the loss of many more lives.

In this same "attack," a microcosmic example of shared disjointed incongruity occurred when one civil defense operator heard the warning bell, saw the "yellow alert" light, and assumed that the telephone company had fouled up again. He called the repair service of the telephone company, and "reportedly was told by the repair service that a repairman would be sent to correct the [warning] device."³⁹ The warning device was working properly, but the imagined telephone system error provided mutual reassurance.

Sherman Kent, retired chairman of the Board of National Estimates, has often noted the disconcerting fact that many future intentions are not knowable. Indeed,

even from within the mind of the decisionmaker it will be impossible to identify incongruities before an intention is formed, and it will be impossible to decide which of the incongruous patterns is correct so long as that intention may be switched.

The Whaley study demonstrates that all the major intelligence services have the utmost difficulty with such intentions estimates, and analysts should not expect their incongruity testing to reverse the abysmal predictive record. However, in conjunction with the other methods, they can expect incongruity testing to improve performance insofar as it deals with capabilities or partially executed intentions, which leave at least preliminary "trails" of data behind them. Such testing can at least identify ranges of uncertainty in the place of falsely held confidence in one's knowledge of future intentions.

These theoretical problems are exacerbated by the ecology of bureaucratic politics, some of whose characteristics do not escape the attention of sophisticated deception planners. Many intelligence services reflect the interests of their associated departments, however much they try to remain objective. Deception generally aims at the misdirection of policy decisions, not intelligence services. If intelligence services are "had" in the process, this is only incidental, a joke of passing pleasure to the deception planner. Deception planners not only feed information that confirms preconceptions, but where possible they feed sprignals that appear to reinforce self-interest. Thus, the inertial bond between the sprignal and the bureaucrat is doubly strong: A preconception is reinforced at a time when the denial of this preconception would appear to be adverse to bureaucratic interests.

Part of the skill in deception work is to coax one's enemy into an assessment of intentions (perhaps by dangling information that confirms preconceptions) rather than an assessment of capabilities, in a situation where the adversary should know better than to expect much luck with an intentions estimate. In the words of a former deception planner, "all intelligence services seem seducible into an assessment of intentions rather than capabilities—which makes them such fall guys for C&D [cover and deception]."⁴⁰

When cryptanalytic success is at the disposition of the deception planner, he has the kind of access to his adversary's decisionmaking system that enables him to spot the apparent self-interest and preconceptions that are most ripe for exploitation:

No deception operation works against enemy intelligence but against the enemy command. It does little good to louse up X intelligence system, if the command believes Y system. Thus a basic assumption is that coordinated intelligence is a seldom thing and that commands (political and military) tend to listen to the intelligence operation that fits their preconceptions and even their personality set and natural cultural pattern.... Hitler could be reached through the nitwit RSHA and tended to neglect his hard Army intelligence.⁴¹

Obviously there are organizational implications, if one wishes to do more than identify deceptive and underlying realities, if one wishes to be sure that decisionmakers accept patterns that are most sensible, not those that are most appealing. That topic will be discussed in Section IV. As for the substantive dangers of consensus formation, we should bear in mind the stratagemic vulnerability of all preconceptions and especially of those preconceptions that are generally shared. At this juncture we might consider the promising forecasting technique known as the DELPHI method and its vulnerability to stratagem.⁴²

Through the exploration of expert opinion, obtained in anonymous responses and iterated with controlled feedback, group judgments can be elicited and refined. Although some of the later DELPHI techniques minimize centrist tendencies, there is the danger of generating too firm a consensus, or at least the risk that others will focus on group forecasting indicators that will enlarge vulnerabilities to deception. After all, foreign deception specialists are searching for the optimal preconceptions to reinforce, and they may be seeking their own tele-DELPHI estimates of others' expert consensus. On one hand, DELPHI forecasting indicators may provide above-average hypotheses to be tested for signal confirmation; on the other hand, DELPHI forecasting indicators may provide above-average targets for foreign stratagems. So DELPHI techniques may serve simultaneously to identify patterns of expectation and hypotheses for signal testing.

GUARDING AGAINST EXPECTATION, SELF-DECEPTION, AND COMMITMENT

Thoughtful intelligence analysts may seek to challenge those stable and dominating assumptions they recognize as preconceptions, either theirs or those of other analysts or politicians. But in picking assumptions that deserve to be challenged by contrast with alternative data patterns, it is important to recognize that yesterday's preconception may lead to tomorrow's expectation. Deception planners work in a world of ongoing data flow. They cannot always reinforce a widely shared preconception but may be able to modulate the wave of subsequent expectations, preconceptions that have germinated, grown, and blossomed. The initial "recognition" of a pattern derived from a fresh set of data is "an act of imagination based on observation."⁴³ Thus, guarding against preconceptions also involves guarding against the failure to retest the first apparently coherent pattern of newly received data.

We tend to find what we expect to find, whether or not it exists.⁴⁴ Deception planners who cannot reinforce our memories reinforce our expectations. A pseudo-history about World War II Soviet intelligence, *Shchit i Mech* [Shield and Sword], describes the phenomenon:

The Soviet counterespionage had organized a tremendous catch on a whole-sale scale and was draining out of the 'Vali Staff' [*Abwehr Eastern Front intelligence HQ*] more and more people and funds. . . . Some of the *Abwehr* intelligence groups sent into the Soviet rear, from the time of their landing, had to engage in battle with the Soviet agents. The most sensible members of such groups began working under the control of the Soviet Chekists; *burdening the Abwehr staff departments with a variety of information which here was considered as absolutely reliable since it was likely. It is precisely because of its likelihood that it had a particularly destructive effect upon the work of the Wehrmacht staffs, more even than the daring attacks of Soviet parachute units on such staffs.*⁴⁵

Conformist tendencies encourage minorities to yield in the deliberations of juries or in the small group demonstrations of the "Asch effect," where all but one unwitting person claim knowingly that the shorter of two rods is the longer one, and the unwitting subject agrees with the crowd. Conformity aside, human data process-

ing may involve centrist tendencies, with overestimations of small magnitudes and underestimations of large magnitudes.⁴⁶ If analysts will recognize the human tendency to seek coherence and plausibility in data that may be incoherent,⁴⁷ to confirm expectations, and to dissolve minority resistance, then they should structure the incongruity testing process so as to protect against such weaknesses. Facilities for forgetting, for segregating and aggregating data sets, for identifying outmoded assumptions of past estimates, and for challenging the fashionable notions of the day will contribute to testing of inconsistent data against alternative assumptions.

Guarding against expectations is not enough. The tendency of the human psyche to deceive itself demands that we also guard against our fantasies, our unrealistic hopes, our fears that the future will repeat the particular historical disasters we have experienced. The Freudian conception of self-deception is found in the analysis of repression and "defense mechanisms."⁴⁸ This conception is reflected in Hannah Arendt's controversial essay on "Lying in Politics,"⁴⁹ in which the prevalence of deception in politics is ascribed primarily to the narcosis of self-deception, the deception of bystanders and adversaries being almost incidental to the freeing of imagination from the impediments to action.⁵⁰ As one confidence man puts it, "You've got to realize that the victim *wants* to believe you."⁵¹

Was the nonexistent "missile gap" of 1957-1961 the product of independent Soviet initiative or the product of anxieties within American society that Moscow harnessed for mutual satisfaction? Was the Suez invasion in 1956 or the 1968 invasion of Czechoslovakia a question of deception and surprise, or a combination of these and a preference by many to be surprised in the event that an invasion was under way? Without quibbling over terminology, we may recognize that cognition involves a symbiotic relationship between transmitters and receivers of information.

Whatever the causes of self-deception, the result is vulnerability to foreign stratagematists. Since deception planners seek to influence decisions, not the track record of intelligence bureaucracies, they may not concentrate upon deception through the intelligence channels of an adversary. Confidants of the adversary leader, or known fantasies of key individuals, may be exploited through more direct channels.

One problem of the intelligence service guarding against the expectations and fantasies of decisionmakers is to identify cognitive vulnerabilities that are being independently reinforced. And those in power value the privacy of their thoughts, their hopes, and their fears. If they are to be protected against the blunders of estimation that have been so plentiful in the past, those in positions of power must recognize the abundant opportunities for their victimization. Only then will they share information on top-level negotiations. Only then will they encourage critical, heretical intelligence. Without such encouragement, established intelligence agencies may draw comfort from Goethe, who wrote, "Who destroys illusion in himself and in others, nature punishes tyrannically."⁵²

Commitment, on the part of intelligence estimators or decisionmakers, is likely to increase resistance to attitude change. Prior agreement of a group may prolong conformity to erroneous judgments.⁵³ If significant actions have been taken on the basis of this prior belief, resistance to attitude change may be more severe.⁵⁴ If past policies have appeared to be successful, there may be the further delusion that the quality of information has been improving, even when it has not.⁵⁵ Thus, attitude

change is further discouraged. So, where action has been taken, decisionmakers may fail to request supplemental intelligence review. Those concerned with forecasts for better decisions should be mindful of the need for corrective reappraisal of forecasts that are the underpinnings of current policy and past decisions.

To assure that the horizons of decisionmakers are not unduly restricted, there is a role for structured "multiple advocacy" in the decision process, as suggested by Alexander George,⁸⁸ supported by the kind of management information systems that encourage use of intelligence hypotheses other than those conforming to fashionable expectations.⁸⁹ Incongruity testing is the primary method of overcoming preconceptions, expectations, self-deception, and prior commitment. When the relevant data are contradictory, even in small but important respects, alternative hypotheses to the most "plausible" deserve recurring scrutiny.

Before passing from the subject of incongruity testing, we should note two aspects of the bureaucratic milieu pertaining to intelligence services and degrading their ability to detect their adversaries' stratagems by this method. First, there is the well-known tendency of the collecting agency to overvalue its own sources.⁹⁰ This is not a vast problem, except insofar as more-or-less untested intelligence is fed to the highest level decisionmakers. In the case of communications intelligence intercepts, electronic transcripts, or deep penetration agent reports that arrive just before a necessary decision, there is a danger that clever sprignals will be funneled to just the people who should be sheltered from them. As Robert Amory puts it, policymakers like "the succulent taste of the hot poop," which often means the very latest in current intelligence, especially that from exotic sources at the expense of the more pedestrian formal estimates, which involve a greater effort to eliminate sprignals.⁹¹ Those channels not subjected to rigorous predistribution testing are those most tempting to the peddlers of sprignals.

Second, there is the less well-known tendency of intelligence agencies to overcollect data, at the expense of quality control.⁹² This can have seriously adverse effects upon intelligence performance. Over the last two million years, the size of the human brain has been expanding at a relatively steady but slow rate.⁹³ If only the appetites of intelligence collectors grew at such a leisurely pace indigestion would be less troublesome. The sheer bulk of incoming data encourages only cursory examination of an overwhelming volume with a higher percent of both noise and sprignals than would be found in a more select collection program. If one had a small core of carefully scrutinized and cross-checked data that could serve as a basis for incongruity testing, one would have a head start in the predictive contest over those who are flooded by reconnaissance photos or signal intercepts but have neither the manpower nor the understanding of the importance of incongruity testing and retesting.

If we are puzzled as to why a modest collection of deceptively induced sprignals can overwhelm genuine signals arriving in larger volume, and from a wider array of sources, we may derive some understanding from studies of signal detection. J. A. Swets observes: "The accuracy of knowledge about signal characteristics is less critical for strong signals, since strong signals carry more information about these characteristics with themselves."⁹⁴

If deception planners work to supplant an array of weak but genuine signals with strong sprignals, the seeming significance of perceived sprignals is likely to obscure the relative ignorance respecting their sources, characteristics, and chan-

nels of transmittal. The inundation of intelligence systems with increasing masses of data encourages only minimal attention to signal (and sprignal) characteristics. If an overloaded intelligence system contains sprignals with stronger impulses than those in background signals and noise, we should not be shocked if the sprignals dominate resulting perceptual patterns.

Those who think that the budgeting of another squadron of recce aircraft or the launching of another set of satellites will solve our intelligence problems should contemplate the possibility that more massive but indiscriminate data collection will have the following result: to inundate the signals with a high volume of noise, while adversary deception planners work feverishly and successfully to bombard the system at critical junctures with enough of the sprignal data to control the final pattern. If deception planners fear that their critical sprignals will be buried in the backlog of unprocessed data, they can arrange to "leak" some last-minute gem, assuring the hurdling of filtration barriers. There are too many bureaucratic and budgetary pressures encouraging overinvestment in intelligence collection systems. With fewer data and more care, with computer assistance and a counter-deception system, we can obtain better estimative results.

VULNERABILITY ASSESSMENT

Various statistical approaches may be adopted to predict future vulnerabilities through knowledge of those in the past. With Bayes' theorem and multivariate statistical analysis we can arrive at conditional probabilities of deception in various modes under various conditions. Game theory, simulation methods, and historical studies may yield conclusions about the likelihood and usefulness of deception in various modes, and about the payoffs through inducing wrongful rejection of accurate warnings (by labelling them sprignals). With estimates of the risks and costs of making either a Type I (lack of warning), or Type II (false positive warning) error, a reconstructive inference system and an incongruity testing system can be designed so as to optimize system outputs.⁶³ Studies such as Barton Whaley's *Stratagem* provide at least a tentative set of *a priori* probabilities. A set of classified studies could further refine some of these probabilities.

Aside from historical studies, war gaming, and simulation exercises, a set of field exercises could generate close-to-real-life probability ranges that would help assess the risks of various arms control postures. Although suggested from time to time since 1961, Amrom Katz's "Hiders and Finders" proposal has never been tested in the field.⁶⁴ The Arms Control and Disarmament Agency's efforts in Project CLOUD GAP (renamed FIRST LOOK) did not constitute a full-fledged field test of stratagematic vulnerabilities. Even more disconcerting are the results of one of the few off-site verification experiments as yet conducted: "Aerial and ground observations in a study by independent research teams failed to distinguish from the exterior which of three American manufacturing plants was producing the deadly VX nerve gas."⁶⁵ Although it was known that one of three plants was engaged in clandestine manufacture, off-site verification efforts failed without any complications introduced by deception specialists. With the "assistance" of "tips" as to yet other sites said to be clandestine producers, a team with even a small quota of on-site inspections might well expend that quota inspecting perfectly innocent plants.

If the United States wishes to enter into arms control arrangements that are not safe unless protected by accurate intelligence, planners should run field tests in which the "hiders" resources include not only passive security but strategic deception as well. If they are wary of deceptions mounted by particular states or clusters of states (as, for example, the Warsaw Pact) they should seek to understand past stratagemic styles and practices.

Past national styles and practices may assist in assessing vulnerabilities to prospective stratagems and in the detection of these practices by the reconstruction of spigmal patterns. No rigorous public studies of national styles of stratagem have been identified, thus the research base does not support firm conclusions. Impressionistic writings do exist and are the basis of the following tentative observations on national styles of deception.

THE STYLE OF SOVIET STRATAGEM

In traditional Russian culture the tendency of respected people to indulge in mild variants of lying, or *vran'yo*, was widely noted, and distinguished from malevolent lies, or *lozh*. In an essay on "Kremlinological Inexactitudes," Ronald Hingley treats as unfair the claim of the dramatist Leonid Andreyev that the art of serious lying (*lozh*) demands intelligence, talent, character, and stamina beyond the capacity of Russians.⁶⁶ Andreyev claims,

Yes, the Russian is incapable of telling lies (*lozh*), but he seems to be equally bereft of a capacity for telling the truth. The intermediate thing for which he feels the greatest love and tenderness resembles neither truth nor *lozh*. It is *vran'yo*.⁶⁷

Dostoyevsky wrote "that among our Russian intellectual classes the existence of a nonliar is an impossibility, . . . even completely honest people can lie."⁶⁸

The scope of permissible misrepresentation in Russian society extended beyond the "white lie" or practical joke of many European cultures; the press censorship of the Czars' and propagandistic dominance of the *Agitprop* machinery in Soviet communications encourage the perpetuation of *vran'yo*, both in official communications and in the word-of-mouth or *samizdat* escape from the boredom of official "lines."

