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A BLUE RIBBON COMMISSION FOR NAVAL GENERAL PURPOSE FORCES

Plagued by rapidly rising shipbuilding costs, and by skyrocketing costs of new weapons, the Navy is being forced to reduce the size of the fleet and to reexamine plans and procurement policies. There is unprecedented real concern within the Navy about its future. Unfortunately, there is no modern consensus upon which to base a shift in Naval plans. Although much of Navy general purpose force planning rests on a web of strategic assumptions and hopes that are only too easy to question, it is less clear what ought to be done.

One issue, for example, is how much should be spent for actually fighting major U.S.-Soviet wars—as opposed to relying upon deterrence; such major contingencies are ever less likely and ever more hopeless. And how should the funds appropriated for these major contingencies be spent?

A second important problem is to structure the fleet so as to prepare best for hard-to-predict lesser contingencies, in which various kinds of Naval power might be useful, over the future lifetime of the ships now planned. One wants to build these long-lived ships so that they are least vulnerable to technological change and best prepared to exploit what technological opportunities may arise.

Finally, much more thought has to be given to Naval arms control as a solution to an otherwise open-ended, very expensive, contest in purchasing ships.

THE NAVY DESERVES HELP

The Navy is not even charged with the first issue of weighing deterrence versus defense; this is a Presidential and Congressional level decision. And the Navy may not really be organized to resolve some of the other issues which require, instead, an amalgam of far-sighted statesmen, technologists, and military and political strategists of all kinds. The Navy is, after all, already partitioned into less than disinterested points of view representing subsurface, surface and air preferences. It seems to be asking too much to ask it alone suddenly to do a detached and objective review providing possible new departures in Naval thought.

Unfortunately, a survey of recent Congressional procurement hearings reveals only too clearly the inability of the usual executive branch and legislative processes to grapple with these basic issues. They are used to working on such biannual Naval recommenations as whether a single new carrier should be built or not and whether or not to give it nuclear power. Nor is the intellectual level of these hearings, with rare exceptions, what it should be.

We are forced to the conclusion that some kind of high level commission should take the matter in hand. The commission should include representatives of the Navy, members of Congressional defense and foreign policy committees, former civilian officials and specialists of all relevant kinds. Especially, it should include some intelligent persons with no previous exposure to the subject whatsoever to ensure that every possible question is raised and every hidden assumption is reviewed.

ARMY VERSUS NAVY PLANNING

For example: the most serious contingency is, of course, related to NATO. Is the Navy planning to fight with only conventional weapons for longer periods than NATO land forces? Either the Army should be prepared to fight conventionally for long enough to make use of the reinforcements the Navy plans to convoy, or the Navy should not be justifying large amounts of money preparing to try to provide them. Or, is the Navy using a long conventional war as a device to secure resources it considers necessary for other purposes?

In general, considerable time ought to be spent on the all-too-neglected $64,000 question: what evidence is there that the Russians would engage in major actions without using nuclear weapons. The fact that our Navy is enormously better off fighting

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The above statement was released by the FAS Executive Committee.

THREE EXAMPLES OF ASSUMPTIONS WORTH QUESTIONING

As an example of the need for a Blue Ribbon Commission urged on page one, and as an indication of the vigorous review of assumptions in which the Commission would engage, we discuss first the U.S. naval assumption of the long conventional war at sea. Has this assumption been considered critically? Is such a war really possible? Would it not turn nuclear quickly? Indeed, is it not likely that such a large scale conflict at sea would begin nuclear? Can forces justified on the basis of this long war be justified in some other way or should they be discarded? These questions have obvious implications

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conventionally tends to make the Navy optimistic about conventional use when—because the Russians know this U.S. preference also—it ought to make our Navy pessimistic.

Or consider the case, of which the Navy often speaks today, in which the Soviet Union tries to disrupt Western commerce, including in particular the Western flow of oil. Even without the use of nuclear weapons—simply because it is always much easier to destroy than to protect—Soviet attack submarines might have a much easier job disrupting commerce than we would have in protecting it. It may well be that protection of Western commerce has to be based largely on the basis of deterrence or selected retaliation rather than defense—perhaps, in effect, it already is—or on some new device such as the destruction of enemy submarines near their bases. But even if one wants literal defense, all studies show that anti-submarine warfare is a task that requires brute force and large numbers of vessels. Why then do we have a surface Navy built around 12 or 15 vulnerable lynchpins (carriers), the destruction of which effectively undermines the fleet?

