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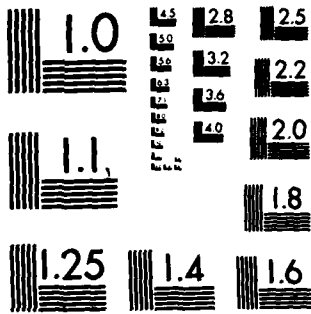
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PSYCHOLOGICAL ASPECTS OF MINE WARFARE

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PSYCHOLOGICAL ASPECTS OF MINE WARFARE

INTRODUCTION

Mine warfare has suffered a history of neglect punctuated by infrequent renewals of interest. These renewals usually are so short that they serve only to remind us that mine warfare has not died a natural death and to delude us into believing that somebody still has a handle on it. The mental checkmark in the box marked "Annual Mine Briefing" is the most predictable, and sometimes most substantive, result of a flurry of interest in mines.

Disabled ships are often cited as indicators of a battle won or lost. Not as obvious but equally decisive in the outcome of battle are all the ships that never went in harm's way, never became disabled, and never contributed to the disabling of anything else. The ships that never got to the fight and the reasons they never got there represent a factor sometimes overlooked by naval officers: the influence of *minefields* on human behavior.

The more minefields control ship movements, the greater the effectiveness of the minefield. Control results from human perceptions of potential damage and arises from that aspect of mining which is often given a solemn nod but rarely emphasized because of its slippery nature: the psychological impact of a minefield. The specific causes

of any decision are often obscure, and the decision to avoid a minefield or to risk it will be influenced by many factors. The decisionmaker's perception of the minefield is one factor.

This paper examines historical and psychological data concerning mine warfare. It then goes beyond those observations to consider how the psychological warhead in minefields can be exploited.

HISTORICAL EXAMPLES

Let's look briefly at four historical examples of the effect of mine warfare.

Haiphong, 1943

In October 1943, a single U.S. B-24 dropped three mines in Haiphong harbor. One of them sank a Japanese freighter. The next month, another B-24 planted three more mines, and another Japanese freighter was sunk. Then a Japanese convoy of ten ships refused to enter Haiphong harbor for fear of mines. After loitering outside the harbor for a few hours, the convoy headed for Hainan Island. On the way, it was detected and attacked, and six of its ships were sunk. Meanwhile, a small 30-ton ship was sunk by one of the remaining mines, and the port was closed to steel-hulled ships for the remainder of the war. When that decision was made, a maximum of three mines remained. The Japanese estimate of the remaining threat is not known, but there is little doubt that their fears were exaggerated.

Palau Atoll, 1944

On the night of 30 March 1944, aircraft from the carriers Lexington, Bunker Hill, and Hornet dropped mines at the entrances to the harbor at Palau Atoll. There were 32 Japanese ships inside the harbor, and they all remained in the harbor rather than run the mined harbor channel, even though they knew that they had been detected. Subsequent air raids thus found the ships neatly concentrated targets, and sank 23 of them. As a final touch, U.S. aircraft dropped mines inside the harbor itself. The Japanese improvised mine-clearing equipment and believed that they had done a decent job of minesweeping until the first ship underway in the channel was damaged by a mine detonation. The Japanese then abandoned Palau as a naval base.

Operation Starvation, 1945

Operation Starvation was an extensive mining campaign aimed at making the seas around Japan hazardous to Japanese shipping. The campaign started in March 1945 and included the mining of Sasebo, Kure, and Shimonoseki Strait. The Japanese altered their shipping routes markedly to avoid mined waters. Perhaps the most notable change was the detour of the battleship Yamato from the mined Shimonoseki Strait to Bungo Straits where she was sighted, attacked, and sunk before she reached Okinawa.

Late in the campaign when most of the navigable water had been mined, the Japanese sent ships through waters known to be mined and

incurred considerable losses. Their only choice at that point was to risk their ships to mines or to remain immobile and subject their people to starvation.

When alternative routes were available, the Japanese avoided minefields. After all routes were fouled with mines, the alternatives were reduced to running a minefield or not moving, and the minefield became the lesser of two evils. The U.S. realized that Japanese ships were challenging the minefields unaided, so mines laid subsequently were set with lower sensitivities so they would detonate only when a target was quite near--an almost sure kill. The goal became ship-sinking rather than deterrence.