The *lozh* was primarily the subject of early Bolshevik fear rather than the product of Bolshevik inspiration. Czarist use of *agents provocateurs* bred distrust of entrapment. Lenin was wary of attempts to deceive the enemy, lest the "masses" also be deceived: "In our midst those who by politics mean petty devices which sometimes are almost on a par with deception should be very strongly condemned. . . . Classes cannot be deceived."⁶⁹

Lenin espoused a policy of frank public discussion of Party difficulties,

When we speak about our situation we speak the truth; we even exaggerate a bit to our disadvantage. In April 1921, we said: Transport is falling, no food supplies are arriving. We wrote this openly in our newspapers. . . . We must talk directly without fearing the newspapers which are published in all the cities of the world. That is unimportant. We are not going to be silent about our difficult situation for that reason.⁷⁰

In one important respect the Bolsheviks under Lenin adopted the *lozh* in Party practice: that was the world of counterespionage, where F. E. Dzerzhinsky's *VChK* or *Cheka* absorbed many of the personnel and practices of the Czarist secret police. Following Dzerzhinsky's investigation of military disorganization on the Eastern Front and the loss of Perm' in December 1918, he proposed to Lenin and the Central Committee that security and counter-intelligence functions within the Armed Forces be transferred from the so-called "Military Control" and the Army *Cheka* to special units under central *Cheka* control.⁷¹ The civilian secret police bureaucracy (now the KGB) would have primary responsibility for the launching of strategic deception operations and jurisdictional responsibility for counterespionage within the Armed Forces (through the *KRU* or Military Counterintelligence Directorate of State Security).

During even the Leninist period, Dzerzhinsky's security forces were active practitioners of the *lozh* against White Russians, foreign intelligence services, and Russian emigrés. Finding it difficult to cope with the multiplicity of growing anti-Soviet movements, the *Cheka* provided central management through "The Trust," the most ambitious of the anti-Bolshevik enterprises, into which they ensnared the most ambitious of their enemies.

The emphasis upon active counterespionage has been a trademark of Soviet security and deception work since the 1917 revolution. With considerable success the Soviet intelligence services have penetrated the intelligence and counterespionage services of their adversaries and have used the resulting knowledge in the management of intelligence channels aimed at deception targets. But the dominance of the civilian security organs in Soviet counterespionage work may have inhibited integration of strategic deception in the military operations of Soviet "grand strategy" in World War II.

In the Stalinist era, and particularly during the purges of the 1930s, deception was a central instrument of domestic politics.⁷² Indeed, during the "Leningrad Affair" of 1948-1950, Malenkov, Beria, and State Security Minister Abakumov appear to have used the investigative apparatus to deceive Stalin into crushing rivals in the loyal Leningrad party.

In *A Study of Bolshevism*, Nathan Leites wrote, "Truth or consistency in public statements as ends in themselves are inconceivable to a Bolshevik. It is inconceivable to him that his bourgeois—as distinguished from his petty-bourgeois—enemy may strive for them."⁷³

These observations were written in the twilight of the Stalinist era, are supported by quotations from Stalin, and are not necessarily consistent with the idealism of Lenin. Nor are they consistent with the pleas of the Soviet physicist, Andrei D. Sakharov, and others in the *samizdat* press of the 1960s and 1970s for frankness and information exchange in an era of peaceful coexistence.

But those who would suppress the *lozh* in government and party conduct must deal with the Stalinist tradition.⁷⁴ In the words of a character from Koestler's *Darkness at Noon*, "We brought you the truth, and in our mouths it sounded a lie."⁷⁵ The Polish poet Adam Wazyk wrote, "They lived off the dream and the lie became their daily bread."⁷⁶ Deception permeated the ranks of state security organs, notwithstanding the functional specialization of a disinformation section, later a department within the KGB's First Chief Directorate. Nonetheless, that functional specialization and coordination of interdepartmental stratagems through Depart-

ment "D" of the KGB has encouraged emphasis upon stratagem in support of interventionist political action (under the heading of "special operations") and in acquiring control of foreign intelligence channels.

Since illusions of military power, apparent readiness to engage military forces, and misdirection of adversary military forces may enhance political influence, the battlefield has not escaped the application of Soviet stratagem. But the Stalinist emphasis upon political intrigue impeded the use of stratagem in the prosecution of war. In contrast to Chinese Communist strategists, who delighted in luring conventionally superior Kuomintang forces into misdirected attacks and entrapments, Soviet commanders failed to disrupt and divert attacking German forces during the onslaught of 1941. Artful examples of tactical camouflage abounded, however, as related in a German survey of experiences on the Eastern Front.⁷⁷ Bomb damage was concealed, or feigned through camouflage of highly valued sites. Armaments factories in the path of attack were evacuated secretly at night, the buildings used as lures for German attack; night movement was stressed. Especially from the autumn of 1942, at Stalingrad, German communications were heavily jammed and false orders passed in German to misdirect enemy strikes, false information was fed to German intelligence.

In regrouping forces for the defense of Moscow and in planning a counterattack, General Zhukov may have integrated deception in his plan of strategy. We should not, however, assume a central deception planning group; each commander was responsible for integrating camouflage and deception into his plans.⁷⁸ Nonetheless, in critical situations Stalin often turned to Zhukov, and Zhukov had a flair for stratagem that is reflected in the surprise of German forces in key Soviet counter-offensives and in major offensives from the battle of Kursk in the spring of 1943 through the Berlin offensive of April 1945. May we assume that by October 1942 Special Operations Staff planners at NKGB and *Stavka* [defense committee] headquarters had incorporated stratagem in operational planning, or should we assume that Front commanders managed to deceive the Germans in almost every case? The former seems more likely.⁷⁹ Whatever the organizational arrangements, according to a self-congratulatory review in 1965,

The operative plans and intentions of our command were carefully protected against the enemy. The enemy did not succeed in obtaining one single plan of offensive operations in our forces in the years of the Great Fatherland War. The Soviet Chekists, operating in close contact with the Army staffs, systematically provided the enemy with wrong information on the plans of the Soviet command on the movement of troops, and on the situation in the rear areas. This contributed toward shifting considerable enemy forces to areas which were favorable for the Soviet command and also toward sudden operations being carried out by the Soviet troops.⁸⁰

Should we be especially concerned about our vulnerability to Soviet deceptions, we should study past Soviet stratagems, including those in military campaigns at Khar'kov (Manchuria) in August 1939, at the battle of Moscow in 1941, at the Orel-Kursk offensive of May-June 1943, at the Fourth Ukrainian Front in January 1944, at the Crimean Front in April 1944, at the Karelian and Byelorussian fronts in June 1944, at the Kishinev offensive of August 1944, at initiatives in October 1944, and during the Vistula crossing of February 1945. Whaley's *Stratagem* and a forthcoming study of John Erickson's treat some of these cases; doubtless others should be mentioned.

Barton Whaley's treatise on *Stratagem* does not credit Soviet deception specialists with the skills of British or Israeli counterparts. But it would be foolish to assume that military planners and NKGB deception specialists first came to understand the role of stratagem in "grand strategy" when briefed in 1944 by Colonel John Bevan, chief of the Anglo-American strategic deception staff, in preparation for the opening of the Second Front. Feints preceding the Byelorussian offensive in June 1944, though coordinated with Anglo-American feints elsewhere, were not the first of the war for Soviet planners. In their counterespionage penetrations of German security and intelligence training apparatus, the NKGB and GRU organs acquired deception assets of prime value. Nor did they neglect the penetration of allied British or American services, as with the promotion of H. A. R. ("Kim") Philby to a responsible position within the counterespionage section (M.I.6/S.5) of the British Secret Intelligence Service.

Indirectly, Soviet deception practices may have found a role in the Korean War, in the invasion of Czechoslovakia, and in the electronic and communications spoofing of Vietnam, as with the misdirecting of American air strikes (reminiscent of the Stalingrad campaign of 1942-1943 and the false British targets of "Colonel Turner's Department" in the former British Air Ministry). Both Soviet planners and foreign observers must project, rather than visualize, the postwar evolution of Soviet deception practices. Major General of Artillery A. P. Zakharchenko wrote in 1970 of a broadened role for stratagem:

Notwithstanding the massive equipping of PVO [Air Defense] forces with modern technology, the role of stratagem in modern combat has not lessened, but, on the contrary, has increased. Military stratagem helps the commander conceal his plans and intentions from the opponent and compel the enemy to reveal prematurely his intentions, tactical methods, or the structure of his troop dispositions; it ensures the surprise of attack, which plays a very important role, given the dynamism, rapidity and decisive nature of actions in modern combat. This is why the USSR Ministry of Defense requires that command personnel, while devoting main attention to tactical training, thoroughly instruct the troops in the employment of tactical methods that are unexpected by the opponent, and in the employment of stratagem and deceptive actions, based on an all-around analysis of the combat situation.²¹

It is curious that in the first two decades after World War II the pattern of Soviet force procurement and deployment was such as to expose unprotected, minimally dispersed strategic forces, at least hypothetically, to the hazards of deceptively induced surprise. Strategic planning did not respond to wartime experience. Not only were Soviet forces severely damaged by the unanticipated German offensive of June 1941, but in the years thereafter the Soviet Union inflicted surprise after surprise upon German military commanders, aided by rigor in security and stratagem.

Stalin's dismissal of the importance of surprise, following the hardships of German attack, may have had a more profound effect upon the inhibition of doctrinal innovation than it had upon Soviet use of mobility and stratagem in the ongoing confrontation with Germany.²² Conceding an extended period of Soviet irrationality in doctrine and force procurement in the 1940s and 1950s we no longer find in Soviet doctrine or evidence of force procurement insensitivity to the effects of deception and surprise in modern war.

Indeed, a more interesting issue is whether Soviet planners have absorbed the implications of an international system in which deception all too often yields surprise, and whether they are prepared to undertake measures that will reduce opportunities for surprise in a nuclear attack or for the spoofing of strategic warning systems. Since Soviet military doctrine places emphasis upon surprise (especially since the XXIInd Party Congress in 1961), any efforts to minimize mutual opportunities for surprise attack must identify the inadequacy of past doctrinal evaluations, and the danger of resort to the "war scare syndrome."

Writing in *Voennyi Vestnik* [Military Herald] in October 1966, Colonel N. F. Miroshnichenko claimed a growing role for deception in nuclear attack:

The surprise use of nuclear weapons permits the bringing of very great losses to the enemy. . . . An indispensable condition for achieving surprise is secrecy. However, achieving it is not easy. For this, along with arrangements for countermeasures of the enemy's reconnaissance, it is necessary to perfect constantly the means and methods of camouflage and of disinformation.²³

Thus, if nuclear war were deemed necessary and a first strike deemed possible, a Soviet nuclear attack would be supported by disinformation efforts designed to mute or cloud enemy strategic warning prior to actual missile launchings.

The occasional Soviet practice of spoofing strategic warning systems in political crises, combined with emphasis upon achievement of surprise in thermonuclear attack, is a risk-prone posture. Given the institutional incentives for a launch-on-warning policy, the subject of comment in Fred C. Ikle's article, "Can Nuclear Deterrence Last Out the Century?",²⁴ it is important to establish restraints upon the spoofing of strategic warning systems, probably subject to some risk of false attack warning even without adversary provocation. Do we find in the declining Soviet reliance upon the "false war scare" growing recognition of the mutuality of interest in avoiding false attack warnings?

In 1948, 1950, and 1956, and possibly in 1969, Soviet force deployments may have been designed to spoof strategic warning systems, creating an ambiguous threat of Soviet attack, in support of other objectives. These may be labelled the "Agayants style" of war scare deception, named after the late Major General Ivan Ivanovich Agayants, who headed the Disinformation Department of the KGB until 1968.

In the so-called "March Crisis" of 1948, Soviet forward Army and Air Force deployments and deceptive leaks in Germany enhanced ambiguous Western perceptions of Soviet willingness to incur the risks of war. Timed to support the forced Allied evacuation of Berlin and as a prelude to critical 1948 elections in Italy, this deception had unintended repercussions: momentum for larger U.S. defense budgets, in a supplemental appropriation for FY-1949 and a larger budget for FY-1950; a quickened pace for the birth of NATO; and a more energetic U.S. atomic weapons program.²⁵

Also, while the Soviet intelligence and counterespionage efforts were supervised by the *Komitet Informatsiia*, or K.I., in October 1950 a major "war scare" was mounted against NATO, in an effort to prevent both redeployment of ground forces to Korea and spillover of General MacArthur's Korean offensive onto the Chinese side of the Yalu River.

According to one propagandistic but vague account released shortly before the 50th anniversary of the Cheka:

The data that came into our hands [an MGB intelligence network in the U.S.A. supervised by the case officer "Rudolph Abel"]... helped save the world from an atomic catastrophe. We managed to obtain information in time about the plans of General MacArthur to open military activity on Chinese territory. These plans were not realized because our country's undertakings forced U.S. President Truman to step back from the precipice.⁸⁶

Six Chinese Communist Armies crossed the Yalu in the last three weeks of October 1950, surprising an unreinforced and unexpecting U.N. Command under General MacArthur, and reversing the momentum of the war. In November 1950, the CIA discounted the Russian threat to Europe, but only after the first Chinese offensive had repulsed the advancing South Korean forces and too late for shipment of NATO troops to Korea before the second Chinese counteroffensive of 25 November 1950.⁸⁷

During the Suez crisis of 1956, Soviet strategic bomber flights over Turkey may have reinforced diplomatic transmission of Soviet nuclear threats to the British and French governments. Whether such tactics actually influenced decisions in London, Paris, and Washington is difficult to say.

In any event, there has been a noticeable absence of Soviet spoofing of strategic war warning systems in the last decade, excepting perhaps the 1969 deployments along the Chinese border. This abstinence has been particularly noticeable in the tensions of the 1962 Cuban missile crisis. It may reflect Soviet appreciation of the contribution to nuclear peace of strategic warning systems that are exempted from mutual spoofing. Strategic information exchange provisions of SALT agreements may provide a more stable footing for measures to discourage the spoofing of strategic warning systems.⁸⁸ Nevertheless, those who manage warning intelligence centers must be mindful of an earlier Soviet tradition of "war scares" and of the attenuating effect of false alarms upon the vigilance of Allied warning systems during the "phoney war" of 1939-1940.

Past Soviet deception style suggests the need for analytic differentiation of the false war scare and the false peacetime vigilance that would precede an actual attack. This is a demanding task, but one whose solution or possibility of solution may contribute to maintenance of the nuclear peace. Stratagems that create illusions of military power or intervention, so long as they do not spoof nuclear forces that might be launched on (false) warning, are not direct threats to the nuclear peace. Deceptions of this sort continue to be within the Soviet repertoire.

Among possible cases of postwar Soviet stratagems are: the disguise of extensive Soviet participation in air battles of the Korean War in 1950-1953;⁸⁹ misleading Moscow bomber "fly-bys" in 1954-1956; the imprisonment of Hungarian political leaders while negotiating in 1956; other "indicators" of extensive medium bomber production; misleading implications and boasts of ICBM missile production and accuracy in 1957 and thereafter, such boasts being cut short by speeches of Deputy Secretary of Defense Gilpatrick in October 1961 and after;⁹⁰ "identification" of a U.S.-Turkish "threat" to Syria in 1957, accompanied by Soviet threats of intervention credited with averting the imagined crisis;⁹¹ Soviet military maneuvers along the Turkish and Iranian borders during the U.S. intervention in Lebanon in 1958, described by Khrushchev to Nasser as only a bluff;⁹² false reassurances to the U.S. Government that no "offensive" missiles would be placed in Cuba before the crisis of October 1962 and successful concealment of about one-quarter of these missiles

in Cuba during the crisis itself; unannounced testing of *FOBS* (Fractional Orbital Bombardment System) after joining in U.N. General Assembly Resolution 1884 (October 17, 1963) prohibiting weapons of mass destruction in outer space;²³ deception of Egyptian intelligence respecting another false invasion "threat" to Syria in May 1965 and October 1966,²⁴ then again in May 1967 contributing to the Arab fiasco in the Six Day War of June 1967;²⁵ misdirection and attrition of U.S. Air Force bombers in Vietnam, in conjunction with North Vietnamese efforts; the misleading of U.S. and NATO intelligence, and of the Dubcek leadership in Prague before the invasion of August 1968;²⁶ military deployments of ground and nuclear missile forces near the Chinese border, in 1968-1969, which may have suggested an East Asian corollary to the "Brezhnev doctrine" in support of dissident Kazakh, Uighur, and Mongol nationalities in north China;²⁷ bluffs of a nuclear strike on China's strategic weapons facilities following March 1969 Ussuri River clashes along the Sino-Soviet border;²⁸ and false assurances that new missiles and equipment would not be moved into the proposed "standstill" cease-fire zone along the Suez canal, resulting in contrary practices in August 1970.²⁹

The evidence of past Soviet deception practices indicates that there may be particular difficulty in applying the reconstructive inference method to clarify the strategic situation. The reconstructive inference method should yield most clarity when the jigsaw puzzle of a rational deception plan is substantially reconstructed. Well-planned military operations may involve such cases of rational, coordinated, and "witting" deception staffing. But it appears from the Soviet practice, particularly in crises short of war, that deception planners may operate in considerable ignorance of their circumstances.

