Naval War College Review

Volume 29
Number 1 *Winter*

Article 17

1976

Aircraft Versus Submarine

M.G.M.W. Ellis

clearly makes the point that there are a great many participants—Catholic, Protestant, Communist oriented, non-Communist, northern areas, southern areas, border areas, and the Government of the United Kingdom. Each participant has goals, methods, as well as supporters among other participants. These goals, methods, and the insurgents' support are constantly changing. The result is a complicated situation in Northern Ireland and, hence, a complicated study. However, when compared to current news reports, the study does shed light on each situation.

The editors have expressed the hope that they will make a modest contribution to the eventual construction of a theory of insurgency and, secondarily, to complement current quantitative efforts to provide a useful and informative book for students of insurgency and to produce a new and more current collection of case studies. In each case they have succeeded.

W.P.C. MORGENTHALER
Colonel, U.S. Marine Corps

Price, Alfred. *Aircraft Versus Submarine*. Annapolis, Md.: Naval Institute Press, 1975. 268pp.

Alfred Price brings meticulous research and professional understanding to this lively history. It begins with the 1912 proposal (by a submariner) to use aircraft to hunt submarines and continues through the two titanic Battles of the Atlantic when, in each World War, the German submarine service all but starved Britain into collapse. The history is rounded off with a review of the major maritime powers' submarines and antisubmarine aircraft which, despite being at peace for 30 years, have progressed remarkably.

The first aircraft sinking of a submarine took place in 1916 when Austrian flying boats sank the French submarine *Foucault* submerged at 35 feet but still visible in the clear waters of the Adriatic. Submarine detection throughout the First World War depended solely on the Mark One Eyeball. In 1940, however, a new dimension was added to the struggle with the introduction of radar. Alfred Price's careful and clear description of the battle in this fourth dimension of the electromagnetic spectrum, between the aircraft of the Royal Air Force's Coastal Command and the U-boats of the German Navy, forms the core of this book. The technicalities are no barrier to the excitement of the interaction between electronic measure, countermeasure, and countercountermeasure.

One particular round of this battle illustrates the close links between electronic warfare, general tactics, intelligence, and dull old equipment maintenance, which are as important today as they were 33 years ago. To break the equilibrium established by the end of 1942, when the U-boats' METOX search receiver was giving adequate warning of metric radar fitted aircraft, the British took the logical step of moving into a different frequency band in March 1943 by fitting a centimetric radar into 2 of the 12 squadrons patrolling the Bay of Biscay. The Germans, thanks to their naval intelligence, were aware that this might occur and had begun to develop a countermeasure, the NAXOS search receiver. However, first trials of this equipment proved disappointing, mainly because its sensitive antenna feeders were damaged as they were hauled through U-boat hatches. (Today's E.W. equipment maintainer will recognize the problem immediately.) Therefore, in a simultaneous change of tactics, the Germans took the drastic step of forbidding night surfacing and ordered the U-boats to do their diesel runs on the surface by day in groups, fighting off attacking aircraft with gunfire. They had some success, downing 12 aircraft over the bay in the summer of 1943,

but for each aircraft shot down, more than two U-boats were lost.

Admiral Doenitz had forgotten that his objective in this phase was to run the U-boats through the aircraft patrol areas with the minimum possible loss. Had he ordered his crews to surface at night to use their diesels and accepted the loss of some boats to unalerted air attack, his force would have suffered less. Since the centimetric radar fitted aircraft could also join in the day battle, the German decision to surface during the day multiplied the RAF's effective force by a factor of six.

But the next step the Germans took is even more amazing. Baffled by their failure to detect anything on the NAXOS receiver, they concluded that the RAF must be using some other method to detect surfaced submarines. Suspicion centered on the METOX receiver used to detect metric radars, as it did produce some low-powered spurious emissions. So the Germans took it out of service, depriving themselves of a still useful countermeasure, while their industry delayed work on the centimetric NAXOS, to concentrate on the unnecessary task of producing a nonemitting metric receiver.

Alfred Price draws a comparison between the scientific advice available to the two adversaries at this stage in the war. The British had the inestimable benefit of their so-called "Sunday Soviets," informal weekly meetings where senior command officers, scientists concerned with radar development, and junior operational officers from the frontline would meet for a frank exchange of views. This brought "reality" to the scientists, frequently mesmerized by the brilliance of what they were inventing; tempered the views of senior officers, many of whom had their "ears pinned back" by enthusiastic juniors; and brought hot technical tips to the operators. On the other hand, Doenitz' operational staff in Paris, consisting of seven action-tested ex-U-boat captains, average age 33, had no contact with the current U-boat commanders and the scientists. Indeed, until the end of 1943, the German Navy thought this was unnecessary and even diverting from the principal task. "Could any matter in naval warfare be all that far beyond the grasp of a trained and dedicated naval officer?"

I have heard this question posed rhetorically in the Naval War College. While by no means advocating the abdication of the naval officer's control of his profession, I strongly recommend that anyone thinking about this question read *Aircraft Versus Submarine*, at least to discover the painful route the German submarine service chose to find a way to the answer.

M.G.M.W. ELLIS
Commander, Royal Navy

Steinbruner, John. D. *The Cybernetic Theory of Decision: New Dimensions of Political Analysis.* Princeton: Princeton University Press, 1974. 366pp.

There are many paradigms or models which the analyst can apply to understanding the policy process. Three of the models most in vogue among contemporary analysts are the rational, cybernetic, and cognitive. The rational model implies that the decisionmaker sets forth his objective, lays out his options, and chooses that option which holds the most promise of achieving the desired objective at an acceptable cost. On the other hand, the cybernetic model assumes that the policymaker uses simple decision mechanisms to adapt to a complicated environment. The cognitive model falls somewhere in between the extremes of the rational and cybernetic paradigms. It implies that the options selected by decisionmakers are a result not of cost benefit analysis but of past experiences.

In this volume, John Steinbruner argues that the cybernetic paradigm