North Vietnam, 1972

In May 1972, mines were planted in the harbors of Haiphong, Hon Gay, and Cam Phou. The first minefield consisted of 36 mines in Haiphong. These mines were dropped by aircraft under the observation (and antiaircraft fire) of the enemy. President Nixon announced that mines were in the water. Ship traffic stopped. Only a few mines had prompted the decision to stop shipping at Haiphong. Haiphong remained closed for 300 days.

PSYCHOLOGICAL THREAT

Minefields can be used most effectively to attain one primary goal--control of enemy forces afloat. If a minefield forces enemy ships

to delay, divert, or forgo the transit of water suspected of being mined, it has achieved control. Minefields achieve that goal principally through the enemy's perception of the threat they pose to his ships. Mines can sink ships and that capability makes their threat credible. But the real effect of a minefield derives from a more subtle influence—an exaggerated fear. Minefields work more on the mind than on ships. You might say similar things about other weapons, but it is especially true for minefields. In this section we explore the notion of the "psychological warhead" in a minefield.

The psychological threat from a minefield arises from the inability to know with certainty the true threat and, second, from the risk of dire consequences if the threat is underrated. Another attribute of minefields that makes them stressful is that they cannot be engaged in combat as can other enemy forces. Of course, fields can be swept if time and resources allow, but the satisfaction of fighting back is missing. Submarines, whose covert threat also operates within the psychological dimension, can be fought against, even if the engagement comes too late, as in the prosecution of a flaming datum. By contrast, the minefield lies quietly, revealing itself only in spasms. The detonation of one mine gives no assurance that the field is clear of danger and gives virtually no information about the presence of other mines. If anything, it confirms the presence of a hidden threat.

There have been experiments performed under controlled laboratory conditions which bear on the psychological threat of minefields. Although these experiments were conducted in a laboratory and did not deal directly with mine warfare, the results seem to be applicable to minefields.

One example is an experiment in which subjects were shown a slide picture of an airplane and had to decide whether the aircraft was "friend" or "foe." The test subjects were acting as sentries and understood that labelling an aircraft as "foe" would result in an order to fire on that aircraft. If the call was right, an enemy aircraft was shot down; if wrong, a friendly aircraft was shot down. The test subjects were divided into two groups. Half of the subjects were told that the foe aircraft were enemy scout planes, the rest that the foe aircraft were enemy bombers. Since it was more important to destroy a bomber than a scout plane, there was a clear and strong bias, even under the calm setting of a laboratory experiment, for subjects to exaggerate the threat perceived in all of the slide projections if the enemy was a bomber and to underrate the threat if it was a scout plane. The general conclusion to be drawn from this and other similar experiments is that, given a choice under uncertainty, the decisionmaker tends to exaggerate the likelihood of the more serious consequences.

Another general observation from psychological studies has to do with validation and multiple clues. Feedback on the correctness of a

decision made under uncertain circumstances turns out to be a critical variable. In the absence of feedback, subjects tend to develop "all-or-none" behavior. ("All-or-none" behavior is a polarization of views with little flexibility for seeing clues as probabilistic rather than deterministic.).

The lesson for minefields seems to be the following: With no opportunity to determine the actual threat a minefield poses (without sailing a number of ships into it), any danger clues (mine- detonations, a shipsinking, the observation of mines being delivered, etc.) should magnify the perception of the threat. The decisionmaker is likely to be forced into an "all-or-none" mode of thinking; that is, the minefield threat would be categorized as either unacceptably high or acceptably low. Historical evidence suggests that the former occurs more often than the latter.

In summary, these psychological studies confirm the intuitive notion that decisions made with incomplete information, with no way to determine the accuracy of guesses, and with dire consequences for certain choices lead to a strongly exaggerated perception of the situation. The application to minefield psychology seems clear, at least qualitatively. Any minefield, regardless of how small a threat it actually poses, tends to be viewed as a serious danger not to be taken lightly.