Were Soviet disinformation specialists more the victims or the partners of those in Damascus who triggered mobilizations before the June 1967 war? In such a case reconstruction of hypothetical deception patterns is likely to shed insufficient light on underlying aspirations. In such instances of bureaucratic politics, testing of inconsistent clusters of evidence could improve predictions yet not elucidate an underlying purpose that may not exist. Similarly, indicators of cover and deception in the Warsaw Pact maneuvers before the Czechoslovakian invasion of 1968 and in Soviet preparations for possible attack on China in 1969 may not shed light on underlying intentions—for an "open options" policy may have allowed delay of ultimate choices. Careful attention to the patterns of deception may at least clarify the formulation of alternative hypotheses and speed reports of significant evidentiary shifts.

CHINESE STYLES OF STRATAGEM

In American defense planning, assessment of deception practices and doctrines of the People's Republic of China assumes an importance second only to appreciation of Soviet styles of stratagem. But deception plays a more fundamental role in both Chinese military tradition and in the objective circumstances of China's geopolitical locus than it ever played in Russian history.

The centrality of stratagem in Chinese tradition is reflected in *Sun Tzu* (circa 4th century B.C.):

All warfare is based on deception. Hence, when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far; when far away, we must make him believe we are near. Hold out baits to entice the enemy. Feign disorder, and crush him. If he is secure at all points, be prepared for him. If he is in superior strength, evade him. If your opponent is of choleric temper, seek to irritate him. Pretend to be weak, that he may grow arrogant. If he is taking his ease, give him no rest. If his forces are united, separate them. Attack him when he is unprepared, appear when you are not expected.

These military devices, leading to victory, must not be divulged beforehand.¹⁰⁰

Unlike traditional Western deception concepts (those of the Soviet Union included), traditional Chinese stratagem aims at winning without fighting, at enabling the enemy to confound himself. The third chapter of the *Sun Tzu*, "Attack by Stratagem," emphasizes "breaking the enemy's resistance without fighting."

Chinese deception is "oriented to the failure of the enemy; Western deception is oriented to the success of the self."¹⁰¹ Thus, the deceptions of time, and place, and strength of attack prevalent in Whaley's empirical studies of Western stratagem are not deception of essence, only deception of means. To the Western strategist, stratagems of initiative are preferred to those of defense; in Chinese tradition, the Taoist conception of effortlessness in mastering external forces is reflected in stratagem. As in the art of unarmed self-defense, the force of enemy motion is turned upon him.

Thus, the *Sun Tzu* advises, "What the ancient call a clever fighter is one who not only wins, but excels in winning with ease."¹⁰²

An 11th century A.D. Chinese source, the *Tzu-chih t'ung-chien*, advises:

Now, the Way of War is this: attacking the heart is the best, attacking the walls is the worst; battle launched at the heart is the best, battle launched at soldiers is the worst. I would wish your Excellency subdue their minds only.¹⁰³

Both the reconstructive inference and incongruity testing approaches to the understanding of adversary stratagems focus upon signal processing and evaluation, upon what Scott A. Boorman terms "the information-theoretic perspective of signaling."¹⁰⁴ Although vulnerability assessment includes the probing of information channel reliability and may utilize identified discrepancies in enhancing predictions,¹⁰⁵ this probabilistic approach will not cope with the essence of Chinese stratagem: influencing the decision process of enemy behavior, not merely skewing the information net so as to affect particular choices. If the enemy must be psychologically disarmed, then efforts to cope with Chinese deception demand not only statistical elegance but also psychological insight.

The game theory of three-person duels, called truels, may be applicable to an understanding of Chinese strategy and opportunities for stratagem. Facing two nuclear superpowers whose technological might cannot be directly matched, China is akin to the weak party in the three-person duel. Although it is intuitively obvious that the weakest party would prefer that the two stronger parties shoot at each other, it is not so obvious that in a sequential game, the stronger parties may have an incentive to "take-out" the other strong party first (depending upon payoffs, specified conditions of sequence in shooting, and lack of prior agreement and trust

between the two "superpowers"). Given the "rationality" of attacking the stronger power first, the poorest shot may have the best chance of winning! So game theorists have been puzzling over "weakness in strength" and "strength in weakness."¹⁰⁶

For the weakest party in the three-party competition there may be an incentive to sow distrust between the two seniors, thus reducing incentives for collusive attack. There may also be an incentive to convey impressions of strategic neutrality, of a weak offensive capability but a strong defensive capability, of the invulnerability of strategic forces, all irrespective of underlying verities.

Other sets of illusions are more risky. To deter one big power, there is the option of enhancing illusions of alliance with the other great power; but this "free ride" is hazardous, especially if it serves to provoke an attack during an initial period of vulnerability. The perpetual anxiety of big power planners that they may face an all-front war may also be exploited; but this, too, is hazardous if it encourages great power collusion.

Neither the simplicity of three-person games nor the classics of Chinese military doctrine cope with the protracted guerrilla warfare of the Maoists in their civil war. In a sense, the Maoists failed as stratagematists: They fought a war of attrition, suffered many casualties, and despite the respite offered by Japanese invasion failed to achieve psychological victory without resumption of civil war. Even in victory, Chiang Kai-shek retained Taiwan and with American protection deprived the Maoists the satisfaction of completion. The Maoists were stratagematists in the sense that they manipulated the behavior of their adversaries and possible intervenors from abroad; they lured and surprised; they caused the wholesale defection of troops; they misdirected Nationalist armies, and paralyzed others in indecision. Still, theirs was a painful, slow, and costly victory.

Given the failure to "excel in winning with ease," as the *Sun-tzu* counsels, and the disturbing characteristics of nuclear weapons, what should we expect of Chinese strategy and stratagem after the passing not only of Mao Tse-tung but of his generation? We may anticipate the continued citation of Mao, but a blending of the prudence of traditional stratagem in winning without war, certainly without thermonuclear war. The concept of the "deep lure," for example, though a Maoist principle, is an invitation of dubious satisfaction if the "invited" brings tactical nuclear warfare with him. The legacy of civil war revolutionary doctrine is a burden that must be unshackled; the stratagem-in-strategy theme may appeal to both the traditional Maoists and those who would reject conceptions of "deep lure" and "protracted conflict" on Chinese territory. Those who would rather fight by quick counterattack on others' territory can draw upon Mao's *On Protracted War* (1938) in their own way. Following the first phase of enemy superiority, for the second phase of strategic stalemate, Mao writes:

We say that it is easy to attack an enemy on the move precisely because he is not then on the alert, that is, he is inadvertent. These two things—creating illusions for the enemy and springing surprise attacks on him—are used to make the enemy face the uncertainties of war while securing for ourselves the greatest possible certainty of gaining superiority, initiative, and victory.¹⁰⁷

This doctrine may evolve into a "first phase" counterattack, into the territory of the attacker.

Many of the trademarks of Chinese stratagem remain of continuing importance in the thermonuclear context. Like their Soviet counterparts, the Chinese communists have excelled at counterespionage, at controlling adversary agent networks and manipulating traffic so as to entrap or lull opponents. They have concentrated upon high-level agent penetrations of the Nationalists, radio deception, and careful leaks to foreign journalists. Part of the similarity to traditional *Chekist* style may result from the extensive training of the long-time "Hai Wal" (secret service) chief, Kang Sheng, in the Soviet Union between 1933 and 1937.¹⁰⁸ The emphasis upon patience in the war of wits is reflected in Liu Shao-chi's remarks to the CCP security training class at Yencheng in April 1941:

We may say it is the open war that decides victory or defeat but it is the secret war of wits that prepares the ground for victory and consolidates it after it is won. If you get your jobs done and have arrangements made inside the enemy forces, within the next three to five decades we shall be able to defeat the enemy right away in case of an open conflagration.¹⁰⁹

The war of wits is particularly germane in an era of thermonuclear deterrence, where assessments of bluff and counterbluff, of proclivities to take risks or absorb costs affect what happens under the strategic umbrella. Both the tradition of clandestine penetration and a fruitful experience with foreign journalists are part of a traditional projection of desired images. It has been suggested that portrayal of reformist and humanistic aspirations to select foreign journalists contributed to forestalling American intervention in the Chinese civil war.¹¹⁰ It has also been suggested that wishful thinking and self-deception were components in Western misperceptions of the character of the Chinese revolution.¹¹¹

Other characteristics of Chinese stratagem appear relevant in a thermonuclear context. In the civil war the Communists mastered the art of stratagems: not just one stratagem involving multiple geographic feints, but an interweaving of stratagems, with two Army groups not only mounting multiple stratagems of their own, but orchestrating them so as to frustrate Nationalist commanders, uncertain where the key battle was to be fought. And sometimes the key battle was being won precisely because no key battle was being fought, with the Nationalist troops preparing for shifting threats, and suffering the psychological defeat of the classicists. The orchestration of deceptions is particularly important in an era of massive reconnaissance and of multispectral perceptions.

Examples of compound stratagem from the civil war include: Lin Piao's fifth and sixth offensives in Manchuria in April 1947, the campaign of General Nieh Jung-chen in North China in May 1947, and Lin Piao's Peiping-Tientsin campaign of November 1948-January 1949, a strategic ballet of lures, traps, and moving threats. Beginning on November 15th, Lin moved twelve columns into north China along separate routes in the direction of Tangku, Tientsin, and Peiping, while Nieh Jung-chen moved simultaneously with forces against Kalgan and Hsin-Pao-an. The Nationalists perceived the main attack to be against Kalgan, where they concentrated for defense, while Lin's troops attacked and occupied cities from which Nationalist troops were withdrawing. Peiping seemed to be threatened from two directions; Tientsin was also threatened. Nationalist reinforcements were confused, demoralized, and untimely in their movements. Tientsin fell on 14 January 1949.¹¹²

Given the opportunities mobility provides for stratagem, it would not be sur-

prising if the Chinese opted for movable intermediate range ballistic missiles,¹¹³ then mobile IRBMs and ICBMs once advances in fuel and maintenance technologies allowed. The fixed-site choices of the Soviet Union and United States, for land-based systems, offer less flexibility in stratagem than mobile land or submarine-based systems.

Premier Chou En-lai expressed a conception of vulnerability to territorial penetration that is consistent with a preference for mobile strategic forces. Chou told a visiting Yugoslav journalist in August 1971:

If we were attacked from above, from the north, by the USSR and if it captured our territory down to the Yellow River; if the United States occupied the southern parts up to the Yangtze Kiang; if the Japanese militarists occupied the eastern part of China from Tsingtao to Shanghai; if India started a border conflict, invaded Tibet, and occupied the southwestern part — would a relaxation of tension occur in Europe? We are ready for all these eventualities.¹¹⁴

Given the sense of an all-vector threat, the Chinese are likely to opt for mobility and stratagem. Chou's statement indicates, at least for the short haul, continued reliance on the "deep lure" in preparation for "active defense" along the river barriers. Articulated in Mao's "Problems of Strategy" (1936), and practiced in Korea in 1950, the "deep lure" strategy was defended in September 1972 against unnamed "Left opportunists" who would forsake "active defense" in favor of "positional" warfare.¹¹⁵ The prospects of ricefield warfare, dike burst entrapments, rear-area guerrilla attacks, and a residual nuclear force somewhere in the mountains would thus deter a nuclear attack, and make a foreign occupation too painful.

If the Chinese seek forces that are mobile and difficult to detect, plus strategic movement, they will confront other states with evaluative difficulties of both a technical and symbolic nature. Strategic theater is a performance designed to affect the audience; if unchecked it could impede prospects for arms control. Even if restrained, it could create innumerable puzzles.

In part the study of national styles of stratagem will help in broadening our sensitivity to stratagems that would not be appealing or widely understood in our own society. Insofar as possible, deception planners will use knowledge of past stratagematic styles in the reconstructive inference process, not only to detect stratagems but, as with the Chinese, to attempt an understanding of the psychological nexus of the deceit.

Study of past cases can also contribute to appreciation of vulnerabilities, including some that are unlikely to be eliminated just by learning of them. With greater sensitivity to the prospects for stratagem, those charged with planning for arms control measures, force deployments, or trade negotiations, among others, may come to appreciate the need for systematic countermeasures.

COUNTERMEASURES

Even if deception analysts have only partially succeeded in detecting those stratagems of which they are the target, they can undertake three sets of countermeasures. The first is a program to make their intelligence systems less vulnerable

to stratagem; some of the systems and techniques have been previously discussed. As preventive medicine they should try to insure that their intelligence system is designed to provide secure, variable, corroborative data. In general the U.S. intelligence system provides such data. Perhaps the greatest weakness in the system is with variability. The United States tends to collect data in accustomed ways; further, we have bought expensive hardware and associated analytic equipment, and it is costly to vary collecting patterns. It is important to collect intelligence "sources and methods" with whatever security we can provide since the greater the uncertainty about our collection parameters, the more difficult for our adversary to custom tailor sprignal packages. It is important to corroborate data in "all available lights," and where necessary to undertake "crash" collection programs (counter-deception intelligence) that authenticate or contradict sets of suspected signals and sprignals.

The second set of counter-measures involves the allocation of resources, the design of weapon systems and of arms control postures that reduce the costs of intelligence misjudgments, taking account of stratagemic vulnerabilities. When we make intentions estimates about matters that have not left a trail of evidence, we should take into account the high *a priori* probabilities of vulnerability to adversary deception. We may attempt to prolong our options or to withhold a more substantial component of our reserves until we have greater confidence in our judgments. The withholding of resources may, in some cases, be more costly than a choice in the face of uncertainty. Where we have detected or anticipated a threat accompanied by stratagemic feints or decoys that we cannot expect to segregate, we might prefer to hold our reserves for specific parries, but we will find it irrational to do so if the "harder" indicators we seek are unlikely to materialize.

In the extreme case we may face the threat of a randomly generated choice. No matter how clever an intelligence system, it will be unable to identify the genuine threat before the choice is made. Further, if the random choice among N possible options is accompanied by N stratagems, one associated with each option, and if after the choice is made the probability of timely detection actions of a stratagem that does not accompany the actual choice is pD , then the probability of identifying the actual choice before the choice is made = $1/N$, and the probability of the timely elimination of all of the misleading stratagems (of which there are $N-1$) = the combination of detecting $(N-1)$ events when taken $(N-1)$ events at a time (C_{N-1}^N) with the probability of detection = pD , or $(pD)^{N-1}$. This net probability will be quite low when pD is low or N is large. Further, if the probability of incorrectly eliminating (as a stratagem) the chosen option is much above zero, the expectation of reaching a correct and timely identification will be further degraded.

Where a random choice has been made and where post-choice detection of stratagems would not allow timely countermeasures ($pD = 0$), if one mounts P parries against P of the N options, the probability of actually mounting a parry against the correct target is P/N . There is the risk of both spreading countermeasures too thinly to be effective and of concentrating them against the wrong targets. Depending upon the utilities and costs of various levels of counteraction, the rational game theorist will seek to minimize his maximum vulnerabilities (a *minimax* strategy) or to maximize his expected payoffs in counter-attack (a mixed strategy). In either case, dispositions are made that do not depend upon the detection of adversary stratagems.

For example, in designing an active defense and retaliatory system in the nuclear missile age, one may calculate that among other penetration aids one's adversary is likely to mount decoys that cannot be distinguished from incoming ICBMs until after the decision must be made to launch ABM interceptors. A more discriminating detection system would be preferable; perhaps the system can discriminate among most of the incoming decoys, but one cannot count upon this event. At the least, dummy ABM interceptors would increase uncertainty levels on the part of the would-be attacker. One can raise the "entry cost" to any particular target by forcing the adversary to assign a greater range of uncertainty to his estimate of the distribution of "real" interceptors (even if the adversary knows that a certain percentage of the total apparent interceptors is only a set of dummies). Similarly, if one fears a counterforce attack one can increase the misdirection of the adversary's initial attack by building ICBM launcher dummies and by camouflaging actual sites. In such cases, the value of intelligence that uncovers these deceptions may be quite high; thus the designer of such "positive" and "negative" camouflage should assume that the adversary will mount expensive and sophisticated detection systems against these intelligence targets.

The point is not to deny the value of spigonal intelligence but to recognize that in some circumstances optimal allocations must be made without waiting for such intelligence. Where threats are randomly generated or where spigonal packages cannot be pierced, waiting for counter-deception indicators may be like waiting for Godot.

The third set of counter-measures involves the "playing back" of deception operations against their sponsors: counter-deception deceptions, or what I have termed "counter-stratagems." Where a set of deception patterns are identified and their strategic nexus uncovered, it is sometimes advisable to "feed" falsely confirming indicators back to the deception planners so as to lull them into the belief that they achieved the misallocations they were seeking.