A major present justification for our carriers is their flexibility as mobile airbases for projecting U.S. power in a world ever less willing to permit us the use of foreign bases. How much is enough for this purpose? Here the major upcoming question is whether to build four more giant carriers over the next decade to maintain a level of twelve or whether to use the funds for other purposes (Naval or domestic) while letting the force gradually decline to eight or nine. For years Congress has been advised that the force would decline from 15 to 12 but it has never done so.

While the growth of the Soviet subsurface Navy has forced upon us the above considerations, the growth of its surface Navy could, in ten or twenty years, provide a new mission for our surface Navy: counter-intervention. But rather than a future race in Naval capital ships, it ought to be possible to manage some kind of Naval limitations. The earlier these are sketched out the better.

Further undermining the utility of carriers is the observation that an ever-increasing number of smaller powers will, in time, also have the capacity to disable, if not destroy them. Within the 30 year lifetime of a carrier commissioned today, more than a few nations may either build nuclear weapons or purchase a handful of submarines or missiles. Even the minimal "show of force" use of carriers may decline in such circumstances of potential neutralization, in favor of some other method.

Increasingly, in the modern world, it is not the surface Navy which protects the United States but the United States which protects the surface Navy—much as was the case in traditional gun boat diplomacy. Far from being deployed and built to protect us from invasion, it is forward deployed and vulnerably deployed, supported as if a trip-wire by the readiness of the United States to become totally involved in its defense. How valid is this strategy; how much money should be spent in pursuing it; and what kind of ships perform it best?

As we retire the aircraft carriers built in World War II, a blue ribbon commission should try to retire some of the assumptions associated with their construction—while developing new assumptions that may last for most of the 30 years of use of our newer ships. This job is too far-reaching and too important to be left to the Navy or to muddling through. Since the cost-squeeze is now at a peak with important decisions pending, and confusion reigning over what to do, this is the time for a thorough review.□

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for naval strategy and procurement but receive little attention in Congressional hearings.

". . . I believe the United States could withstand the Soviet submarine threat and provide sufficient resupply to U.S. and Allied forces in an extended conflict in Europe."

—Senator John C. Stennis, Chairman, Armed Services Committee, September 19, 1974

". . . I have serious reservations about our being able to give adequate protection to large convoys — convoys loaded with troops and equipment — sailing from North America for Europe along fairly predictable routes and converging on predictable ports."

—Admiral Ralph W. Cousins, Jr., Commander in Chief, Atlantic Fleet, January 16, 1974

The most serious error that a military planner can make is to focus on the wrong kind of war; it is extraordinary how continually and completely all Naval commentators ignore limited nuclear war while assuming, for planning purposes, that large-scale conventional war at sea is worth major preparations.

Where Army planners have planned for limited nuclear war for two decades, Naval planners talk in public at least, as if all nuclear war were general war. The Navy talks sometimes as if it had never thought of any other possibility:

"Admiral Train. At the present time the Chief of Naval Operations has estimated that we have (deleted) if a war were to erupt today, in successfully maintaining control of the seas.

Mr. White. In a conventional war?

Admiral Train. On a conventional war basis.

Mr. White. All right. What about nuclear warfare?

Admiral Train. I am just not competent to answer that question. *I suspect we are all guilty of optimism that nuclear warfare at sea will not take place."* (italics added) (May 22, 1973; pg. 4223 House Armed Services Committee Hearings on Cost Escalation)

Later, he added:

"Admiral Train. If it is not a conventional war, then the problem becomes so complex that it really cannot be limited just to war at sea. *I think that has been our approach.* That if it expands to the exchange of nuclear weapons, that it may well be that this is not limited to the sea; it also expands to . . .

Mr. White. That opens up a new area. Is it the Navy's expectation that we could confine a war strictly to sea with Russia?