This perception is further aggravated if the threat cannot be combatted directly. Studies done on British reaction to psychological stress during German bombing raids during World War II show that the stress was reduced for antiaircraft gun crewmen who fired at the bombers, even if they never hit anything. The act of fighting back, even in vain, releases stress. (This finding is just as true as in noncombat situations--the man kicking his car when it won't start, for example.) Minefields do not allow this rapid release of tension; they cause a buildup of tension instead.

Minefields play on all of the psychological levers mentioned above. The threat of the minefield is largely unknown, and there is no direct way to validate a decision made to sweep or to cross the field. Any events that tend to confirm worst fears (visual observation of the minelaying, loss of first transitor, etc.) intensify the perceived threat and reinforce "all-or-none" tendencies. Unless delay is out of the question, no prudent commander is likely to risk his ships until he is convinced that the area under question is free of mines. Moreover, if some mines are detonated by sweeping, the sense of danger could be reinforced, at least initially. Sweeping would not reduce psychological stress. There is not much psychological reward for detonating mines in a minefield, one by one, however important that action may prove to be in the overall conflict.

IMPLICATIONS FOR STRATEGY AND TACTICS

Crisis Control

The decision to use mines during crises prior to full-scale war is a serious and potentially escalatory one. The laying of sea mines is unquestionably an act of war, and it is felt by some to overstep the boundaries of the traditional concept of proportionality of response. For these reasons, mining may not be authorized in most crises.

But acts of war lie on a spectrum determined by their direct consequences. Clearly an act that has only the potential to sink ships is less escalatory than one that actually damages or attempts to damage them. The laying of a minefield is similar to a naval blockade (in terms of potential for damage) but without the same risk to our own naval ships. Moreover, a naval blockade may be less likely to provide the same level of psychological deterrence as a minefield for the simple reason that minefields present a threat of unknown, hence potentially exaggerated, magnitude.

It is in the use of mines for crisis control that the psychological leverage of the weapon is at its peak. Consider a third-world country with whom tensions are mounting inexorably toward war. Mines laid in the harbors not only bottle up the military and economic shipping of that country, but also deny those harbors to the maritime ships of other countries.

Treaties with or entreaties to our allies to cut off economic shipping to this country might not always be heeded. Allies sometimes look after their own economic interests first. Mining harbors would reinforce our demands and impose an economic boycott more effective than any that words alone could. For this purpose, the no-nonsense significance of a minefield would be more effective than a much more flexible blockade. Moreover, a naval blockade with warships might force a face-to-face confrontation with allies, with consequences that would either weaken our resolve or damage our relationships with these allies.

Their utility aside, the use of mines in crisis situations is loaded with uncertainty. If other less threatening forms of leverage are available, and likely to prove effective, mine warfare should probably not be used. In some crises, any show of force could unravel potentially productive diplomatic maneuvers. Nonetheless, there are other cases in which the psychological impact of a minefield might carry the message of our intentions more clearly than ambiguous diplomatic "signals." This is particularly true when dealing with renegade governments that demonstrate little concern for diplomacy or openly harbor international terrorists.

How large a minefield should be used to carry off this show of force? If past experience is a guide, very few mines are needed. The object of crisis control is just that--control. If the psychological deterrence works, very few mines are needed to create it. Moreover, the

effect can be enhanced by the mine settings chosen. If one or two mines from a minefield dropped into a harbor entrance are set to detonate soon thereafter, the observation of the explosion will likely confirm the enemy's worst fears. Similarly, a few mines set to detonate from a weak stimulus may discourage any tentative attempts to move ships.

By forcing a closure to harbors or by defining no-man's zones in narrow straits to keep naval forces separated, time can be bought. Since direct naval confrontations are denied by the minefield, time to resolve differences might prove crucial to a solution. To these ends, mines with settings that automatically disarm the minefield (preferably by detonation) within a very short period of time are useful.

Finally, to enhance the deterrent effect (as opposed to the ship sinking power) of the minefield under crisis control conditions, mines should be laid during daylight hours by aircraft. The laying should be as overt as possible, followed by a public announcement from our government.

Wartime Transit Control

Great caution must surround the use of mines during crises and confrontations. As we have noted, the planting of a minefield could aggravate rather than control such situations. The psychological effect would be a two-edged sword in crises. The uncertainty in the consequences of mining a harbor not only would deter enemy forces but

also might inhibit our planting of mines in the first place. The conditions for their use must be such that failure to deny transit areas would almost certainly lead to a broader conflict.