An example of a partly successful counter-stratagem from World War II experience involved limited German perceptions that the Pas de Calais sector was too obviously only a deception target for the OVERLORD landings:

I talked briefly to von Blumentritt (Rundstedt's Chief of Staff) after V-E Day and he said that they had the Pas de Calais only lightly guarded (he used the word "crust") and that if we broke through and went on to Paris and cut off their main forces they would have been in a hell of a mess. He implied that they had been misleading us on the Pas de Calais' real strength (no reserves too). Thus, both he and Rundstedt had a Pas de Calais sensitivity. Despite this, as I recall, ... OKW and the mad Fuehrer, who saw the "big picture," i.e. the deception operation, bit and hung on. (Possibly, again, it's hard to admit you've been had.)¹¹⁶

An effective counter-deception system should support the mounting of more than partly successful tactical counter-stratagems. These can be effected in combination, too, so as to provide strategic misallocations on the part of the stratagemic initiator.

A somewhat more mischievous variation involves a set of counter-stratagems that do more than falsely confirm the stratagemic success of opposing deception planners. Instead of returning spigonal packages indicating total acceptance of the original deceptions, one can send back counter-stratagems suggesting modified accept-

ance of spigular inferences with such modifications designed to cause opposing planners to modify their own commitments. If done skillfully, these induced modifications may uncover new vulnerabilities that further counter-stratagems can perpetuate.

Chess players—of whom the Russians are among the best—will appreciate the endless layers that can be added: counter-counter-measures, and beyond. But the sheer complexity and bureaucratic inefficiency should cause most of these additional layers to collapse of their own weight.

Those who view stratagem as preposterous in the first instance will wonder what inanities I really recommend. Once more, I cite the abysmal predictive records of the past and note that I am deadly serious.

But we are not above making fun of ourselves; and I close the discussion of counter-deception strategy with a quotation from Peter Ustinov's *Romanoff and Juliet*:

GENERAL:

Incidentally, they know your code.

AMERICAN AMBASSADOR:

(beaming) We know they know our code.... We only give them things we want them to know.

GENERAL:

Incidentally, they know you know their code.

SOVIET AMBASSADOR:

(smiling) We have known for some time that they knew we knew their code. We have acted accordingly—by pretending to be duped.

GENERAL:

Incidentally, you know—they know you know they know you know....

AMERICAN AMBASSADOR:

(genuinely alarmed) What? Are you sure?¹¹⁷

NOTES TO SECTION III

1. B. H. Liddell-Hart, *Strategy: The Indirect Approach* (New York: Praeger, 1954). Liddell-Hart discusses British utilization of deception in the Mareth Line campaign of February-March 1943 and in Tunisia, 6 May 1943, at pp. 282, 286-286, 289-290, in addition to his general discussion of a multiple option strategy.
2. By "uncoordinated" I mean that the analytic inferences as to the underlying intentions were not the product of all-channels intelligence analysis. One assumes that such "uncoordinated" analyses would be widely distributed among various intelligence consumers, but this constitutes distribution, not "coordination." On the evils of disjointed, compartmented analysis, see Carl Kaysen, *Notes on Strategic Air Intelligence in World War II (ETO)*, R-165 (Santa Monica, Calif.: The Rand Corporation, October 1949), pp. 24-26.

3. Professor H. Wentworth Eldredge conceived of some of the more spontaneous stratagems as "seat-of-the-pants" deceptions. I have converted his usage in the cause of counter-deception analysts, who seem to rest more firmly on their seats.
4. See Barton Whaley, *Codeword BARBAROSSA* (Cambridge, Mass.: M.I.T. Press, 1973). See also *Stratagem* (1969 ed.), p. 146.
5. See sources cited in Section II, Note 6. These examples are somewhat complicated by the remarkable success of the British counter-espionage services (both the Security Service, MI-5, and Section V of the Intelligence Service, MI-6) in penetrating their German counterparts. Consequently, British deceptions operated on the German services from the outside, admittedly with cryptologic insights, and through their contacts on the inside. It is thus not surprising that Admiral Canaris, often pictured as a "hero" of the German resistance, should be portrayed by Hugh Trevor-Roper, who ran the German section of MI-6's Section V, as rather incompetent. See Trevor-Roper's portrait of the *Abwehr* chief in *The Philby Affair*.
6. Whaley, *Stratagem* (1969 ed.), p. 230. The five sets of fake plans swallowed whole involved Whaley's cases A6 (Gaza), A8 (St. Mihiel), A38 (North Africa, TORCH), A53 (Bavarian Redoubt), and B27 (Alam Halfa). The four sets of genuine plans that were disregarded involved Whaley's cases A10 (Warsaw), A20 (Belgium), A21 (France), and A28 (USSR, BARBAROSSA). The only genuine plan accepted as such involved Whaley's case A34 (German summer offensive, Russia, 1942, BLAU). One Soviet account of an NKGB penetration of German intelligence in World War II, Vadim Kozhevnikov's *Shchit i Mech* [Shield and Sword] (Moskva: Sovetskiy Pisatel, 1965), translated in JPRS 56046 (19 May 1972), V. II, p. 114, claims that the German war plan captured at Mechelen-sur-Meuse in January 1940 was a deception plan, not the genuine plan that Whaley claims it was. The German attack was postponed after compromise of this document and temporary military alerts in the West, but the attack on May 10, 1940, achieved substantial surprise.
7. Calculating the binomial distribution of 10 choices at a time, with the probability of success, $p=0.5$, yields the following random distribution:

R, Number of Correct Predictions *pR* Successful Predictions ($p=0.5$)

0 of 10	1/1,024 = .001
1 of 10	10/1,024 = .010
2 of 10	45/1,024 = .044
3 of 10	120/1,024 = .117
4 of 10	210/1,024 = .205
5 of 10	252/1,024 = .246
6 of 10	210/1,024 = .205
7 of 10	120/1,024 = .117
8 of 10	45/1,024 = .044
9 of 10	10/1,024 = .010
10 of 10	1/1,024 = .001

Probability of correctly predicting 0 or 1 of 10 = 0.011

Probability of correctly predicting 2 or more of 10 = 0.989

Source: Hubert M. Blalock, Jr., *Social Statistics* (New York: McGraw-Hill, 1960), pp. 117-118.

8. Carl Kayser has noted "the vital importance of not attributing to an intelligence source credibility in respect to information which the source cannot reasonably be expected to possess. This is, of course, an obvious remark, but its importance was not often appreciated in World War II." *Notes on Strategic Air Intelligence in World War II (ETO)*, p. 20.
9. F. M. Cornford, in *Microcosmographia Academica* (London: Bowes & Bowes, 1953).
10. Personal Communication from H. Wentworth Eldredge.
11. *Ibid.*
12. Arnold L. Horelick and Myron Rush, *Strategic Power and Soviet Foreign Policy* (Chicago: University of Chicago Press, 1966), Pt. 2, "The Politics of Soviet Missile Deception, 1957-1961," pp. 35-102.
13. "The Government of the Soviet Union authorized TASS to state that there is no need for the Soviet Union to shift its weapons... to any other country, for instance Cuba. Our nuclear weapons are so powerful in their explosive force and the Soviet Union has such powerful rockets to carry these nuclear warheads, that there is no need to search for sites for them beyond the boundaries of the Soviet Union." TASS, September 11, 1962, in Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston: Little, Brown, 1971), p. 40.
14. Anthony Lake, "Lying Around Washington: The Foreign Policy Bureaucracy (2)," *Foreign Policy*, n. 2 (Spring 1971), pp. 92-93. See also David Wise, *The Politics of Lying* (New York: Random House, 1973).
15. Allison, *The Essence of Decision*, pp. 40-41, 135, discusses the apparent ignorance of ambassadors whose protestations of innocence further deception plans. In the Cuban missile crisis, assurances of Foreign Minister Gromyko were not interpreted as acts of an ignorant official. Those of Ambassador Dobrynin were. However, in the "standstill ceasefire" understanding of 1970, it was reported that "U.S. officials... [branded Ambassador Dobrynin's] assurances to [Department of] State Secretary Rogers that the Russians would not move their missiles in the Suez as a 'deliberate lie.'" *Newsweek* (September 28, 1970), p. 17.
16. Whaley, *Stratagem* (1969), pp. 147-149, advocates the collection and analysis of the "signals of stratagem." See also Harris, *Intelligence and National Security*.
17. The best general account of Allied deception operations in the Italian campaign is W.G.F. Jackson, *The Battle for Italy* (London and New York: Harper & Row, 1967), esp. pp. 25-26, 44, 46-48, 51 (Sicily); 110-111 (Salerno); 133 (Volturno); 146-147 (Sangro); 155 (Monte Camino); 173, 182-183 (Anzio); 177, 181 (Garigliano); 204-207, 222, 225-229, 230, 236-237 (DIADEM); 266, 268 (Gothic Line); 299-300, 304-305 (Po Valley). See also Whaley's *Stratagem*, Cases A38, A41, A44, B31, B33, B38, and B41, for a fuller account of the stratagems but less detail of their context.
18. R. V. Jones, "Irony as a Phenomenon in Natural Science and Human Affairs," *Chemistry & Industry* (1968), p. 470. See also pp. 472-474 for unanticipated revelations.
19. Personal Communication of H. Wentworth Eldredge.
20. See O. T. Campbell, "Pattern Matching as an Essential in Distal Knowing."

- in K. R. Hammond, ed., *The Psychology of Egon Brunswick* (New York: Holt, 1966), pp. 81-106.
21. R. V. Jones, "The Theory of Practical Joking—Its Relevance to Physics," p. 195.
 22. Klaus Knorr, *Foreign Intelligence and the Social Sciences*, Research Monograph No. 17 (Princeton, N.J.: Center for International Studies, June 1, 1964), p. 23.
 23. Benno Wasserman, "The Failure of Intelligence Prediction," *Political Studies*, Vol. 8 (June 1960), 156-169. This study is marred by its failure to probe for details of the cases cited and glibly analyzed in footnotes. Wasserman misses the presence of stratagem in most of his cases, many of which are better handled in Whaley's *Stratagem*.
 24. See the sources on cognitive dissonance and attitude change cited in Section II, Note 55.
 25. R. V. Jones, "Scientific Intelligence," *Journal of the Royal United Services Institution*, Vol. 92 (1947), p. 354.
 26. Kaysen, *Notes on Strategic Air Intelligence in World War II (ETO)*, p. 25.
 27. M. Alpert and H. Raiffa, "A Progress Report on the Training of Probability Assessors," unpublished note, August 28, 1969; N. C. Dalkey and B. Brown, *Comparison of Group Judgment Techniques with Short-Range Predictions and Almanac Questions*, R-678-ARPA. The Rand Corporation, May 1971; Thomas A. Brown, *An Experiment in Probabilistic Forecasting*, R-944-ARPA, The Rand Corporation, May 1973.
 28. Ward Edwards, *Nonconservative Probabilistic Information Processing Systems*, Report ESD-TR-66-404 (Ann Arbor, Mich.: Institute of Science and Technology, University of Michigan, December 1966). Andrew W. Marshall brought this and related studies to my attention.
 29. The shifting conditional probability evaluation (or "tagging") of intelligence sources and intelligence contents would probably require computer facilities, if only to keep track of both source and contents evaluations and to adjust confidence levels in the light of post mortems or special intelligence considered highly reliable. This approach should be contrasted with three other static evaluation systems: the traditional A1 to E6 source-content rating system, the abandonment of quantitative evaluation in favor of a fixed verbal judgment, and the weighted "magnitude estimation scaling" approach. On the last-mentioned method see T. Meeland and R. F. Rhyne, *A Confidence Scale for Intelligence Reports: An Application of Magnitude Estimation Scaling*, SRI Technical Note RSSC-TN 4923-31 (Menlo Park, Calif.: Stanford Research Institute, June 1967). The computer-aided Bayesian approach has the advantage of freeing the analytic data base from the vulnerabilities of earlier preconceptions.
 30. Amrom H. Katz, personal communication.
 31. Masterman, *The Double-Cross System*, p. 46.
 32. *Ibid.*, p. 34.
 33. This technique is suggested by Andrew W. Marshall. Sequential analysis can both identify shifting channel exploitation and flag perceptual patterns that might not otherwise appear suspicious if analyzed in small pieces over an

extended period. In this connection, note Robert Jervis' conclusions derived from the literature on attitudinal change:

"Actors can more easily assimilate into their established image of another actor information contradicting that image if the information is transmitted and considered bit by bit than if it all comes at once. . . . When the information arrives in a block, the contradiction between it and the prevailing view is apt to be much clearer," Robert Jervis, "Hypotheses on Misperception," *World Politics*, v. 20 (April 1968), pp. 465-466.

34. Masterman, *The Double-Cross System*, p. 164.
35. Delmer, *The Counterfeit Spy* p. 25.
36. Jones, "The Theory of Practical Joking," p. 195.
37. *Ibid.*, pp. 195-196.
38. Richard A. Blum, *Emergency Operations Procedures in a Civil Defense Situation* (Menlo Park, California: Stanford Research Institute, December 1955), p. 23.
39. *Ibid.*, p. 40.
40. Personal Communication of H. Wentworth Eldredge. See also Amrom H. Katz's warning to "count on nothing, and especially count not on intentions which can change faster than capabilities can be developed." Letter to the Editor, *Air Force/Space Digest* (September 1963).
41. Personal Communication of H. Wentworth Eldredge. On the vulnerability of intelligence to emotion when fused with political interest, see Irving, *The Mare's Nest*; and R. V. Jones, "Emotion, Science, and the Bomber Offensive," *The Listener* (November 30, 1961).
42. On DELPHI technique and its development, see The Rand Corporation, *A Bibliography of Selected RAND Publications: Long-Range Forecasting and Future Computer Technology*, SB-1019 (Santa Monica, Calif.: The Rand Corporation, February 1972), and especially Norman C. Dalkey, *The DELPHI Method: An Experimental Study of Group Opinion*, RM-5888-PR (Santa Monica, Calif.: The Rand Corporation, June 1969).
43. Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper, 2d. ed., 1960), quoted in Eugene J. Webb, "Individual and Organizational Forces Influencing the Interpretation of Indicators," MS, April 1969, p. 12.
44. Donald T. Campbell, "Systematic Error on the Part of Human Links in Communication Systems," *Information and Control*, I (1958), pp. 349-350; J. B. Juhasz and T. R. Sarbin, "On the false alarm metaphor in psychophysics," *Psychological Record*, Vol. 16 (1966), pp. 322-327; M. D. Vernon, ed., *Experiments in Visual Perception* (Harmondsworth, Penguin, 1966), ch. 5. Early "cues" may trigger a series of seemingly independent expectations; when 22 witnesses identified the wrong individual in an English criminal case, the real criminal being discovered years later, or where in a U.S. case involving forgeries attributed to one person, 30 witnesses attributed the forgeries to a person who was acquitted upon proof that he was in prison at the time of at least one forgery. See Patrick Wall, *Eye-Witness Identification* (Springfield, Illinois: Thomas, 1965), p. 12. In another case, the police replicated a hunting accident in which a hunter was mistaken for a deer. The police, at the same distance, could tell that the figure was that of a man, not a deer. But "the hunters, expecting to see a deer, 'saw' a deer; the police expected to see a man and

- therefore 'saw' a man." D. S. Greer, "Anything but the Truth? The Reliability of Testimony in Criminal Trials," *British Journal of Criminology*, Vol. 11 (April 1971), p. 143. Expectation of an unidentified "sane" applicant at a mental hospital led to substantial reductions in abnormal admission diagnoses, and unidentified "normal" admittees were treated as if they were abnormal. D. L. Rosenhan, "On Being Sane in Insane Places," *Science*, Vol. 179 (January 19, 1973), pp. 250-257.
45. Vadim Kozhevnikov, *Shchit i Mech* [Shield and Sword], Moskva: Sovetskiy Pisatel, 1965, translated as JPRS 56046, 19 May 1972, pp. 102-103 (emphasis added).
 46. H. L. Hollingsworth, "The inaccuracy of movement with special reference to constant errors," *Arch. Psychology*, n. 13 (1909), and citations in Campbell, "Systematic Error on the Part of Human Links in Communications Systems," pp. 345-346.
 47. "The output of the human transmission and memory unit, no matter what degree of information loss, is apt to appear to a later human unit as intelligible and usable as a base of action. This appearance of plausibility and comprehensibility in the output can accompany a total loss of the input message. Human beings as transmission units have this characteristic of rationalizing, of filling gaps, of providing outputs that lead to action rather than paralysis." Campbell, "Systematic Error on the Part of Human Links in Communications Systems," p. 341.
 48. Anna Freud, *The Ego and the Mechanisms of Defence* (1936), translated by Cecil Baines (New York: International Universities Press, 1946).
 49. Hannah Arendt, "Lying in Politics: Reflections on the Pentagon Papers," *New York Review of Books*, Vol. 17, No. 8, November 18, 1971, pp. 30-39; in Hannah Arendt, *Lying in Politics, Civil Disobedience, on Violence, Thoughts on Politics and Revolution* (New York: Harcourt Brace, Jovanovich, 1972).
 50. Also see Campbell, note 47 above.
 51. Richard H. Blum, *Deceivers and Deceived* (Springfield, Illinois: Thomas, 1972), p. 42.
 52. J. W. von Goethe, "Die Nature," (1782), in *Schriften über die Natur* (Leipzig, A. Kroner Verlag, n.d.).
 53. James W. Julian, C. Robert Regula, and Edwin P. Hollander, "Effects of Prior Agreement by Others on Task Confidence and Conformity," *Journal of Personality & Social Psychology* 9 (1968), pp. 171-178.
 54. Charles A. Kiesler et al., *The Psychology of Commitment: Experiments Linking Behavior to Belief* (New York & London: Academic Press, 1971), chs. 4 and 5.
 55. Siegfried Streufert and Carl H. Castore, "Effects of Increasing Success and Failure on Perceived Information Quality," *Psychonomic Science* 11 (1968), pp. 63-64.
 56. Alexander L. George, "The Case for Multiple Advocacy in Making Foreign Policy," *The American Political Science Review*, Vol. 66, No. 3 (September 1972), pp. 751-785.
 57. See Seyom Brown, Paul Y. Hammond, William M. Jones, and Robert L. Patrick, *An Information System for the National Security Community*, RM-6054 (The Rand Corporation, Santa Monica), August 1969; and Bruce F.