Admiral Train. *On a conventional basis* this is a possibility that lies within the range of possibilities that we must consider." (italics added)

In short, the Navy is willing to consider large-scale conventional wars at sea that go on in isolation but not comparable isolated engagements involving nuclear weapons.*

Even the Senate Armed Service Committee accepts the Navy assumption without even realizing that it has:

"Senator Stennis: Mr. President, should there be an all-out nuclear war, who and what will survive on either side are impossible to predict. Very likely a large portion of all military and naval forces on both sides as well as civilian populations will be destroyed. *The issue of comparative naval power therefore has focused largely on conventional naval forces."* (September 19, 1974) (italics added)

Assuming away a significant kind of war is a bad error for military planners; but the error is much compounded if, as so often happens, it is done because such wars are precisely the ones that commend themselves to the other side.

The major Soviet Naval mission in a NATO conflict will be denial of the seas. The larger the weapons used, the easier is that denial. Naval analysts know that the Soviet Union could destroy most of the several deployed U.S. carriers within a relatively short period of time if nuclear weapons were used. Other surface ships would be comparably more vulnerable and less well protected.

But few comparable advantages accrue to the U.S. forces if nuclear weapons are used at sea. With modern homing devices that can bring conventional weapons into kill-distance range, nuclear weapons are not necessary for destroying Soviet attack submarines. In fact, use of tactical nuclear weapons for this purpose tends only to befog and confuse listening devices so as to make it more difficult to do subsequent antisubmarine warfare (ASW). In particular, one is less able to determine whether the submarine has been destroyed or has escaped.

Would the Russians Prefer a Short War?

There are tactical reasons also why the Soviet Union might use its submarines with nuclear rather than conventional warheads. Soviet forces have a hard time maintaining themselves in the Western seas where they plan to operate. Every time they move back and forth through narrow choke points, Western forces are prepared to exploit their vulnerability in order to attrite their force. Under these circumstances, if they ever move toward large-scale war at sea, they will certainly prefer that it be a short war rather than a long one.

That the Russians are building for a short Naval war at sea was confirmed in 1973 by Admiral Moorer, then Chairman of the Joint Chiefs of Staff; his posture statement asserted: "USSR ships by and large have been optimized for strong initial striking power, with relatively limited reload capability and lower endurance." Nuclear weapons will recommend themselves to Soviet planners under these circumstances and they may well try for some kind of Pearl Harbor attack or *fait accompli.*

The Russians might well argue that nuclear use at sea is no more provocative than large-scale conventional war at sea. After all, if one assumes large-scale Naval

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*Another instance of such Naval analysis occurred in the 1970 hearings on CVAN-70; responding to a critic who suggested nuclear weapons coulld destroy carriers, the Navy noted in remarks supplied for the record: .

"A direct hit from a nuclear warhead will destroy any ship, and any other military installation as well. *But there is little or no chance that nuclear weapons would be employed against the U.S. carrier force except under circumstances of a general nuclear war with the Soviet Union or with China. Under these conditions, everything is vulnerable . . ."* (italics added) (pg. 68 and pg. 228, Joint Hearings of Senate and House Armed Services Committee, 1970)

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engagements, one is talking of wars in which one loses carriers, each with 5,000 men aboard. Faced with such losses, the U.S. temptation to escalate to land attacks is not going to be much different whether the Soviet Navy uses torpedoes with a conventional or a nuclear warhead. The Russians know this; why then would they take the trouble to use conventional weapons? It is true that the U.S. would use nuclear weapons at sea if the Soviet Navy used nuclear weapons at sea; but it would not help us much against submarines and the Russians know it. (Limited nuclear war at sea may also seem to them more likely to remain limited than nuclear war on land because fewer people are being killed, none of whom are civilians, and because the limits of the terrain in which the war is to be contained are much more evident.)

But it would be a mistake to assume even that the Russians will think it over carefully. They may simply assume nuclear use in these contingencies. Our internal strategic dialogue is far more sophisticated than that of the Soviets in such areas as arms control. And we have trouble enough getting our services to give serious consideration to maintaining a conventional option. Just as our Army wanted nuclear preparedness when it considered itself vulnerable to conventional attack in Europe, the Soviet Navy is unlikely to be thinking of the kinds of wars in which *we* do best just so as to limit the use of nuclear weapons.

We May Use Them First!

If the Russians do not use nuclear weapons early in a major NATO conflict, we may. It has been our policy to threaten to do so. And the Army bases its planning on early use of nuclear weapons. For example, in 1970 hearings on a new carrier (CVAN-70), General Earle G. Wheeler, then Chairman of the Joint Chiefs of Staff, asserted:

> "In other words, we consider an initial clash could very well be conventional, but it would probably move into at least a tactical nuclear area in a relatively short time."