In limited wars, mines are also apparently viewed as weapons of escalation. In this sense, the use of mines in limited wars has been subject to some of the same constraints as their use in crisis control. In the Vietnam War, for example, mines were laid around Haiphong and other North Vietnamese ports only in the last stages of conflict. Plans for a mining campaign existed early in the war but, like the massive Linebacker bombing raids conducted against North Vietnam, were not implemented until 1972.

This conceptual barrier to the use of mines in limited war needs to be reexamined. In an era in which weapons of high and occasionally indiscriminate lethality find roles in war, the use of minefields seems almost humane by comparison. When compared to bombing raids on cities or harbors, mines come off as weapons of calm and persuasive reason, exerting their primary inducements through psychological deterrence rather than by physical destruction. Even if destruction does occur, it can be selective and result from a conscious decision by the enemy to challenge the mined areas.

For the reasons already discussed, the enemy is not likely to send ships through known minefields. If he has sweeping gear, he may attempt

to clear the area. If he has none or can act on other options, he will likely abandon the area. In any event, only if the waters that are mined prove absolutely essential to the strategic interests of the enemy will he attempt to transit them.

In this age of increasing overhead surveillance, enemy surface naval forces can be observed and attacked by means more rapid and certain than minefields. For this reason, minefields in limited conflicts should be used to control the enemy ships, either by diverting them or constraining them. Either mode of control should be subservient to larger goals, such as strengthening our bargaining position at the closure of war.

In a worldwide war, the stops would be out on the use of mines. But this circumstance would differ from crisis control and limited war in one crucial aspect: no longer would deterrence necessarily be the primary objective of minefields. Certainly one objective would be to damage enemy ships. Slowing down the passage of enemy naval vessels could have some effect on the war, especially if time were critical. But nothing would work as well as actual damage to the enemy fleet.

If minefields can be planted to force enemy naval vessels to seek alternative transit areas in which they risk an attack by our forces, they serve well. If, however, enemy ships challenge the field, the mines must sink the ships. Here there are limitations. Mines cannot

move; once they detonate they are no longer able to engage successive ships moving by. Thus it can happen that for minefields with mines spaced far apart, only a few detonations will result for a determined transit of ships in trail of one another. These detonations, if they fail to deter further transit attempts, cause few if any casualties.

Minefield planners should recognize the possibility of catastrophic failure (all ships penetrating successfully) and make appropriate back-up plans. Back-up actions could include the laying of adequate numbers of mines to make the sustained threat virtually insurmountable, and the use of other naval forces to challenge those ships that do cross the minefield.

SUMMARY AND CONCLUSIONS

There is considerable evidence from historical data and from laboratory testing that minefields exert a substantial psychological influence -- through what we refer to as a psychological warhead -- on an enemy's maritime operations. This influence is seated in the necessity for the enemy to make decisions with incomplete information, no validation of the accuracy of guesses (until it is too late), and dire consequences for a wrong choice. Such circumstances are not unique to mine warfare but are always an integral part of it. Moreover, minefields aggravate the enemy's circumstances by not allowing a direct combat with the threat. The threat is mechanistic, operating on a logic all its own in ambush, much like a terrorist's pipebomb.

The psychological utility of mine warfare also can be applied in crisis control and wartime tactics. Because the psychological response to minefields is not absolutely predictable, no unambiguous rules can be given for their use. Yet, certain observations seem useful.

Mining has in the past been considered an escalatory move, certainly in prewar crises but also in wartime. Our view is that mining fits into a spectrum on the range of escalatory moves and could send just the right message. When it works, only a few mines laid overtly are required.

During war, enemy forces would be subject to the same psychological pressures from a known (or suspected) minefield as they would during pre-war crises. The effect could be the same, but the likelihood of the enemy challenging the minefield would increase since the consequences for staying put or delaying transit could outweigh the risk of transiting mined waters. If the mines fail to deter, they fail completely unless they can also sink ships. The fields should be designed to be lethal against more than only a few ships in trail. Mine warfare planners should also recognize that technical improvements that increase the lethality of mines and minefields also automatically enhance their psychological warhead.

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