Goeller, Paul Y. Hammond, John E. Koehler, and William B. Quandt *Information System Applications for a High Level Staff*, R-840 (The Rand Corporation, Santa Monica), August 1972.

58. This tendency is especially noteworthy with established espionage agents, whose case officers defend their reliability. Masterman remarks on the difficulty of "blowing" a well-established agent: "The fact that we have so many facts and details under review makes it obvious to us [deception controllers] that a certain message if sent ought to 'blow' an agent. But in truth it probably or almost certainly will not." *The Double-Cross System*, p. 57. "In short, it was extremely, almost fantastically difficult to 'blow' a well-established agent." *Ibid.*, p. 58. On departmental perspectives, see Dearborn and Simon, "Selective Perception: A Note on the Departmental Identification of Executives," *Sociometry*, Vol. 21 (June 1958), pp. 140-144.
59. In this connection, note Carl Kaysen's judgment, derived from his World War II experience: "If intelligence from certain sources or intelligence derived by certain methods is considered supersecret and superior to the general run of intelligence, it tends to penetrate upward to command levels immediately without passing through the machinery of shirt-sleeve intelligence analysis. Intelligence items of this character can be falsely interpreted and wrongly evaluated by commanders and high-ranking staff officers who do not themselves possess the necessary background possessed by the whole intelligence staff as a unit." *Notes on Strategic Air Intelligence in World War II (ETO)*, R-165 (The Rand Corporation, Santa Monica, California), October 1949, p. 22.
60. Any information processing system involves selectivity choices, whether recognized or not. See "The 'Gate Keeper': A Case Study in the Selection of News," *Journalism Quarterly*, Vol. 27 (Fall 1950), pp. 383-390. On overcollection see Amrom H. Katz, *Some Ramblings and Musings on Tactical Reconnaissance*, P-2722, The Rand Corporation, March 1963, in *Air Force/Space Digest* (August 1963); and Patrick J. McGarvey, *CIA: The Myth and the Madness* (New York: Saturday Review Press, 1972), pp. 4, 14, 20, 23-24, 27, 115, 213-214, and 225-227. McGarvey quotes Gilbert Fitzhugh, Chairman of a Blue Ribbon panel on the Department of Defense in July 1970: "I believe that the Pentagon suffers from too much intelligence. They can't use what they get because there is so much collected" (p. 24). The availability of digital computers postpones the necessity of remedying excess collection by providing increased processing capabilities. Edwin W. Paxson observes, "Like scientific journals, command and control requirements are exponentiating. And neither scholars nor generals can encompass the plethora of information. We shouldn't forget that a plethora is a morbid condition." *Computers and National Security*, P-4728, The Rand Corporation, January 1972, p. 14. The data processing requirements of intelligence are second only to those of logistics, according to Paxson. Special surveillance systems may generate exponential increases in data processing requirements. Major General G. T. Gould, Jr., referred to annual USAF data traffic increases of about 11 percent, noting, "This figure... [does] not include the data-like requirements related to imagery or special sensor-generated systems. Systems of these types require separate analysis. . . . On a fulltime basis, one of these systems, for example, could generate ten times more data than all data systems are generating

- today." "Computers and Communications in the Information Age," *Air University Review*, Vol. 21 (May-June 1970), p. 11. Ambassador John W. Tuthill writes that recruitment of intelligence agents "can become a kind of infection in the intelligence services." "Operation TOPSY," *Foreign Policy*, n. 8 (Fall 1972), p. 74.
61. Phillip V. Tobias, *The Brain in Hominid Evolution* (New York: Columbia University Press, 1971).
 62. J. A. Swets, "Detection Theory and Psychophysics: A Review," *Psychometrika*, Vol. 26 (1961), pp. 49-63.
 63. A Bayesian model for the assessment of pattern verification capabilities on the basis of *a priori* probabilities is presented by R. C. Dixon and P. E. Boudreau, in "Mathematical Model for Pattern Verification," *IBM Journal of Research and Development*, Vol. 13 (November 1969), pp. 717-721.
 64. Amrom H. Katz, *Hiders and Finders: An Approach to Evasion and Inspection Technology*, P-2432 (Santa Monica, Calif.: The Rand Corporation), April 26, 1961.
 65. "Verification Task Cited at Arms Talk," *The New York Times* (July 17, 1970), p. 3. Midwest Research Institute's summary report, *Verification Aspects of a Chemical and Biological Weapons Arms Control Agreement*, ACDA/ST-150 (Kansas City, Mo.: Midwest Research Institute, May 29, 1969), Vol. 1, p. 20, observes: "Regardless of the type of evasive tactics which may be practiced in either CW or BW activity, the estimated inspection effectiveness is high for on-site access, medium for plant-perimeter access, and low to negligible for extra-territorial access levels. This indicates that inspections conducted solely at locations outside the border of a treaty nation will not provide the necessary assurance of compliance with a CW arms-control agreement." But if deceptive measures degrade the supposedly "high" effectiveness of on-site inspections, physical access may not be a panacea.
 66. Ronald Hingley, "Kremlinological Inexactitudes," *Problems of Communism*, 11 (March-April 1962); revised and republished in *Soviet Analyst*, 1 (August 3, 1972), pp. 2-5; (August 17, 1972), pp. 2-5; (August 31, 1972), pp. 3-6. Arnold L. Horelick brought this work to my attention.
 67. *Ibid.*, Pt. 1 (August 3, 1972), p. 3, citing Leonid Andreyev, "Pan-Russian Vranya"
 68. *Ibid.*, p. 4, citing Dostoyevsky, "A Word or Two about Vranya"
 69. Leites, *The Operational Code of the Politburo* p. 48, quoting V. I. Lenin, *Selected Works*, 9, 28.
 70. *Ibid.*, quoting V. I. Lenin, *Sochineniya*, 3d ed., 26, 180.
 71. See A. Khatskevich, *Soldat Velikikh Boyev* [A Soldier of Great Battles] (Minsk: Academy of Sciences Byelorussian SSR, 1961), especially pp. 258-259.
 72. See Nathan Leites, *A Study of Bolshevism* (Glencoe, Illinois: The Free Press, 1953), pp. 123-124, and ch. 13, pp. 324-340.
 73. *Ibid.*, p. 123.
 74. Bittman, *The Deception Game*; U.S. Senate, Committee on the Judiciary, Internal Security Subcommittee, *Abuse of Psychiatry for Political Repression in the Soviet Union, Hearings, September 26, 1971, 92nd Congress, 2d Session*, Washington, D.C., 1972.
 75. Arthur Koestler, *Darkness at Noon*, New York, 1968, p. 47, quoted in Paul

- Cocks, *Controlling Communist Bureaucracy: Ethics, Rationality, and Terror* (Cambridge, Massachusetts: Russian Research Center, n.d.), Vol. 1, p. 68.
76. "Two Fragments," in Edmund Stillman (ed.), *Bitter Harvest: The Intellectual Revolt Behind the Iron Curtain* (New York, 1959), p. 137, quoted in Cocks, *Controlling Communist Bureaucracy*.
 77. K. Urbe, *Russian Patterns of Reaction to the German Air Force*, USAF Historical Study No. 176, Historical Division, Hq. USAREUR, July 1956, pp. 49-65, 68 *et seq.*
 78. *Ibid.*, p. 68.
 79. A Special Operations Staff for cover and deception planning is cited in Maj. General V. Matsulenko, "Tactical Camouflage of Soviet Troops in the First and Second Periods of the War," *Voyenno-Istoricheskii zhurnal* [in Russian], No. 1 (January 1972), pp. 11-20. By 25 October 1942 the Supreme Command in Moscow was issuing operational deception orders to Don and Southwest Front commanders.
 80. V. Semichastnyy, "Sovetskiye Chekisty v Velikoy Otechestvennoy Voynе," *Pravda* (May 7, 1965), p. 4; translated in *Soviet Intelligence and Security Operations (Collection of Articles)*, JPRS 55623 (4 April 1972), p. 107.
 81. Major General A. P. Zakharchenko, "Stratagem in Modern Combat," [in Russian], *Vestnik Protivovozdushnoi Oborony* [Anti-Air Defense (PVO) Herald], n. 9 (September 1970), pp. 7-10; translation courtesy of Lilita I. Dzirkals.
 82. In his Order of the Day of February 23, 1942, Stalin claimed: "the issue of the war will not be decided by such a secondary factor as suddenness, but by such permanently operating factors as the strength of the rear, the morale of the army, the quantity and quality of the divisions, the armament of the army, the organizational abilities of the army commanders." Impediments to doctrinal innovation through 1953, and through the "revitalizing influence" of the 20th Party Congress in 1956 are noted in Major General S. N. Kozlov *et al.*, *On Soviet Military Science*, p. 209, and Colonel A. A. Stokov, "Military Art in the Postwar Period," *Istoriia Voennoy Iskusstva* [History of Military Art], Voenizdat, Moscow, 1966, ch. 17.
 83. "Changes in the Content and Nature of Modern Combat," *Voennyi Vestnik* (October 1966), translated in William R. Kintner and Harriet Fast Scott, *The Nuclear Revolution in Soviet Military Affairs*, Oklahoma University Press, Norman, 1968, p. 373.
 84. Fred C. Iklé, "Can Nuclear Deterrence Last Out the Century?" *Foreign Affairs* 51 (January 1973), p. 275; R. I. Widder, "Launch on Warning," *Air University Review* 21 (January-February 1970).
 85. See *The Forrestal Diaries* (New York: Viking Press, 1950), Entry for March 5, 1948, *et seq.*; Eberstadt Task Force Report, *Hoover Commission Report, Appendix G* (Washington D.C., 1948), p. 4; and press commentaries, especially: Drew Pearson, "War Scare Arose from Clay's Data," *The Washington Post* (December 29, 1948); Jim G. Lucas, "G-2 Boner Almost Got U.S. in War," *The Washington News* (December 16, 1948); and John G. Norris, "Truman's Cut-Back Decision: Economic Phases of Cold War a Factor in Military Program," *The Washington Post* (January 3, 1949), pp. A1, A4.
 86. "Pulkeveža Abela paligs Gordons Lonsdeils," [Gordon Lonsdale, Deputy of Colonel Abel] *Liesma* [Riga, in Latvian] n. 5 (May 1967), pp. 21, 22; also see *Leninskaya Smena* (February 18, 19, 21, 22, 1967).

87. David Rees, *Korea: The Limited War*, Penguin Books, Baltimore, 1970; ch. 8. Cf. Allen S. Whitting, *China Crosses the Yalu* (New York: Macmillan, 1960).
88. The US-USSR Treaty on the Limitation of Antiballistic Missile Systems signed in Moscow on May 26, 1972, states at Article XII, para. 2: "Each party undertakes not to interfere with the national technical means of verification of the other party operating in accordance with Paragraph 1 of this article." Article XII, para. 3, provides: "Each party undertakes not to use deliberate concealment measures which impede verification of national technical means of compliance with the provisions of the treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices." Under Article XIII, para. 1(C), the parties shall "consider questions involving unintended interference with a national technical means of verification." See also Article V, paras. 2 and 3 of the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms, executed on May 26, 1972, and containing identical provisions on noninterference with national means of verification, and the prohibition of concealment measures that impede verification of strategic missiles. The SALT Interim Agreement, also signed on May 26, 1972, was approved by the U.S. Congress in House Joint Resolution 122 on September 30, 1972. See Public Law 92-448, 86 Stat. 746 (1972), and the text of the agreements in *Department of State Bulletin* 66 (June 26, 1972), pp. 918-921.
89. Whaley, *Stratagem* (1969), Case A58, pp. A476-A478.
90. Horelick and Rush, *Strategic Power and Soviet Foreign Policy*; Roy E. Licklider, "The Missile Gap Controversy," *Political Science Quarterly*, 85 (December 1970), pp. 600-615.
91. A. S. Becker and A. L. Horelick, *Soviet Policy in the Middle East*, The Rand Corporation, R-504-FF (Santa Monica, California: September 1970), pp. 30-31.
92. Nadav Safran, *From War to War*, (New York: Pegasus Press, 1969), pp. 115-118, citing Muhammad Hasanayn Haykal in *Al Ahram* (January 22, 1965).
93. See especially para. 2(a) of U.N. General Assembly Resolution 1884 (XVIII).
94. In May 1965 Syrian and Soviet sources suggested to Nasser that the Israelis were preparing to invade Syria. *Radio Cairo*, August 30, 1965. In 1965, Major General Agavants "attached great importance to the situation in Syria," and noted that among the disinformation assets in Syria the KGB had influence on two newspapers. Bittman, *The Deception Game*, p. 158. In support of the faction-torn Ba'athist clients then in power in Damascus, the KGB mounted a disinformation campaign in the fall of 1966 respecting an Israeli-Jordanian-CIA "threat" to Syria. On October 12, 1966 a Soviet Government note claimed nonexistent "concentration of Israeli troops can again be discovered along the Syrian frontiers." See also Ambassador Fedorenko's charges of an Israeli attack plan in the U.N. Security Council, October 14, 1966.
95. In early May 1967 Syrian and Soviet intelligence received information on Israeli contingency plans to suppress *Al Fatah* and other terrorist operations from Syrian territory. (Nadav Safran, *From War to War*, Pegasus, New York, 1969, p. 277.) Syrian military intelligence Front HQ added disinformation on Israeli mobilization plans for a ground attack into Syria; other disinformation may thereafter have originated in Damascus, where the Ba'athist regime sought justification for secret police raids on dissidents in the wake of reli-

gious turmoil. "There was almost certainly no truth in Russian reports of large Israel troop concentrations at this time." (Willie Morris, *How the Arab/Israel War of June, 1967 Happened*, Center for International Affairs, Harvard University, Cambridge, 1968, p. 43.) The first alarming report to Nasser, perhaps claiming mobilization of 18 Israeli divisions, was attributed by Nasser to "our Syrian brothers," not the Russians. (Radio Cairo, July 23, 1967.) "On May 8, two Syrian intelligence officers arrived in Cairo and informed President Nasser of an impending Israeli attack against Damascus. Information from troop movements was corroborated by Lebanese sources." (Sharabi, "Prelude to War..." (1970), p. 49.) By May 10, 1967, Nasser is reported to have received intelligence on the massing of Israeli troops on the Syrian border from Syrian intelligence, Soviet intelligence, Libyan intelligence, and Egyptian intelligence. (Eric Rouleau *et al.*, *Israel et les arabes, le 3e combat*, Seuil, Paris, 1967, p. 73.) Allegedly based upon decryption of cipher traffic, on May 12, 1967 the Soviet Ambassador in Cairo reported to Moscow, "Today, we passed on to the Egyptian authorities information concerning the massing of Israeli troops on the northern frontier for a surprise attack on Syria. We have advised the U.A.R. government to take the necessary steps." (Michel Bar-Zohar, *Embassies in Crisis*, Englewood Cliffs, New Jersey: Prentice-Hall, 1970, p. 1.) The Soviet warning of May 12th may have alleged that 11-15 Israeli brigades were mobilizing on the Syrian border, for an attack between 0400 and 0500 on 17 May 1967. A Syrian government communiqué on May 12th proclaimed an Israeli plot, aided by Jordanian mercenaries and agents within Syria. On May 13th Syrian Defense Minister Hafiz al Asad provided Egyptian Defense Minister Amer similar warnings of an attack early on the 17th, with Israel's Independence Day on May 15th to be used as a "cover" for mobilization. (Walter Laqueur, *The Road to Jerusalem, 1967*, New York: Macmillan, 1967, pp. 76-77.) This Syrian warning, on the heels of a Soviet warning that may have misrepresented a captured Israeli contingency plan as an approved governmental decision, led to contingent Egyptian war planning on May 13th. Some Soviet officials believed that the "Defense and Policy Committee of the Knesset on May 9 granted the [Israeli] government powers for military operations against Syria. Israel troops moved to the frontier of Syria were alerted. Mobilization was proclaimed in the country [sic]." (Statement of the Government of the USSR, May 23, 1967, in *The New York Times*, May 24, 1967, p. 17.) An Egyptian delegation in Moscow was notified that "there was a premeditated plan" to invade Syria. (Radio Cairo, June 9 and July 23, 1967.) Those elements of Soviet warnings to the U.A.R. that included statements about Israeli mobilizations along the Syrian border were either the sole result of Syrian disinformation or the results of joint Syrian-Soviet disinformation, more likely the latter if overhead reconnaissance data were at hand. On May 13-14, 1967 the Egyptian government sought to deter an Israeli invasion of Syria by preemptive mobilization and preparedness to execute the 1966-approved war plans. On May 14th, a delegation under the Egyptian Chief of Staff General Fawzi was dispatched to Damascus, both to exchange intelligence and to coordinate military operations. At 1430 hours on May 14th, all Egyptian armed forces were placed on alert (*al Ahram*, Cairo, May 17, 1967) and two divisions were readied for movement into the Sinai.

