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Naval Operations Analysis

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of 30 years ago, admitting that he has had no access to pertinent documents since 1944 but assuring the reader that "I am lucky in having a photographic memory" He also admits that he is "by nature a congenital liar and romancer," only one among "quite a number of lunatics who had been, apparently through extra-sensory perception, selected by Galveston for the supporting roles"

He further admits, "I am not at all highly educated, and on this point the present reviewer can confirm that the author would have benefitted from a crash course in the principles of punctuation. Worse, he has been ill-served by his publishers. The book's index is skimpy; there is only one map, and that grossly inadequate; there are misspellings and textual omissions; and the so-called bibliography is sadly lacking completeness. Two titles clamoring for addition therein are Elyesa (not Eleazar) Bazna, *I Was Cicero* (1963) and Leonard O. Mosley's account of the Abwehr agent Johann Eppler, *The Cat and the Mice* (1959).

Nevertheless, this volume may be recommended to all those intrigued by the nuances of double-agentry and how it is "played." The book is a natural companion piece to Sir John Masterman's *The Double-Cross System* (1972).

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Naval OR Study Group USNA. *Naval Operations Analysis*. 2nd ed. Annapolis: Naval Institute Press, 1977. 372pp.

The growth of operations research and operations analyses has been phenomenal. Since the first edition of this book in 1968 the complexity of naval tactical and strategic problems has so continued to increase that an update of the earlier edition is most appropriate. This edition is written principally for naval officers or those with a day-to-day

interest in the relationship between new technology and such naval decisions as:

(a) On average, what is the best course of action if the enemy has the choices of A, B, C, etc.?

(b) What search pattern should be used for today's sea state in order to minimize the location time of a lost aircraft?

(c) When is it best to fire in salvos and when is it best to use a doctrine of shoot-look-shoot?

The introductory chapters are a good review of a logic process for problem formulation, development of alternatives and evaluation of possible solutions. The methodology is straightforward and easy to read. This formulation process can stimulate creative ideas and introduce objectivity.

The detection theory chapters expand upon detection concepts and problems associated with continuous looking and separate glimpses. The illustrations and problems at the end of each chapter, including the electronic warfare and radar detection sections, contain many additional combat examples of the uses and limits of these ideas. The electronic warfare/countermeasures (with cross-over or burnthrough) discussion of an attack aircraft against a SAM defense system on a major naval ship is an outstanding example of the principles of EW, deception, and mass attack.

Throughout the book analytical and mathematical concepts are skillfully used to assist in decisionmaking. The authors have used Bayes' Theorem in search and patrol situations, probability theory in Antiair Warfare and Mine Warfare situations, and PER (Program Evaluation and Review) techniques relating to deployment scheduling.

The latest edition does have some limitations. First, it could have more descriptive matter rather than such a high analytical content. To the naval officer who has been away from formulas and calculus for several years a greater use of graphic illustrations

would be helpful. Second, in view of the high-low mix issues in the Navy today, Lanchester's combat "laws" on possible tradeoffs between mass and technology or firepower should at least be carried in an appendix. (For naval officers who desire to refresh themselves on Lanchester ideas Peter W. Zehna, ed., *Selected Methods and Models in Military Operations Research* (Monterey, Calif.: Naval Postgraduate School, 1971) and Chantee Lewis, "A Method for Conceptualizing Combat Theory," *Naval War College Review*, Fall 1975, pp. 45-56 are suggested.) Third, the end of the book section on systems effectiveness and reliability is limited and does not reflect such techniques as fault-free analysis or the post-World War II work of Barlow, Prosehan or Jorgenson on military reliability issues. The reader should be aware of these limitations.

All in all, the Operations Research faculty of the U.S. Naval Academy has given us an excellent book, useful as a text at the undergraduate level or by naval officers wishing to update themselves on recent quantitative applications relating to tactical and strategic decisionmaking.

The shortcomings mentioned are more than compensated for by the strengths of this book, a broad and imaginative attempt to show the role of a logic process to increase objectivity in military decisions.

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Pensel, Helmut. *A History of War at Sea*. Annapolis: Naval Institute Press, 1977. 176pp.

The 1975 German edition of this book was titled *Von Salamis bis Okinawa* but this edition is more up to date with the addition of a new chapter, "The Nuclear Age," which covers Suez, Cuba, Vietnam, the Indo-Pakistan War, and the Yom Kippur War. The author

intended to "provide an easily accessible chronicle of all significant armed conflicts at sea from the time of the Persian Wars to the present day . . . favoring the history of no one nation above the other." He succeeded.

The book does not pretend to be detailed history but is more a chronology of naval battles. The accompanying maps (there are well over 200) do not permit recreating actual ship or fleet movements but they do serve to fix an engagement in place and time. The first dated entry is 1210 BC: Battle off Cyprus (the first recorded sea battle) in which the Hittites defeated the Cypriot fleet. The last entry is for May 1975: the recovery of *Mayaguez* and her crew. The intervening 3000 years are covered in 150 pages with no lacunae evident.

A History of War at Sea is not only a useful research aid but is good recreational reading. The latter, however, will accent an unusual character of the book; the entries are written entirely in the present tense and the language cadence is evocative of a Lowell Thomas newsreel narration:

The combined squadrons approach the Korean Coast. Togo, well-informed of the Russian strength and movements, awaits them in the Korea Straits, off Tsushima Island.

Beatty overhauls the Germans, and outflanks them on an easterly course, but the weather closes in and prevents continuous action.

A bomb and torpedo attack wave takes off from *Hiryu* for *Yorktown*, which is hit by 3 bombs and 2 torpedoes and loses way, apparently doomed.

There are several appendixes including the oldest surviving naval order of battle (that of the *Iliad*), tonnage and ship numbers tables, lists of ships sunk by various weapons, etc. Of more interest, if not of practical value, are the tables which rank great naval battles.