

**Born of War, Operations Analysis is the Science of Decisions and Command  
or  
“I’m not Studying That. That’s for Geeks!”**

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**Introduction**

“I’m not studying that. That’s for Geeks!” is an often-heard response to the detailer’s proposal that a sea-going junior officer invest his first shore tour at the Naval Postgraduate School in the study of Operations Analysis. Oh, Monterey sounds pretty good, but let someone else tackle that math stuff. Besides, the word is out—if you get that degree, all you do is hard work in the Pentagon’s backrooms.

Articles should have the summary up front and here is this one’s: A Masters in Operations Analysis is not easily earned—it’s no gimme—but its value has been proven in every war since World War II, it is used in operations at sea today, and it helps determine the future fleet of tomorrow. All Government branches and every major civilian industry use it to guide tactical, operational, and strategic decision-making. It applies decision theory, applied math, human factors, campaign analysis, war gaming, simulation, optimization, statistics, regression, forecasting—but it is not any *one* of them. Operations Analysis is about decisions, operations, and winning. You should give more than a passing thought to accepting the detailer’s proposal.

**Operations Analysis is Not About Building Simulation Models**

“You can’t fool me,” is your response, “I knew a guy whose roommate studied OA, and all he did was build computer simulation models.” A common misconception is confusing

Operations Analysis with the tools it uses to achieve the real objective: aiding decisions and operations. It's like calling a carpenter a hammer-smith because in his work's course he may apply that tool. Yes, some decisions can be aided through the use of computer simulations, but the Operations Analyst's art is to know when simulation, or for that matter, any model, is appropriate to the problem.

What makes Operations Analysts qualified to make judgments on Navy problems? Enter you, the line officer. The ability to select the right techniques to best aid fleet problem solving requires talented sea-going operators to study Operations Analysis. Experienced aviators, surface and submarine officers bring knowledge of the actual problem to be addressed. They have lived it. Combining operational experience with a basic understanding of decision aids, they are the experts on which "tool" is best for the decision concerned—ranging from designing a future distributed sensor system to the scheduling of today's strike assets. They also become the best evaluator of a contractor's newest study or model, the bridge builder between today's vision and tomorrow's fleet, and a qualified and quantitative advisor to a fleet commander. In turn, they prepare themselves to take critical leadership positions in the future they help shape.

### **Operations Analysis is About Decisions and Risk Evaluation**

So what is OA? Operations Analysis is the art of applying quantitative methods to formulating problems, developing and evaluating alternatives, and communicating results in a venue useful to leadership. "What?" your response may be, "I do that every day in my job!" Yes, you do. As the current CNO N80, RADM Route, himself an Operations Analyst, recently said, "We do OA everyday at sea." Every time we shoot a missile, navigate a channel, launch an aircraft, plan an operation, determine a search pattern, or order fuel, we are evaluating

alternatives, and considering expected benefits and possible risks by using some measurement important to us. So why don't we expose all naval officers to OA techniques? Hmm... Quoting RADM Ellison, Superintendent of the Naval Postgraduate School, "I believe every unrestricted line officer should be taught the rudiments of Operations Analysis." NPS offers a variety of courses and programs to meet that objective. Two programs specifically designed to meet operators' needs in analysis are the Naval Warfare track of Operations Research and the Systems Engineering and Analysis program.

Everyone does not need an OA degree, but the Navy can benefit from a select cadre of operator-analysts to help our leadership in the following categories, which are taken directly from the book *Military Modeling for Decision Making* [1].

***Battle Planning.*** People with Ph.D.s' in rationality and management call the joint planning process technical/economic rationality. The technical rationality and joint process formulates the problem, generates and evaluates alternatives, and communicates results—sound familiar? You will be hard pressed to walk into an Army-led Joint Task Force and not find about three to five Army officers called the "Operations Analysis Cell." Their job is to assist the J5 and/or J3 in the evaluation of alternatives and daily operational planning. Are we saying the Navy should do things the Army way?—not in this paper! However, every Joint Task Force and fleet staff can benefit from a Navy operator educated in OA techniques to assist the commander in evaluating his maritime campaign options. The mariner knows the environment, his warfare, and the evaluation techniques to best show their contributions to the joint fight.

***National Policy Analysis.*** What effectively influences governments or foreign leadership before we jump into battle planning? Is there a link between subsidies, military education, and a DDG port visit? An OA-educated naval officer, bringing the tools of network analysis, game theory, decision analysis, and influence theory, can impact our own national-level policy.

***Wartime Operations.*** What are the critical nodes and links to strike? In what order? What are the first, second, and third order effects? Which cells on what ships to launch? When and where should strike assets be relocated? What is the best sensor allocation? Search plan? Officers use a variety of decision aids to answer questions like these. Most operational and tactical aids are based on Operations Analysis techniques. A tactical aid's effective development, selection, and implementation during war depend on an experienced operator, educated to understand the underlining analytical principles, who can guide its proper use. Great swords are made by sword-smiths who also know how to fence.

***Force Sizing, Weapons Procurement, and Human Resources.*** The Navy's future! Officers experienced in campaign analysis, regression, optimization, forecasting, cost estimation, simulation, war gaming, and operational test and evaluation are deeply involved in creating the analysis required to determine critical program decisions that will affect the U.S. Navy's nature, character, and composition for 50 years. Not a believer? Ask Commander Steve Richter, an OA-educated surface officer, who recently found himself in a one-on-one briefing with SECNAV on future fleet composition. He made a difference. And what made him different from just any action officer inside the Navy Staff is that he could explain the basis for the analysis in his briefing. He knew what he was talking about.

## **Operations Analysis is About Thinking.**

The preceding examples highlight where Operations Analysis tools have been brought to bear by educated sea-going officers to help solve difficult, time-critical warfighting problems demanding decisions. But there are many other areas where our Navy's Staff Corp uses OA techniques on a daily basis, such as logistics and supply, medical planning, and intelligence evaluation. To support all these activities, the Navy's billet structure supports OA-educated officers in fleet staffs, operational test, evaluation, and warfare development commands, personnel commands, and the CNO's Staff. All are important places, but an unrestricted line officer's next tour after receiving an OA-degree is at sea, where only the imagination's limits restrict how they apply their education to benefit current operations.

A little oversell you think? As more than one flag officer alumni of the NPS OA programs has stated, it's not necessarily the specific analytical tools learned, but the thought process of clearly defining a problem, then generating measurable and comparable alternatives to address the challenge, that has served them well throughout their careers. It's a way of thinking, and in turn, a tool for leadership.

Are you considering an NPS education or do you mentor junior officers on their career moves? If so, don't dismiss the Operations Analysis or System's Engineering and Analysis degrees' value—to you, the Navy, and the future.

If you're interested in learning more, visit <http://www.nps.navy.mil/opnsrsch/> for a more complete description of analytical degrees at NPS.

[1] Hughes Jr., Wayne P., ed. 1997. *Military Modeling for Decision Making*. Alexandria, VA: Military Operations Research Society: 3-4.