Anticipating a threat to passage through the Straits of Tiran, and not daring to allow a preventive Egyptian execution of the 1966 war plans, known to Israeli intelligence, the Israelis executed preliminary mobilization measures the following day, May 15th. (E.g., Bar-Zohar, *Embassies in Crisis*, p. 21.) Before returning from Damascus on May 15, General Fawzi cabled respecting the lack of confirmation of Israeli mobilization on the Syrian border, that the Russians "must have been having hallucinations." (*al Ahram*, Cairo, February 25, 1968.) Nonetheless, prior intelligence and reactions had set in train circumstances requiring a show of support for the Syrian brethren. U.A.R. armed forces were placed on emergency status on May 16th, and troops moved into Sinai. Later that day General Fawzi handed the United Nations Emergency Force (UNEF) Commander a demand for the withdrawal "immediately" of all U.N. troops from the border. Since as late as May 20th Egyptian officers were told that it would not be necessary to close the Straits of Tiran, it appears that other miscalculations resulted. When the U.N. Secretary-General indicated that a request to him would be necessary but sufficient to withdraw all UNEF forces from Egyptian territory, and such a request was submitted on May 18th, Israeli General Dayan told Defense Ministry colleagues, "this means war," predicting both closure of the Straits and guerrilla activities along the Egyptian front. Thereafter, Israeli war mobilization and deception planning proceeded apace, subject to cancellation in event of a political accord. Nasser announced closure of the Straits of Tiran on May 22. The formal Israeli decision for war came on June 3, 1967, and the attack commenced on June 5, 1967. Thus, the role of Soviet disinformation appears to have been significant in conjunction with unanticipated actions and miscalculations of other parties. (See Safran, *From War to War*, p. 275 et seq.; Walter Laqueur, *The Road to Jerusalem*, p. 71 et seq.; Michel Bar-Zohar, *Embassies in Crisis*, passim; Emery Kelen, ed., *Hammarskjöld, The Political Man*, Funk & Wagnalls, New York, 1968, ch. 37, "The Hammarskjöld Memorandum," pp. 170-177.)

96. Whaley, *Stratagem*, 1969 ed., Case A67, pp. A605-A628; Barton Whaley, "Public Diplomacy Aspects of the Soviet Invasion of Czechoslovakia in 1968," Fletcher School of Law and Diplomacy, Medford, Massachusetts, December 1, 1969, MS; Bittman, *The Deception Game*, ch. 5. The role of East German research institutes, and of Czech and Soviet conservatives, notably Vasili Bilak and Pyotr Shelest, in funneling disinformation to the Soviet Politburo in the summer of 1968 should not be discounted. See "Kremlin Official Felled After Prague Intrusion; Politburo Member Shelest Spurred Czech Invasion with False Reports, Sources Say." *Los Angeles Times*, December 26, 1972, p. A14.

97. In the first half of 1968, Soviet surface-to-air and MRBM missiles were quietly deployed in Outer Mongolia. *Los Angeles Times*, July 10, 1968; *Sing Dao Jih Pao*, Hong Kong, August 3, 1968, p. 2. These missiles were seen as a threat to Chinese nuclear facilities in Sinkiang and to industrial areas of Manchuria, and to Peking. Large-scale Red Army troop redeployments along the Sino-Mongolian border were noted. *Sing Dao Jih Pao*, Hong Kong, October 7, 1968, p. 1. Non-Han minorities in Sinkiang and Mongolia were encouraged to emigrate to Soviet-claimed territory, and dissident Chinese party officials were

believed to be in the Soviet Union. *China News Analysis*, No. 767, August 1, 1969, p. 2. Some 24 additional Chinese divisions were reportedly redeployed to the Sino-Soviet border. *Sing Dao Jih Pao*, Hong Kong, December 9, 1968, p. 3. The Political Commissar of the Sinkiang Military Region spoke openly of possible invasion by the "Soviet revisionists." *Ta Kung Pao*, Hong Kong, October 8, 1968, p. 1. And Peking condemned the invasion of Czechoslovakia. *Jen-Min Jih-pao*, Peking, August 23, 1968. Only in September 1969 did a Soviet journalist with KGB connections flaunt the Brezhnev doctrine in the China context: "The fact that China is many times larger than Czechoslovakia and might offer active resistance is, according to these Marxist theoreticians, no reason for not applying the [Brezhnev] doctrine." *The New York Times*, September 18, 1969, p. 5.

98. By May 2, 1969, "several hundred tanks, armored cars, and vehicles of Soviet forces had moved into a disputed area of Sinkiang." Peking-NCNA, June 6, 1969. A Soviet journalist with close Ministry of Defense contacts, Konstantin Simonov, raised the specter of a Sino-Soviet clash, as in 1939, i.e., at the Army level. "Thinking Aloud," *Pravda*, May 4, 1969. By May 1969 Soviet "military exercises" were viewed in Peking as a component of "anti-China war hysteria." "USSR Nuclear Blackmail Policy Doomed to Fail," Peking, NCNA International Service, June 3, 1969. Beginning in June 1969 Soviet officials undertook what were mislabeled as "discreet inquiries of at least some fellow Communist leaders, both those in power in Eastern Europe and some out of power in Western Europe, on what would be the reaction to such a Soviet strike [on Chinese nuclear facilities]." Chalmers M. Roberts reported, "It appears that the inquiries were made at the world Communist gathering in Moscow last June and later repeated at another place." "Chinese-Soviet War Rumors Worry U.S." *Los Angeles Times* (August 28, 1969), pp. 1, 27. "Discreet" inquiries respecting an attack facilitated by surprise appear designed to reach both the non-Communist press and officials in China. In case the message had not been clearly received, by late August 1969 "the question of a possible preemptive strike against China" was raised in a circular letter that Moscow "distributed to Foreign Communist parties and Eastern European governments." Harrison Salisbury, "A War of Nerves," *The New York Times* (September 18, 1969), p. 5. Appointment of a missile specialist, Colonel General V. F. Tolubko, as commander of the USSR's Far East Military District and public mention of the appointment in August 1969 added to the tension. *Krasnaya Zvezda* [Red Star], Moscow, (August 6, 1969). Chinese officials claimed by mid-August 1969 that Marshals A. A. Grechko and I. I. Yakubovskiy "openly threatened to start a nuclear war." Peking, NCNA, August 15, 1969, in Tillman Durdin, "Red China Charges Soviet Is Mobilizing," *The New York Times* (August 16, 1969), p. 4. By late August Radio Wuhan termed the U.S. and USSR "our main enemies" but "Soviet revisionism" was "the enemy who threatens us the most." Tillman Durdin, "Troop Movements in China Reported," *The New York Times* (August 30, 1969), p. 5. The nuclear scare campaign reached its last phase with a Moscow dispatch from Victor Yevgen'yevich Eui ("Victor Louis"), a symbol of the KGB, to the *London Evening News* on September 17, 1969, stating that a Russian attack on the Chinese nuclear site at Lop Nor was only "a question of strategy."

"Controversial Soviet Newsmen Hints Russians Might Launch Attack on China," *The New York Times* (September 18, 1969), p. 5.

99. Apparently with Soviet assistance, the Egyptians concealed the extent of personnel training and preparation for movement of SAM-2 batteries into the Suez Canal zone during July 1970, then executed a "crash" installation program between August 3d and August 7th. Israeli intelligence claims that at least six SAM-2 batteries were moved within 50 km. of the canal after the midnight deadline on August 7-8. Soviet technicians also moved SAM-3 batteries into the "standstill" zone shortly before the midnight deadline, and after the deadline the 3000 or so Soviet personnel and Egyptian counterparts made 40-odd SAM-3 sites and additional SAM-2 sites operational, built new dummies, and shifted the battery locations within the "standstill" zone. Cover and deception operations led to excessive Israeli estimates of new SAM-3 installations, misidentifications of ceasefire violations, and difficulties for U.S. intelligence analysts with an inadequate data base on configurations prior to the August 7-8 deadline. The evidence of Egyptian or Soviet violations after August 5th was ambiguous, even acknowledging the technicians' work which made operational additional SAM-2 and SAM-3 batteries. On October 6, 1970 Egyptian Foreign Minister Riad claimed "the missiles had already been on our territory and our men had completed their training. . . . This was a surprise. . . on the days of 3, 4, and 5 [August], including each night, we moved in all the missiles we wanted to move." Cairo-*MENA*, October 6, 1970, in Arabic, 1304 GMT. Of U.S. U-2 photos Riad stated on October 18, 1970: "These photographs, very frankly, mean nothing and they can prove nothing. We have to build alternative positions for the missiles. We have to build also what we call dummy positions. . . . And we have proof. . . that the Israelis, when they attacked six sites, four of them were dummies." ABC-TV "Issues and Answers" (October 18, 1970), excerpted in Hedrick Smith, "Egypt Spurns Suggestion of Token Missile Pullback," *The New York Times* (October 19, 1970), pp. 1, 6. See also Alfred Friendly, "Admits Error on SA-3 Charges," *Washington Post* (August 20, 1970); A. D. Horne, "Israel Spells Out Missile Claims: U.S. Says It Lacks Evidence," *Washington Post* (August 20, 1970); Peter Grose, "Israeli Says Egypt Has 50 Missile Batteries at Suez," *The New York Times* (October 27, 1970). I am indebted to William Quandt for some of these references. It is reported that a U.S. reconnaissance search satellite launched on July 22, 1970 provided a partial data base before the cease-fire. Philip J. Klass, "Keeping the nuclear peace: Spies in the Sky," *The New York Times Magazine* (September 3, 1972); that the data base was not timely is suggested by reports of "an intelligence breakdown" in which requests for aerial reconnaissance were not passed to U.S. intelligence until "almost the very hour the ceasefire was to begin," with resulting administrative, political, and weather delays. "Ultimately, U-2s and satellites began providing proof that the U.S.S.R. and U.A.R. were violating the ceasefire terms by moving more SAM-2 and SAM-3 missile sites into the stand-still zone. But the intelligence was consistently ignored for political reasons." Benjamin Welles, "H-I-S of the C.I.A." *The New York Times Magazine* (April 18, 1971), p. 41.
100. Lionel Giles, *Sun Tzu on the Art of War*, Luzac & Co., London, 1910, pp. 36-37. See also D. C. Lau, "Some Notes on the *Sun Tzu*," *Bulletin of the School of*

- Oriental and African Studies* [London], Vol. 28, Pt. 2 (1965), pp. 319-335; Brigadier General Samuel B. Griffith, *Sun Tzu*, Clarendon Press, Oxford, 1963; and Scott A. Boorman, "Deception in Chinese Strategy: Some Theoretical Notes on the *Sun-Tzu* and Game Theory," in W. Whitson, (ed.), *The Military and Political Power in China in the 1970s*, Praeger, New York, 1972.
101. Observation of Nathan Leites, in 1970.
 102. Giles, *Sun Tzu on the Art of War*, p. 29.
 103. Boorman, *supra*, 1971 ed., p. 10.
 104. *Ibid.*, p. 5.
 105. See Thomas A. Brown and Emir H. Shuford, Jr., *Communicating Uncertainty in an Intelligence System*, The Rand Corporation, R-1185-ARPA, 1973.
 106. Martin Shubik, "Does the Fittest Necessarily Survive?" in Martin Shubik (ed.), *Readings in Game Theory and Political Behavior*, Doubleday, Garden City, New York, 1954, pp. 43-46; S. G. Cole and J. L. Phillips, "The Propensity to Attack Others as a Function of the Distribution of Resources in a Three-person Game," *Psychonomic Science* 9 (1967), pp. 239-240; R. H. Willis and N. J. Long, "An Experimental Simulation of an International Truel," *Behavioral Science* 12 (1967), pp. 24-32; S. G. Cole, "An Examination of the Power-inversion Effect in Three-person Mixed-motive Games," *Journal of Personality & Social Psychology* 11 (1969), p. 50; E. A. Hartman, *Development and Test of a Model of Conflict in a Truel*, Cooperation/Conflict Research Report 71-1, Michigan State University, East Lansing, Michigan, 1971; and L. Shapley and M. Shubik, *Game Theory in Economics*, The Rand Corporation, R-904/2-NSF, January 1973, paras. 2.2 and 2.3.
 107. Mao Tse-tung, *Selected Works*, II, pp. 183-185.
 108. Warren Kuo, "CCP Wartime Secret Service and Underground Struggle," *Issues & Studies* [Taipei] Vol. 6 (August 1970), p. 58.
 109. Warren Kuo, *Analytic History of the Chinese Communist Party*, ch. 41, excerpted in *Issues & Studies* [Taipei], Vol. 7 (October 1970), p. 67.
 110. Natalie Grant, "Disinformation," *National Review, Supplement*, November 5, 1960, pp. S41-S46. This analysis also claims that the Sino-Soviet rift was more the product of Communist disinformation than a genuine schism, claims that are disputed in Donald S. Zagoria's careful study, *The Sino-Soviet Conflict, 1956-1961*, Princeton University Press, Princeton, New Jersey, 1962, esp. p. 403, Note 1.
 111. Kenneth E. Shewmaker, *Americans and Chinese Communists, 1927-1945: A Persuading Encounter*, Ithaca, New York: Cornell University Press, 1971.
 112. War History Bureau, Ministry of National Defense, Republic of China, *Military Campaigns in China: 1924-1950*, translated by Colonel William W. Whitson et al., Military History Office, MAAG, Taipei, September 1966, pp. 126-130.
 113. *Aviation Week & Space Technology*, Vol. 98 (February 12, 1973), p. 11, indicates that IRBMs were secured in West China cave silos by the year 1972; this may presage rejection of fixed-point ICBM sitings, or reliance on superhardened fixed sites.
 114. Chou En-lai, interview with D. Jankeovic, editor of *Vjennik* [Zagreb], Peking, August 31, 1971.
 115. Chin Ts'an, "The Basic Guideline for China's Revolutionary War—Study

"Problems of Strategy in China's Revolutionary War," *Red Flag* [Peking] No. 9 (September 1972), pp. 18-23.

116. Personal Communication of H. Wentworth Eldredge. The OVERLORD case is the subject of a paper Thomas C. Schelling brought to my attention: Mark Smith Thompson, "The Lure and Related Elements of Military Strategy: A Game-Theoretical Approach," B.A. thesis, Economics, Harvard College, March 3, 1968. Thompson identifies the risks of stratagemic detection and countermeasures based upon reconstructive inferences. But Thompson's economic models are more helpful than his highly incomplete historical recapitulation. Since the OVERLORD stratagems were so numerous and varied, this case involved risks of reconstructive inference far less substantial than those in many other cases. See Whaley, *Stratagem*, *passim*, and Thompson, ch. 4, pp. 25-44. Thompson misses the partial counterstratagem completely.
117. Peter Ustinov, *Romanoff and Juliet* (New York: Random House, 1958), Act II, as quoted in Whaley, *Codeword BARBAROSSA*.