The fact is that the Army in Europe considers itself largely unable to fight long conventional wars. This only increases the responsibility of the Navy to recognize the likelihood of nuclear escalation. (Obviously nuclear weapon use on land will lead to such use at sea!)

Basically, U.S. declaratory policy is to use nuclear weapons before losing Western Europe. Whether the loss seems about to result from Soviet military action on land or at sea is quite immaterial to the policy. Presumably the Russians believe the policy. Therefore, if U.S.-Soviet escalation over Europe ever reaches the point where the Soviet Union attempts to win by cutting the sea lanes, the Russians will expect a nuclear riposte and will, therefore, make no special effort to keep their attack conventional.

In short, for all these reasons, with regard to *large-scale* wars related to NATO, one can argue that the Navy may be more likely to confront nuclear war at sea than conventional war. One reason Navy spokesmen may never face this possibility is because such a conclusion makes it harder to justify the present Naval structure. Emphasizing nuclear war would require rejustifying that part of the fleet that is not required for less than major contingencies (e.g., carriers number 10 through 15 and their escorts.) Emphasizing conventional war makes the existing structure arguable—if still not especially plausible.

Our point is not to argue that it is possible to design a surface Navy that could successfully fight a limited nuclear war at sea. For the most part, one may have to deter such contingencies with the tacit or open threat of some kind of retaliation in kind. But there may well be things one could do better to survive such an onslaught if one gave the contingency the thought it obviously deserves—like putting more of the fleet underwater. And there is certainly no point in preparing for a straw-man contingency.

The Navy has an enormous stake in believing in the possibility of a long conventional war at sea because such a view justifies the highest possible force levels. The first objective of any review of Navy plans should be to decide whether in this regard, the Navy has let its interests distort its judgment.

Example 2: Maintaining "Sea Control"

With increasing deterrence and the Arab oil boycott, Naval rationales turned increasingly to keeping open the sea lanes. Is this assumption one based on a threat that is both real and answerable or does it lack one or both of these two characteristics? How much would be enough in trying to cope with such a threat?

> *"Just stop to think of how our economy would be paralyzed if we were not able to keep those sea lanes open for the free movement of commerce. That's the responsibility of the U.S. Navy."*
>
> —Former Secretary of the Navy John W. Warner, February 22, 1974
>
> *"Their capability to deny us the sea lanes, which is their job, is greater than our capability to keep the sea lanes open which is our job."*
>
> —Admiral Elmo R. Zumwalt, Jr., Former Chief of Naval Operations, May 13, 1974

The Navy had, after World War II, complete "Command of the Sea" outside the seas adjoining Russia. But it now talks of maintaining "Sea Control" rather than even "Control of the Sea" meaning by this distinction that it cannot expect to maintain control throughout.

According to a century old Naval tradition, control of the seas is determined in grand battles in which opposing fleets are met and destroyed. This was strikingly true in World War II. But it is not likely to be true again. The Soviet Navy—no other Navy is relevant nor even in sight—is not so much moving toward control of the sea if war occurs as to "sea denial". Its submarines will be spread around like wolfpacks. And those submarines cannot be decisively engaged once and for all.

In this context, is the U.S. Navy actually being designed to be spread around the world in protection of shipping? Or is it designed around 15 carriers which it escorts as if they were the queen bees of the system? The carriers themselves play only a small anti-submarine warfare role. And much of the anti-submarine function of the other ships is devoted to defending the carriers.

ASW IS STILL TOO HARD

Progress is being made in ASW, but it's in small increments, and the dramatic breakthroughs that some people hoped over the years would occur, simply haven't happened. It appears to us that the laws of physics just aren't amenable to change.

I am sure that the Soviets have their own problems, and I don't consider them 10 feet tall. But, after weighing the various factors involved, and considering the results of our fleet exercise and war games and analytic studies, I have serious reservations about our being able to give adequate protection to large convoys—convoys loaded with troops and equipment—sailing from North America for Europe, along fairly predictable routes and converging on predictable ports. The protection of economic convoys, and the protection of the oil tanker routes *all add to and compound* the problems I foresee in the first weeks of such a war.