IV. COUNTER-DECEPTION PLANNING IN AN ARMS CONTROL ENVIRONMENT

Before turning to the problems stratagematic success poses for arms control environments, we may wish to examine one set of arms control tasks that is indifferent to stratagem and another set that is confused by the non-exercise of deceptive capabilities. Those of us who underscore stratagematic vulnerabilities dwell upon those intelligence problems deception planners can complicate. Yet there is an array of arms control intelligence problems not involving deception: These are intelligence battles waged against the natural environment, often confusing but not intentionally deceptive. There are, for example, scientific intelligence judgments that pit man against his physical environment: Can nerve gas be safely stored in deep submersible capsules? Can waste nuclear materials from weapons manufacture be safely handled in various ways? What are the radioactive contamination risks in accidental nuclear explosions? What are the risks of inadvertent weapons or missile explosion? Nature being as inscrutable as it is, we are fortunate not to be burdened by natural stratagem.

There is also a range of strategic intelligence problems involving deceptive systems *not* intending to deceive. When a flock of geese appears on radar screens as a set of Soviet bombers, we should recognize the misidentification as a problem of *signals and noise*, not a problem of deception. Similarly, moon-bounced radar echoes tentatively identified as ICBMs may turn out to be noise, even if radar systems are otherwise used in deception programs. With foresight, not hindsight, we must be prepared to treat such problems as ones involving possible signals, sprignals, or noise, for we cannot be sure that a fleet of Soviet bombers is not trying to present radar images of geese, or that a salvo of ICBMs is being launched so as to simulate moon-bounced radar (whether our own echoes or the usual patterns of foreign moon-bounced emissions).

DECEPTION IN THE SERVICE OF ARMS CONTROL

Just because deception can degrade the performance of intelligence systems, we should not conclude that all strategic deception is detrimental to arms control. As we move from symbolically important but technically modest agreements (like the limited nuclear test ban) into more ambitious arms control measures, we will re-

quire substantial exchanges of strategic information. Further, both the Soviet and American intelligence services will tend to collect more information than they can effectively handle. Perhaps they will reach the conclusion (probably erroneous) that the best safeguard against deception is an expanded collection program. In any event, as they collect that generous quantity of data they think they need, they will incidentally acquire data they may find interesting but that may be destabilizing. They may detect some information that would yield greater advantage in a first-strike than in a second-strike, or that might allow countermeasure designs jeopardizing entire weapon systems.

In these circumstances, the selective employment of strategic deception may be mutually advantageous. Deceits of location reduce vulnerability to precision-guided attacks; deceits of direction of movement reduce vulnerability to attacks based upon discontinuous reconnaissance; deceits of number clusters heighten inefficiencies of attack allocation. But decoy programs suggesting (falsely) higher overall production—not merely false configurations of a known total—may trigger new cycles of weapons procurement, inimical to arms control interests. The mounting of selective deception programs may perpetuate or accentuate deterrence at far lower cost and with greater effectiveness than some incremental weapons systems.² For example, it has been suggested that even the sea-based missile launching systems may become vulnerable as surveillance technologies advance, and that consequently restrictions on antisubmarine warfare and ocean sanctuaries should be the subject of prior negotiation.³ But if the natural noises of the ocean are not sufficient to confuse sensor advances, then the sprignals of man ought to be, if the effort is undertaken, so as to preserve most of the undersea strategic forces from sudden destruction.

Deception can serve arms control objectives by maintaining deterrence at lower overall cost, by prolonging the immunity of existing strategic systems from surprise destruction, and by assuring that if deterrence fails the ensuing holocaust will involve the exchange of smaller levels of destruction. The uncertainties generated by deception programs are just those that should deter pressured executives who, with good reason, do not fully trust the technical judgments of their military and intelligence advisers.

Some of the same people who assume it appropriate to mount strategic deceptions in war may be reluctant to mount deceptions for arms control. If they have become victims of George Washington's cherry tree syndrome, they should re-examine their illogic.⁴

If some stratagems contribute to the stability of arms control arrangements, then a counter-deception system must be sufficiently discriminating that it can identify the approximate purposes of detected foreign stratagems. Otherwise, chief executives may be tempted by simplistic domestic pressures to abrogate agreements that remain of mutual advantage.

THE NECESSITY OF COUNTER-DECEPTION CAPABILITIES

Some readers may find it strange to introduce an argument for counter-deception capabilities with an ode to stratagem in the service of arms control. What deceit have we here? None is intended. Admittedly, it would be better for all if certain

stratagems remained undetected, but there are compelling reasons to have a counter-deception capability. It is important to have a counter-deception system that is not only clever in the detection of foreign stratagems but also sophisticated in evaluating their import.

Section II of this report provided evidence on the efficacy of deception in the furtherance of offensive military action. The Whaley data suggest that as intelligence collection accelerated (comparing World War I with World War II) there was acceleration in the incidence of surprise and the mounting of deceptions. Further, most of these stratagems served as the bodyguard of military offensives.

If one objective of arms control arrangements is a reduction of incentives for launching military offenses, then the development of counter-deception capabilities by all of the major powers (and others who would reduce their defense vulnerabilities) appears to enhance the prospects of obtaining timely "warning intelligence"—warning of impending military attack. As to surprise-dependent military attacks—to be launched only if surprise can be anticipated—the enhancement of strategic warning is a contribution to deterrence. This is no guarantee that a war could not commence in another fashion: by miscalculation; by a willingness to risk the retribution of alerted adversary forces; or by the mistaken belief that a planned attack would achieve surprise when, in fact, adversaries obtained sufficient warning to reduce the vulnerability of their strategic forces.

If an "arms race" is viewed in a social and psychological context, we may identify the depth of mutual fear, distrust, and recrimination as detrimental to that broader *détente* of which arms control is just one aspect. By restoring a measure of confidence in the predictions of the world's leading intelligence services, counter-deception capabilities should provide statesmen with a degree of reassurance. One would not expect that statesmen would come to trust the behavior of foreign governments (for they can scarcely trust other bureaus within their own governments); yet a measure of trust in the predictions of one's own intelligence services would provide the bedrock for those international commitments and reductions of tension that stabilize policies of *détente*.

Difficulties in distinguishing nuclear tests from earthquakes, for example, have delayed the extension of the limited "test ban" treaty to encompass all nuclear tests for at least three reasons. First, there has been legitimate concern that man could adapt his nuclear testing program to more fully resemble the seismic characteristics of earthquakes, thus to avoid identification of such events as clandestine tests.⁶ Second, there has been concern that unverifiable and ambiguous data might exacerbate international tensions and defense efforts, rather than contributing to a safer world. Third, those institutions that were never enthralled by the prospect of a complete nuclear test ban have more colorful arguments and political effect when verification cannot be assured.

The efficacy of strategic deception is a legitimate source of concern in strategic arms negotiations. Recognition in the SALT I ABM Treaty and Interim Agreement on Offensive Weapons of a legitimate role for "national means of verification" is a milestone in the juridical elucidation of national rights of treaty verification. But it is not enough to have a right to collect information. It is essential to be properly organized so as to make use of that information, despite the protective bodyguard of stratagem that encapsules it. So counter-deception systems may contribute to the

range of prudent strategic arms options, at least as much as particular measures of on-site verification, data from which are highly visible to deception planners.

In the present context, I shall not hazard any recommendations on the organizational characteristics of effective counter-deception systems. I shall assume the institutionalization of some counter-deception capabilities to be worthwhile, both for each national state and for the community of nations. I shall further assume that such capabilities are nationally based, designed to protect command decisions and the intelligence systems supporting those decisions. On these assumptions, I turn to problems of arms control verification as they relate to such counter-deception capabilities.

STRATAGEMATIC VULNERABILITIES IN ARMS CONTROL ENVIRONMENTS

Three characteristics of arms control environments create stratagematic hazards: (1) opportunities for establishment of verification procedures "facilitated" by one's adversary; (2) temptations to rely upon "facilitated" verification capabilities subject to deception, termination, or both, in that order; and (3) incentives to confirm reassuring trends, corresponding to the mutual advantages in arms control agreements.

SAFEGUARDING VERIFICATION SYSTEMS

Among those safeguards that might reduce but not eliminate the stratagematic vulnerabilities of verification systems are the following:

- Maintain back-up unilaterally controlled intelligence surveillance of targeted intelligence objectives, to corroborate "facilitated" data collection.
- Introduce a sophisticated counter-intelligence capability into any on-site inspection system to protect the exact configurations of the collection system from identification and exploitation by adversary stratagematists.
- Design elegant inference methods for the verification of arms control agreements, on the assumption that adversary stratagematists are unlikely to "cover" the more obtuse "indicator" channels.
- Increase the variability of verification patterns to change the configurations of both collection and inference patterns, to maximize uncertainty among adversary stratagematists.
- Increase the corroborative characteristics of collection systems, and revise source and data "ratings" systematically.
- Emphasize quality not quantity in data collection.
- Analyze detected stratagems for contextual inferences.
- Maintain special surveillance of inspection systems that may be channels for deceptive information.
- Rely more upon corroborative analytic techniques than upon on-site inspection.

tions "facilitated" by an adversary with advance warning of arrival or prior knowledge of inspection techniques.

- When on-site inspections are limited by a quota, subject all indicators of suspicious locations to rigorous counter-deception analysis as a means of reducing adversary efforts to expend a quota on "wild goose chases." Provide for no-warning reinspection needs in negotiating inspection quotas.

Aside from these specific recommendations, I refer readers to the previous discussion on strategies for the detection of deception (see Section III) and to pleas for actual field experiments involving not only "hiders" and "finders," but "hiders" who can sprinkle deceptive "clues" along with "finders" who are sophisticated readers of these "clues."

Some arms control arrangements may be of such overwhelming mutual interest or of so readily observed phenomena that we need not worry about the foibles in the verification system. As for less compelling arms control arrangements, proclamations about the wonders of intelligence technologies should give way to sober appraisals of predictive strengths and weaknesses.

THE CONTROL OF DECEPTION: IS IT POSSIBLE?

It is worth considering the asymptotic approach of foreign deception operations and internal misrepresentations undertaken by governments. Foreign deception operations are no longer limited to the exigencies of national survival in war; "communications" strategies threaten elites with relatively primitive communication systems; falsification becomes a way of life, a technique some hidden Department "D" will unleash whenever a target of opportunity appears. Not only is trust in the international system undermined but trust in the domestic policy is eroded as well. The "credibility gap" destroys reliance on inter-personal communications; it destroys reliance on one's government, it destroys reliance on intelligence about foreign governments; and perhaps it destroys reliance on human society.

What began as an aid to survival for the threatened state, when left unchecked became a threat to human society. In the late 20th century the recognition that communications could be easily manipulated threatened domestic confidence in a variety of national governments and impeded international arms controls that might have alleviated the risks of thermonuclear devastation. Although much of the arms control debate focused on the rhetoric of "inspection," it was clear that the possibilities of manipulation exceeded the grasp of "inspection" capabilities.

In the early 1950s, studies by Albert Wohlstetter and others suggested the continuing vulnerability of retaliatory forces, despite efforts to create an effective strategic bomber and early warning system. By 1969, when Whaley analyzed relationships between deception and surprise in war, many thought that strategic forces were sufficiently invulnerable, that strategic warning was not a necessary component of effective deterrence. Nevertheless, opportunities for deception had kept pace with "improvements" in intelligence systems; and if they had not threatened deterrence, they had at least required greater effort and resources for the maintenance of that deterrence. Others foresaw a future period of strategic instability, where the jeopardy of strategic warning would once again be a matter of grave concern.

In the quarter century following World War II, deception planners were largely forgotten men. But when they were remembered, it was usually in connection with a threatening international crisis. We should not blame stratagematists for conceiving of their operations as weapons in a "zero-sum" conflict: what the enemy lost was their gain, and vice versa. But peacetime, even an uneasy peace, is *not* a "zero-sum" game, and in the thermonuclear age a war between the superpowers would not be a "zero-sum" game. It is important for stratagematists to recognize that they move in a "non-zero-sum" environment, despite their traditional involvement in pure conflict situations. If stratagem is to further national and international security, then deception planners must recognize their obligation to design only responsible stratagems. The infliction of heavy costs on a foreign adversary is not, of itself, a legitimate objective unless it is rigorously related to broader objectives. Short-lived stratagematic triumphs may generate a more durable distrust, defeating broader national goals. Yet the conflicts of diverse societies involve continued opportunities for reshaping the perceptions and apparent choices of adversary-partners. Within the framework of "peaceful coexistence" there are legitimate roles for stratagem. What is required is a sophisticated appreciation of stratagematic needs and limitations. This demands the thoughtful attention of both deception planners and governmental leaders who can no longer afford to view deception as a military technique for pure conflict situations. It is one matter to urge responsibility and restraint in the use of stratagem, and another matter to expect cross-national realization of this objective.

Enhancement of counter-deception capabilities provides an alternative means of restoring integrity to transnational communications. We can still urge restraint and responsibility upon deception planners and those who guide their actions, but we need not end with verbal exhortation. We can raise the likelihood of detecting and counteracting deception by managed analytic effort.

IS *HOMO SAPIENS* A DECEPTIVE SPECIES?

Most natural species that communicate among themselves have limited their deceptive practices to occasions when survival is threatened. Human history has taken a different course, and in the 20th century national systems for the misleading of fellow men have reached new heights of efficiency. In 1967-69, Barton Whaley analyzed deception systems that functioned in time of war and found that in preying on human prejudice, preconception, wishful thinking, and the mysteries of secret service work, stratagematists misled their adversaries time and again.

Some of the "old boys" in London who excelled in these wartime endeavors were distressed by publication of Whaley's *Stratagem* in 1969; to these gentlemen, Whaley's study jeopardized the "security" of still-secret techniques of World War II. What they did not perceive was that not only were most of these techniques probably known to all the major powers and to a few others such as Israeli intelligence, but also the very techniques they wished to preserve in secret were becoming a threat to that modicum of international trust required to keep the international system functioning without recourse to nuclear war. When statesmen cannot even trust their own intelligence services, knowing how likely it is that they are being deceived,

it is difficult to enter into serious international commitments. The degree of occupational paranoia that would be required in such circumstances would be likely to create personal and international unbalance.

In the domestic arena, over the past decade, alleged "credibility gaps" have been daily noted by a watchful press. Despite the outpouring of books on the uneasy relations between press and government, there is so little empirical research that one cannot identify quantitative trends respecting deception programs aimed by a government at domestic targets. Consequently, it is not yet possible to relate either the skill or the frequency of foreign deception operations to the use of these techniques on the home front.

Despite the absence of empirical data, one can identify the spillover of stratagem into the domestic arena. First, stratagems have been mounted against foreign audiences in the hopes of influencing foreign elites; next, domestic channels are used to preserve "credibility" of deception themes aimed abroad;⁹ then, these themes have been "orchestrated" in the domestic press. Success abroad tempts efforts at home. Whether or not there are "national security" concerns, manipulations at home are often convenient.

Foreign stratagems have met with such success that there are strong incentives, for the nation and for the community of nations, to correct the imbalance in international communications that has undermined reliance on predictive instrumentalities. But is there a present incentive for the development of domestic counter-deception systems? Probably there is not, if only because the costs of deceit *within* a society have been so high as to restrain the growth of this phenomenon.¹⁰ And yet, the investigative resources of nongovernmental information systems are often limited, or impeded in states that either lack constitutional safeguards or abuse them.

In forecasting the role of stratagem in human society, can we derive any clues from the evolution of other species?

The literature on *interspecific mimicry*, or the imitation by one species of the behavior or other characteristics of another species, has its origins in the Darwinian exploration of natural selection and evolution.¹¹ The mimicking of the warning coloration or other characteristics of a model that is inedible, poisonous, dangerous or otherwise unappealing to a potential third species predator is known as *Batesian mimicry* when the mimicking species is edible by the predator. Batesian mimicry involves an aspect of deterrence and an aspect of mistaken identity, whether or not it embodies a conscious intention to deceive. A second form of mimicry, known as *Müllerian mimicry*, involves the clustering of various species forms that share common warning coloration or other obvious signals of undesirability to potential predators. In such instances, each species has its own defenses and means of advertising them, but the grouping of the various biosystems in one habitat accentuates the visibility of the warning messages and decreases risks of unwitting attack.

Batesian mimicry, then, involves the deception of enemies through false warning coloration, while Müllerian mimicry involves the education of enemies through true warning coloration. Interspecific mimicry is the subject of extensive modern investigation. Mimicry appears to play a significant role in evolution and natural selection; Batesian mimicry has permitted the perpetuation of otherwise vulnerable life forms; where inedible models have been successfully mimicked, to the extent that they are increasingly attacked by mistake, mutant forms that are distinguishable from the species that draws predatory attack may evolve. Camouflage and inter-

specific mimicry play central roles in altering the balance of life forms on this planet.¹²

From the above one may conclude that primitive forms of deception against other life forms are advantageous, as are adaptations to discriminate the mimics from the mimicked.¹³ But the experiences of biologists do not suffice to enlighten us on our subject of primary concern, deception within our own species, man against man. Most of the cases of biological mimicry that have been investigated appear to involve mimicry supportive of self-preservation, rather than mimicry supportive of predatory attack. There are, nonetheless, examples of interspecific mimicry yielding advantage to predatory attackers or to parasites of unsuspecting hosts.¹⁴

Turning to the literature on what Wickler terms *intraspecific mimicry*, akin to the deception of man against man, one finds fragmentary evidence supporting the view that intraspecific deception for purposes of attack is both uncommon and unsupportive of species preservation. If there were evidence of an organism with an advanced intraspecific communications system and a known inability to deceive, this species might be identified as highly advanced, more advanced than man. Although it has been asserted without adequate foundation that some social insects, bees in particular,¹⁵ were incapable of deceiving within the species, sophisticated search over wide ranges of communication codes among various species has as yet failed to identify a species with both the communications and memory capacity required in complex signalling and a known inability to deceive. Although the inability to deceive has not been proven, except by surmise as to organisms with primitive nervous systems, the infrequency of intraspecific deception has been noted.¹⁶ Rare instances of intraspecific deception, or instinctual misrepresentation, as the case may be, tend to involve phenomena supportive of species preservation, particularly in association with the reproductive process. The African mouth-brooding fish, *Haplochromis burtoni*, for example, uses a form of mimicry that ensures fertilization of the female eggs. The female takes her eggs, unfertilized, into her mouth. The male of the species proceeds to place dummy eggs on the substrate, which the female then takes into her mouth, in the process admitting male semen into the mouth and fertilizing the real eggs in a protected environment.¹⁷ Monkeys also use deception between the sexes, in support of species preservation.¹⁸

Is man alone in using deception in intraspecific attacks, as well as in defense? Apparently man has company. The praying mantis, and other insects of the mantid family, use camouflage in defense and deception in attack:

A mantis is never fussy about its food as long as there is enough of it. With the sole exception of ants, which it seems to shun, the mantis will eat anything it can catch, including members of its own family. All mantids are cannibals and will just as readily make a meal of one of their own kind as of some other insect. If the male does not step lively—and he apparently rarely does—the female will eat him, likely as not, right after mating. This seems a rather unromantic approach to marriage, and as the noted biologist Dr. Alexander Klots has remarked, a harsh way of making the bridegroom pay for the wedding breakfast.¹⁹

Intraspecific deception running counter to the preservation imperative is a great rarity. The rarity of the condition suggests, in itself, that no selective advantage is involved, and perhaps that this form of deception within a species is positively disadvantageous. Those who stand by the aphorism "All's fair in love and war"

might consider that what is permitted is not necessarily in the interests of species survival.

Although there may be no selective advantage for the species in virulent forms of intraspecific deception, there does appear to be comparative advantage *within* the species in favor of those who have practiced deception in war. It seems prudent for man to set about reducing the incentives to deceive his fellow man in aggressive modes, by designing counter-deception systems rather than by merely excoriating those who abuse opportunities of communication.

Methodologies and systems of counter-deception, for the detection of stratagem, for realistic forecasting in view of it, and for counter-measures where appropriate are needs of the present era. Stratagem between nations may be rendered less deadly and less likely by establishment of counter-deception systems. Concerning stratagems within societies, the watchful eyes of government and neighbors scarcely need encouragement.²⁰ Concerning domestic chicanery by governments, those societies with a vigorous press and constitutional safeguards can "vote the bums out."

As for our foreign troublemakers, however, we must learn to live with them.

NOTES TO SECTION IV

1. If nature deceives us, we suffer from what I have termed clandestinely disjointed incongruities. We may perceive incongruities, but not a malevolent effort to twist perception.
2. Sorrel Wildhorn, *The Potentialities of Deception as a Survival Aid for a Retaliatory Missile Force*, The Rand Corporation, RM-3355-PR, November 1962, suggests that deception efforts are highly cost-effective when identified U.S. missile sites have a low (≤ 25 percent) probability of surviving an attack. A recent Soviet commentary notes the relative ease of concealing rocket launch positions or nuclear storage sites and their duplication with false targets over a wide area. See Capt. N. Gordeev (Ret.), "Protivodeistvie razvedke protivnika" [Counteracting Enemy Intelligence], *Morskoi sbornik* [Naval Review] No. 10 (October 1972), pp. 31-35.
3. Richard L. Garwin, "Antisubmarine Warfare and National Security," *Scientific American*, Vol. 227, July 1972, pp. 14-25.
4. See William J. Barnds, *The Right to Know, to Withhold, and to Lie* (New York: Council on Religion and International Affairs, 1969).
5. I am inclined to agree with Charles Wolf, Jr., that the phenomena that have involved the United States and the Soviet Union in heavy defense investments over the last two decades are not accurately characterized as an "arms race" by any reasonable definition of that phrase, although they have involved armaments competition and a set of little understood interactions.
6. Gerald Wick, "Nuclear Explosion Seismology: Improvements in Detection," *Science*, Vol. 175 (March 10, 1972), pp. 1095-1097; David Davies, "Monitoring Underground Explosions," *Nature*, Vol. 241 (January 5, 1973), pp. 19-24.
7. See Section III, Note 88.

8. T. M. Franck and K. H. Gold, "Limits of Perceptual Objectivity in International Peace Observation," *Law & Contemporary Problems*, Vol. 33 (Winter 1968), pp. 183-193.
9. H. Wentworth Eldredge, "Political-Psychological Warfare," Lecture, NATO Defense College, June 18, 1962; revised as "Projecting Western Realities," *NATO Letter*, Pt. 1 (June 1963), pp. 2-7; Pt. 2 (July-August 1963), pp. 2-7.
10. But see David Wise, *The Politics of Lying* (New York: Random House, 1973).
11. H. W. Bates, "Contributions to an Insect Fauna of the Amazon Valley, Lepidoptera: Heliconidae," *Transactions Linnean Society* [London], Vol. 23 (1862), pp. 495-566; H. W. Bates, *The Naturalist on the River Amazon* (London: 1892); A. R. Wallace, "Mimicry, and Other Protective Resemblances Among Animals," *Westminster and Foreign Quarterly Review* (July 1, 1867); A. R. Wallace, *Darwinism* (London, 1889).
12. H. B. Cott, *Adaptive Coloration in Animals* (London: Methuen, 1940); Adolf Portmann, *Animal Camouflage* (Ann Arbor: University of Michigan Press, 1959); James Poling, *Animals in Disguise* (New York: W. W. Norton, 1966); Dorothy E. Shuttlesworth, *Animal Camouflage* (New York: Natural History Press, 1966); Hilda Simon, *Insect Masquerades* (New York: Viking Press, 1968); Wolfgang Wickler, *Mimicry in Plants and Animals* (London: Weidenfeld & Nicolson, 1968 ed.); Roger Caras (ed.), *Protective Coloration and Mimicry* (Richmond, Va.: Westover Pub. Co., 1972); J. v. Z. Brower, "Experimental Studies of Mimicry 4," *American Naturalist*, Vol. 44 (1960), pp. 271-282; A. D. Blest, "Longevity, palatability and natural selection in five species of New World Saturniid moth," *Nature*, Vol. 197 (1963), pp. 1183-1186; L. P. Brower, J. v. Z. Brower, and C. T. Collins, "Experimental Studies of Mimicry 7," *Zoologica*, Vol. 48 (1963), pp. 65-84; J. v. Z. Brower and L. P. Brower, "Experimental Studies in Mimicry 8," *American Naturalist*, Vol. 49 (1965), pp. 173-188; C. J. Duncan and P. M. Sheppard, "Sensory Discrimination and its Role in the Evolution of Batesian Mimicry," *Behaviour*, Vol. 24 (1965), pp. 269-282; L. P. Brower, "An Experimental Study of Selective Value of Mimicry," *Journal of Applied Ecology*, Vol. 3 (1966), p. 15; W. Wickler, "Mimicry and the Evolution of Animal Communication," *Nature*, Vol. 208 (1966), pp. 519-521; W. Wickler, "Mimicry in Tropical Fishes," *Philosophical Transactions Royal Society London, Biological Sciences*, Vol. 251 (1966), p. 473; M. G. Emsley, "Mimicry in Butterflies," *Journal of the New York Entomological Society*, Vol. 75 (1967), p. 109; A. G. Raske, "Morphological and Behavioral Mimicry among Beetles of Genus *Moneilema*," *Pan-Pacific Entomologist*, Vol. 43 (1967), p. 239; M. Rothschild, "Mimicry: The Deceptive Way of Life," *Natural History*, Vol. 76 (1967), p. 44; L. P. Brower, "Automimicry: a New Extension of Mimicry Theory," *American Zoologist*, Vol. 8 (1968), p. 745; J. M. Emlen, "Batesian Mimicry—a Preliminary Theoretical Investigation of Quantitative Aspects," *American Naturalist*, Vol. 102 (1968), p. 235; P. S. Moharir, "Mathematical Models of Polymorphic and Monomorphic Mimicry," *Journal of Scientific and Industrial Research*, Vol. 27 (1968), p. 395; R. P. Coppinger, "Effects of Experience and Novelty on Avian Feeding Behavior with Reference to Evolution of Warning Coloration in Butterflies; Reactions of Wild-Caught Adult Blue Jays to Novel Insects," *Behaviour*, Vol. 35 (1969), p. 45; R. P. Coppinger, "Information Theory—A Criticism of Its Application to Bate-

sian Mimicry," *American Naturalist*, Vol. 103 (1969), p. 551; M. Edmunds, "Polymorphism in Mimetic Butterfly *Hypolimnas misippus* in Ghana," *Heredity*, Vol. 24 (1969), p. 281; A. P. Platt, "Demonstration of Mimetic Advantage of Edible Butterflies Presented to Caged Avian Predators," *American Zoologist*, Vol. 9 (1969), p. 1062; R. E. Silberg, "Mimicry of Hymenoptera by Beetles with Unconventional Flight," *Science*, Vol. 163 (1969), p. 486; R. R. Howard, "Mimetic Relationships in Salamanders...", *American Zoologist*, Vol. 10 (1970), p. 475; G. M. Morrell and J. R. G. Turner, "Experiments on Mimicry: Response of Wild Birds to Artificial Prey," *Behaviour*, Vol. 36 (1970), p. 116; J. Reiskind, "Multiple Mimetic Forms in an Ant-Mimicking Clubionid Spider," *Science*, Vol. 169 (1970), p. 587; C. W. Rettenmeyer, "Insect Mimicry," *Annual Review of Entomology*, Vol. 15 (1970), p. 43; J. R. G. Turner, "Mimicry: A Study of Behaviour, Genetics, Ecology and Biochemistry," *Science Progress*[Oxford], Vol. 58 (1970), p. 219; M. S. Blum and D. H. Kistner, "Alarm pheromone of *lasius* (*dendro-lasius*)-*spathepus* (*Hymenoptera-formicidae*) and its possible mimicry by two species of *pella* (*coleoptera-staphylinidae*)," *Annals of the Entomological Society of America*, Vol. 64 (1971), p. 589; W. W. Benson, "Natural Selection for Mullerian Mimicry in *Heliconus-Erato* in Costa Rica," *Science*, Vol. 176 (1972), p. 936; M. S. Blum, "Alarm Pheromones of Attini; Their Phylogenetic Significance," *Journal of Insect Physiology*, Vol. 18 (1972), p. 31; D. L. T. Conn, "Genetics of Mimetic Color Polymorphism in Large Narcissus Bulb Fly," *Philosophical Transactions of the Royal Society London, Biological Sciences*, Vol. 264 (1972), p. 353; M. Ikin and J. R. G. Turner, "Experiments on Mimicry—Gestalt Perception and Evolution of Genetic Linkage," *Nature*, Vol. 239 (1972), p. 525; R. G. Lea and J. R. G. Turner, "Experiments on Mimicry Effects of a Batesian Mimic on Its Model," *Behaviour*, Vol. 42 (1972), p. 131; V. P. W. Lowe, "Distraction Display by a Woodcock with Chicks," *IBIS*, Vol. 114 (1972), pp. 106-107; B. F. J. Manly *et al.*, "Analysis of a Selective Predation Experiment," *American Naturalist*, Vol. 106 (1972), p. 719; C. Matessi and R. Cori, "Models of Population Genetics of Batesian Mimicry," *Theoretical Population Biology*, Vol. 3 (1972), p. 41; S. J. Shettlew, "Role of Novelty in Learned Avoidance of Unpalatable Prey by Domestic Chicks (*Gallus-gallus*)," *Animal Behavior*, Vol. 20 (1972), p. 29; J. R. G. Turner, "Polymorphism and Biology of Populations," *Heredity*, Vol. 29 (1972), p. 131; and D. A. S. Smith, "Batesian Mimicry between *Danaus chrysippus* and *Hypolimnas misippus* (Lepidoptera) in Tanzania," *Nature*, Vol. 242 (March 9, 1973), p. 129.

13. See Note 12, and "Animal Coloration; Jumping for Life," *Nature*, Vol. 235 (February 11, 1972), p. 312; C. H. Lindroth, "Disappearance as a Protective Factor," *Entomologica Scandinavica*, Vol. 2 (1971), pp. 41-48; V. Thompson, "Spittlebug Polymorphic for Warning Coloration," *Nature*, Vol. 242 (March 9, 1973), pp. 122-128.

14. See Hugh B. Cott, *Adaptive Coloration in Animals*, ch. 8, "Concealment in Offense," pp. 140-146; J. E. Lloyd, "Aggressive Mimicry in *Photuris*: firefly femmes fatales," *Science*, Vol. 149 (1965), pp. 653-654. Slave-Maker ants (*Formica sanguinea*) in raids on target ant colonies discharge acetates that serve as long-lasting chemical alarms simultaneously attracting the worker-slave prospects and dispersing the defender ants. Such chemical communicators

have been termed "propaganda substances." F. E. Regnier and E. O. Wilson, "Chemical Communication and 'Propaganda' in Slave-Maker Ants," *Science*, Vol. 172 (April 16, 1971), pp. 267-269. Staphylinid beetles have been studied by C. H. Seevers, "The Systematics, Evolution and Zoogeography of Staphylinid Beetles Associated with Army Ants," *Fieldiana, Zoology*, Vol. 47 (1965), pp. 137-351; and by Bert Hölldobler. Having "broken the code" of ant communications, beetles gain acceptance in ant colonies they infest. The beetle parasites secrete "appeasement" substances that halt attacking ant workers in their tracks; later the beetles generate substances mimicking ant larvae pheromones, so that worker ants carry the beetles to the ant larvae chambers where the beetles obtain food by imitating the begging movements of worker ants. This "Trojan Horse" chemical parasitology has the characteristics of multi-channel deception. Mite parasites have been studied by Carl W. Rettenmeyer, who reports the infestation of army ants by mites that have evolved phylogenetically so as to resemble various parts of the ants' bodies, to which they become attached. See *Science*, Vol. 172 (April 23, 1971), p. 406. Also see T. C. Schneirla, *Army Ants: A Study in Social Organization*, Freeman & Co., San Francisco, 1971.

15. It was once reported that the dance of scout honey bees was invariably along the appropriate axes, signifying correct locations. Robert L. Jervis, *The Logic of Images in International Relations*, Princeton University Press, Princeton, New Jersey, 1970, relied on this earlier notion. In recent years, even the fundamentals of hymenoptera communications have been challenged. See Patrick H. Welles and Adrian M. Wenner, "Do Honey Bees Have a Language?" *Nature*, Vol. 241 (January 19, 1973), pp. 171-175. There is no evidence that bees cannot lie; there is evidence that under the influence of chemical stimulants bees can misreport direction. See James L. Gould *et al.*, "Communication of Direction by the Honey Bee," *Science*, Vol. 169 (August 7, 1970), pp. 544-554. In youth and old age some bees lack the capacity to communicate. For about the first 30 days of life *Trigona* bees cannot communicate; after about 97 days, communication periods are limited. It is premature to reach judgments about inability to deceive in the mature period. See C. da Cruz-Landim and A. Ferreira, "Mandibular Gland Development and Communication in Field Bases," *Journal of Kansas Entomological Society*, Vol. 41 (1968), pp. 47-481.
16. Wolfgang Wickler, *Mimicry in Plants and Animals*, cited in Note 12, especially ch. 16, "Intraspecific mimicry," pp. 221-227.
17. *Ibid.*, pp. 221-226.
18. Wolfgang Wickler, "Socio-sexual signals and their intraspecific imitation among primates," in Desmond Morris (ed.), *Primate Ethology* (Chicago: Aldine, 1967).
19. Hilda Simon, *Insect Masquerades*, p. 21, cited in Note 12.
20. Paul C. Lunsford, "A Study of Government Inquiries into Alleged Staged News Practices of Two Television News Documentaries," Ph.D. Dissertation, Ohio State University, 1972.