—Admiral Ralph W. Cousins, Jr.;
Commander in Chief,
Atlantic Fleet
January 16, 1974

Does this make any sense for "sea control" in a world of submarines? There is question whether the Navy understands the problem. As Admiral Rickover put it recently:

"If this country or Russia ever turned their forces of submarines loose, they would devastate the seas. That does not mean that we should not build other kinds of ships. But nuclear submarines have never been tried out under actual conditions of war. It is beyond the capability of most naval officers to comprehend the difference between a submarine that can make a maximum of 9 knots for one-half hour and stay submerged for but 2 days at most and a submarine that can make over 20 knots and stay submerged indefinitely. They cannot grasp the significance of this military capability. It is beyond their comprehension because they are too loyal to their previous concepts and to the regime and environment in which they have been brought up."

—June 7, 1973 before House Armed Services Committee, pg. 4346 of Hearings on Cost Escalation.

During his tenure as Chief of Naval Operations, Admiral Zumwalt did make one relevant effort to cope with this problem: Sea Control Ships (SCS). These were cheap mini-carriers designed especially for antisubmarine warfare in areas of the ocean where Soviet aircraft were unlikely. They were to be non-nuclear (Admiral Rickover had at least initially agreed to this) and austere so that enough could be bought to make a difference. They would have cost as much as 1.5 nuclear attack submarines. The House of Representatives Defense Appropriations Committee studied the matter and turned it down on the grounds that Sea Control Ships were just another defensive ship without offensive punch! Sea Control Ships got little support elsewhere and are now considered, with Admiral Zumwalt's retirement, to be dead.

Would a review of U.S. naval potential conclude that "keeping the sea lanes open" was no more than a slogan embodying an unattainable goal, whose endearing characteristic is its ability to justify virtually any Navy program?

Example 3: The Modern Role for Carriers

What is the role of aircraft carriers and how many should be maintained? The U.S. Navy went into World War II assuming that battleships would play the major role and discovered, instead, that aircraft carriers did so. That our naval plans were inadequate should be no surprise. No military service has a greater problem keeping up with military reality than a navy. Between the major wars, there are always fewer naval engagements than land or air battles with which to update military doctrine and the ships built by navies last for much longer periods than any other combat vehicles.

During World War II, the carriers were used to provide air power for use primarily against Naval fleets. However, after the War, there was no existing fleet anywhere against which we could imagine carriers being necessary. A new rationale was provided by the Korean and Vietnamese wars: mobile airfields for land bombardment.

Land versus Sea Debate Irrelevant?

There ensued a long debate over the relative cost of land-based tactical air bombardment and sea-based tactical air bombardment. Some analysts consider this a central issue. In fact it is not. In the first place, the studies show a very close equivalence in cost (perhaps a 20% advantage in favor of land, a number which varies with assumptions). Under these conditions of close equivalence, the real question obviously turns on the availability of bases. The carrier does indeed have great advantages of mobility and can be used without regard to many otherwise difficult political considerations.

This is becoming of real importance. In the past, all likely conflicts took place in the context of U.S.-Soviet confrontation and a coalition of anti-communist states were ready and willing, if not eager, to provide the U.S. with land bases. The future suggests confrontations for which no comparable coalition exists. Most nations will not want to become involved in these local conflicts. A striking example was the need to use U.S. carriers as staging bases for planes being flown to reinforce Israel. European allies did not want to become involved in this reinforcement operation. Also, the easy assumption that, after all, we will always be coming to *someone's* aid, who will supply the bases, may not always be warranted. We may, for example, be coming to the aid of our own interests, seeking to protect the flow of our commerce or to protect our nationals.

It should be noted, however, that carriers are sufficiently vulnerable so that even third rate powers may from time to time try to put one out of action during the lifetime of carriers building now. In particular, the spread of submarines could make it very difficult for carriers. Another such technological specter arose when the Egyptian Styx missile sank the Israeli destroyer Elath.

Carriers are much easier to put out of action than to sink. When on high alert with weapons, and fuel spread along the decks, they themselves provide the munitions. Two of our carriers, (Forrestal and Enterprise) put them-

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ARMS LIMITATIONS REVIEW IS IN ORDER ALSO

"The U.S. propaganda machine has launched a campaign against the Soviet Navy. Washington sees a menace, if you please, in the fact that our ships appear in the Mediterranean, in the Indian Ocean, and in other seas. But at the same time American politicians consider it normal and natural that their 6th Fleet is constantly in the Mediterranean—next door, as it were to the Soviet Union—and the 7th Fleet off the shores of China and Indochina. We have never considered, and do not now consider, that it is an ideal situation when the navies of the great powers are cruising about for long periods far from their shores, and we are prepared to solve this problem, but to solve it, as they say, on an equal basis. On the basis of such principles, the Soviet Union is ready to discuss any proposals."

—General Secretary Leonid Brezhnev, June 11, 1971

What are some of the arms control possibilities that a blue-ribbon commission might consider with which to respond to this invitation of Brezhnev?

a) Limits on naval manpower are one example; such manpower has become increasingly expensive and hard to secure for our Navy. U.S. and Soviet naval manpower are comparable, in the ratio of 6:5 and known. (Tonnages are not comparable, viz. 6:3, and budget outlays are not so well known.)

b) Limits on nuclear attack submarines; such submarines are the backbone of the threat to our surface fleet and commerce.

c) Prohibitions on trailing missile-firing submarines so as to maintain deterrence.

d) Constraints on deployment of surface ships or on their nuclear status; for example, the Indian Ocean zone of peace.

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selves out of action when no more than a five inch rocket went off accidentally, promptly leading to subsequent explosions. (While some Navy spokesmen normally mention only the total munitions that went off and use the fact that these ships were not *sunk* as an example of carrier toughness, it is evident that the example proves quite the opposite.) Indeed, for third world countries, it is safer to put the carrier out of action than to sink it since the latter would bring more outraged retaliation. Other relevant new technology are torpedoes homing on the screws of the carrier.

Proliferation: The Last Straw?

Nor should it be overlooked that proliferation over the coming decade may leave countries with a few nuclear weapons that could be used against a carrier. Finally, it should be noted that even the threat of successful attack can have a disabling effect on the carrier since it must then engage in defensive maneuvers incompatible with launching and receiving aircraft.

In short, in the medium future, it is not always going to be easy to use carriers even against less than superpowers. And we can expect the usability of military force, and the need for it, to decline as well over the same period. But the lack of any substitute for carriers, to project U.S. power when needed, seems equally clear. □

FLEXIBLE DEPLOYMENT: NECESSITY IS THE MOTHER OF INVENTION

The Navy is faced with the problem of reducing carrier numbers. It prefers to continue deploying carriers, however, in much the same way. What to do? It is partly a problem of getting more from less. But here again, the considerations go beyond those that are purely Naval since political significance attaches to the carrier positioning. Thus deployment is another issue worthy of consideration by a high level commission.

The situation is as follows. For the past quarter of a century, the Navy has maintained five attack carriers and supporting units on distant deployment; two in the Mediterranean and three in the Western Pacific and Indian Ocean, west of 160° east longitude. The requirement for these deployed forces has long been considered mandatory, but in fact only the two Mediterranean carrier task groups represent any kind of force "commitment" to allies (in this case, NATO) and even this "commitment" is renewed on an annual basis; it is really an "earmarking."

Positioning of three carriers in Western Pacific, from which comes the occasional Indian Ocean foray, reflects U.S. military judgment, but is not fixed by agreement with other nations. In both cases, the primary role of the carriers has been to provide U.S. political-military presence in the region and respond to crisis and limited war situations involving third countries. Their earlier contribution to the strategic deterrent has greatly diminished with the advent of strategic ballistic missiles and their utility in a possible conventional war with the Soviet Union is not enhanced by their forward positioning. In fact, a good case can be made for withdrawing the carriers from the confines of the Mediterranean before such a war breaks out.

15 Carriers Provides 5 On-Station

Thus five carriers have been deployed by maintaining 15. It has been assumed that the other two out of each three were required to provide adequate transit time to and from the Mediterranean and Western Pacific and to provide adequate time in port.

Time in home port is important for morale purposes (close to half of all fleet personnel are married) and for heavy maintenance (shipyards tend to be located in or near homeports). In regard to morale, although deployed ships in peacetime may spend up to half of their time in port, because they are remote from their home port, these periods are of no value in terms of family life. Recently, this has led to increased homeporting in the forward areas, notably Yokosuka, Japan, and Athens, Greece. However, local political problems, or the threat of future problems, militate against this concept, and the ships must return to the continental U.S. every few years for shipyard overhaul anyway.

Transit time is as follows. Roughly two weeks is required to steam from Norfolk, Virginia, to the Western Mediterranean at the normal, economical, 16 knot speed of advance, and twice that to transit from San Diego to the South China Sea (allowing for logistic port visits en route). In the interest of efficiency it is necessary to remain away for upwards of six months before returning

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IN THE EYE OF THE FBI

In late September, the FBI press office invited members of the science press to attend part of its Symposium on Crime Laboratory Development. FAS has not reviewed forensic science (the application of science to law) in a long time if ever; perhaps the last even near discussion turned on surveillance. (See the FAS February, 1971 Newsletter on Mail Covers and Wiretapping.)

A visit to the FBI Academy in Quantico, Virginia, produced these impressions. A vast amount of FBI energy and 3,300 clerks and technicians are associated with fingerprinting. (Along with handwriting, these fingerprints are considered the only sure method of identification at this time.) The FBI now has a criminal file of 20,000,000 fingerprint cards and a civil file of 40,000,000. Each day they are asked to search between 20,000 and 30,000 fingerprints against this basic file. The clerks are obviously being overwhelmed. With the help of the National Bureau of Standards and Cornell Aeronautical Laboratory, the FBI has developed an optical scanning and encoding method that permits machine comparison of two different sets of (10-finger) fingerprints. (The machine is called FINDER.) In time, they hope to be able to do this at sufficient speed (a few millionths of a second per comparison) to permit searching the entire file in six to eight seconds. Eventually using terminals at scattered locations, state and local agencies would be able to discover, instantaneously, whether an arrested and fingerprinted suspect was already on file under a different name.

The Real Problem Is Still Unsolved

Of course, the much more interesting problem is to determine who owned a (latent) single fingerprint at the scene of a crime. As things stand, it is not possible to determine even which finger was represented. Nor is it now possible to use FINDER to solve this problem since it does not search *individual* fingers against the existing file. Such searches are, however, an anticipated next step albeit one considered to be some considerable time off.

The FBI seems to be adept enough at both "lifting" and photographing those fingerprints that it finds but it has no particularly clever method of locating the fingerprints *in the first place—its agents simply look in the logical* locations, e.g., rear view mirrors, etc. (In general, agents apparently make use of only a small amount of the truly available evidence of all kinds that is involved in most crimes.)

Handwriting analyses are done entirely by eye without technology. Apparently individual variations of the same signature are well beyond current pattern recognition state-of-the-art. An interesting unsolved problem in the related document identification field is to assess the age of documents through analyses of the ink used in drafting them.

Crime Traces Examined

In the FBI biological laboratories, much attention is given to such scene-of-the-crime residues as blood, semen, and hair. By using blood types, red cell antigens, RH factors and isoenzyme systems, it is possible to link a particular blood sample to 1% of the population. Thus 99 out of 100 suspects might be eliminated on the basis of blood. It is only beginning to be possible, however, to determine sex from blood samples. Similar, though not quite so high, degrees of identification are possible with semen in cases involving rape.

It is possible to tell from hair samples whether they come from an animal (and which general kind) or human (and whether Negro, Caucasian, Mongoloid). If human, it is possible to tell what part of the body it is from but not the sex of the bearer. Nor is it possible to determine—the most important thing—when two hairs are from the same suspect.

The chemistry divisions of the FBI laboratory worry a great deal about new ways of "tagging" objects, e.g., money to be given to extortionists or gasoline that might be stolen. (The gasoline could be tagged cheaply with trace elements by the different oil companies; for some reason, they have not done so.) This division also considers such problems as tagging people to keep them under surveillance but associated methods are treated as classified. One gathered that the FBI saw no legal problem (certainly no moral problem) about such tagging. When asked, for example, whether the placing of a beeper in a car would raise a legal question, one official noted that placement *inside* a car might raise questions of trespass but attaching it to the outside would not.

As this technology of surveillance improves, there are going to be interesting questions raised, one would think, about the right of law enforcement officials to "tag" persons without their knowledge with resultant complete access to their activities. This is presumably a greater violation of their privacy than even a search of their homes but requires no comparable warrant.

The physics division worries about such problems as the identification of gun shot residues (barium, antimony) on the hands of persons who might have fired such a gun a few hours before.

An interview with a behavioral sciences instructor at the Academy revealed preoccupation with such internal problems as validly assessing the suitability of police personnel. There was some concern about the interface of the police force and the society, e.g., the problem of having the law enforcement official seen as something other than an "enforcer." There did not seem to be much concern with applying behavioral sciences to deviant behavior. But crime prevention *is* considered important and the psychology of negotiating with persons holding hostages is currently a hot subject.

The old-line officials obviously still hold J. Edgar Hoover in adulation. One explained patiently that Hoover did not really make all the decisions, though they did pass through him; Hoover simply acceded to the freely debated views below him. In the one case when this individual had been overruled, he had been wrong, he now felt. The FBI image had only been hurt after Hoover (and before Kelly). Hoover had properly taken the view that the important thing was not to make people happy but to get the job done.

All in all it seemed an echo of the aparatchek's apology for, and devotion to, Stalin, complete with explanation of how democratic centralism works. Fortunately, the new Director, Mr. Kelly, is obviously clearly following a different and more open policy. (Mr. Hoover

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would not have invited the science press to this affair.) But it will take a long time before this devoted and unquestioning generation that saw no problems with Hoover retires.

Technology versus Public Support

Everyone at the Academy pays at least lip service, and often something more, to the importance of a good public image, if only to get needed public cooperation. Assistant Director Briggs J. White suggested that public support was critical; for example, in the Patty Hearst case, many people had been questioned who knew more than they would tell. White felt that losses in public support that were currently evident "challenge us to make technological advances" to compensate for them.

FBI feels that it has a good scientific exchange with CIA, but in this security area in particular, and in FBI science in general, it is not possible to determine the quality of FBI work. The FBI lab personnel read the vast relevant literature diligently but have few staff free of immediate and continual crises. Research is consequently hobbled. And its isolated relations with the outside world, characteristic of the later Hoover years, are reflected in the fact that it does not even have a scientific advisory board of outside academics.

Socially concerned scientists might well devote more time to the FBI. It could obviously use more help on—and especially a fresh look at—its crime control techniques. And monitoring of its surveillance technology is clearly necessary as long as that technology is kept secret and is so relevant to potential loss of privacy if not political repression. Finally, the change in FBI Director has been enormously helpful to the Bureau (as well as a relief to the many political figures who received veiled threats from the late J. Edgar Hoover). Perhaps the time has come to help bring the Bureau into the light of day. ☐

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home. Crew morale aside, the longer the deployment, the lower the percentage of time "wasted" in transit.

It is fallacious, of course, to consider transit time as wasted other than in terms of time on distant deployment station. A great deal of precious operational training occurs in transit, or any time ships are at sea, and operational training is a major function of the peacetime Navy.

Should Transit Time Count?

One solution to the Navy's problem is to recognize the value of transit time by considering carriers in transit to be "deployed". They are, after all, never very many days distant from their destination once they are underway. And they are, in some ways, even more flexibly deployed while in transit. Their whereabouts is perhaps less well known and their options for moving in various directions are different than they are once stationed. Above all, if the Navy were to recognize the steaming time as on-station time, in one sense or another, it could continue to follow the pattern of five deployed carriers but do so, obviously, with considerable fewer. The ratio of three carriers to one deployed would drop to something closer to two to one.

This scheme is more than a rhetorical device. The Navy would be freed from the questionable rigid requirement of keeping its carriers at fixed points while continuing to earmark carriers in highly similar ways. Much greater freedom in Naval maneuvers would be possible, the vulnerability of carriers would be reduced, and the new method of counting would permit a graceful stepping down from the requirement, for example, that carriers earmarked for the Mediterranean be kept there constantly.

Obviously, there are many ways of splitting the difference between counting ships deployed only when on some particular "station" and counting them deployed while in transit also. One could imagine a variety of formulas giving less weight to those in port. And one could assure various allies that a certain number of ship-days would be spent in their particular area by one or more carriers.

The underlying notion here is one in which the Navy —which wants flexibility and the opportunity to use its carriers as military judgment suggests—would receive greater freedom in return for giving up its own rigid assumptions that ships off-station do not count at all. ☐

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