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2014-07

Admiral Mike Mullen Interview (MORS)

Mullen, Michael Glenn Mike

<http://hdl.handle.net/10945/52654>

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INTRODUCTION

Oral histories represent the recollections and opinions of the person interviewed, and not the official position of MORS. Omissions and errors in fact are corrected when possible, but every effort has been made to present Admiral Mullen's own words.

Admiral Michael Glenn "Mike" Mullen was the 17th Chairman of the Joint Chiefs of Staff from October 1, 2007, to September 30, 2011, and the 28th Chief of Naval Operations from July 22, 2005, to September 29, 2007. Admiral Mullen earned a master of science degree in operations research (OR) from the Naval Postgraduate School (NPS) in 1985, with Captain Wayne Hughes, FS, as his thesis advisor. This interview was conducted on July 14, 2014, in Washington, DC.

FOREWORD

By Wayne Hughes, FS

Regarding this oral history: Mike's replies paint a picture that is valuable to all officers in charting a military career, not just OR graduates or even NPS graduates. I think his description of a Navy life, including how he decided on the Naval Academy, his aspiration to and satisfaction from repeated commands, his candor about surviving some career-killer events, the risks and rewards of the Zumwalt Mod Squad, the role of his wife, and at every career stage never being so fixed on the Navy (out of fear of going outside and starting over) but thinking about other options along the way is precious. Mike describes how our best officers should think about their careers and their lives as contributors to a better society and nation. His interview is unique.

MORS ORAL HISTORY

Interview with Admiral Mike Mullen. Dr. Jerry Brown, CDR Harrison Schramm, and Dr. Bob Sheldon, FS, Interviewers.

Bob Sheldon: First of all Admiral, can you give me your parents' names and where you were born?

Mike Mullen: I was born in Hollywood, California, and my father's name is John Edward Mullen and my mother is Mary Jane Glenn Mullen.

Bob Sheldon: Tell us about your parents and how they influenced you.

Mike Mullen: I grew up in the entertainment world. Both of my parents were Midwest kids, depression kids. My father was the first in his family to go to college. He graduated from the University of Illinois with a degree in journalism—put himself through college. His parents both died when he was young. He spent his last dime on a phone call to possibly get a job out in Southern California and accepted that job and started his career at Republic Studios in the 1940s.

He went on the road with Gene Autry in the 1940s, which is where he started in the business. My dad had an older brother Bill. My mother was one of five kids—fourth by age. Her family lost their farm in the 1940s and my mother and two of her sisters along with my grandparents moved to Southern California to find a better life. Then my mother ended up working at Republic Studios.

Sometimes it's depicted that my mother worked directly for Jimmy Durante. I'm not sure that's the case but she was in his office. So my parents met at Republic Studios. They got married December 1, 1945 and I was born a year later. My mother stopped working and raised five kids while my father progressed through the entertainment business to become a very successful publicist. My mother was also a publicist.

I would differentiate between publicist and agent; my dad wasn't anybody's agent. He was a terrific writer and a terrific journalist and spent his professional life that way. He was a ghost writer for a very famous woman named Sheila Graham, who was one of the "in-crowd" in Hollywood and the entertainment community. It was good if you could get your name in Sheila Graham's column, so he spent a lot of time getting his client's names in—"putting them in lights." He handled Julie Andrews when she came to the West Coast.

He handled Steve McQueen when he became a star, Jim Garner and Jack Kelley who were the "Maverick brothers" in the famous western series *Maverick* in the 1950s. He handled the whole *Gunsmoke* show. He handled Cliff Robertson's Oscar nomination for his academy award-winning performance. Robertson won the Oscar for the film *Charley*. He handled some of the biggest

Military Operations Research Society (MORS) Oral History Project Interview of Admiral Mike Mullen

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stars in the business, including academy award winner Rod Steiger.

Both my mom and dad influenced me greatly. Both of them taught me early to not be judgmental and to care about people, especially my mom. They were both very caring people. My father was an incredibly hard worker. He taught me responsibility early without me really knowing it, and he was very influential in my decision to go to Annapolis even though he had not served in World War II. His brother did; my uncles all had. My dad was medically not qualified to serve.

I was the oldest of five kids and my dad said, "If you want to go to a good college you better figure out a way to have somebody pay for it." I was a basketball player and I was on my way to the University of California at Santa Barbara (UCSB) to play basketball on a scholarship, which wasn't a lot of money back then in the UC system at about \$300 per semester.

The Naval Academy recruited me at the last minute to play basketball, and my parents let me do this. They knew nothing about the Naval Academy. I was also pursued by a father of a good friend of mine from high school who'd gone to Annapolis the year before to play football. He was a Beverly Hills cop and he said, "It's something you really ought to look at." So eventually, very late, I made a decision to go. I was actually, ironically, given an appointment out of Chicago, which is where my dad was originally from, by Dan Rostenkowski, because he had one appointment that wasn't filled and Annapolis figured out a way to make that available to me. I was what was called a "qualified alternate."

I got there and my parents, who had no military background, didn't know much about the place and didn't get in the way. This was in 1964. It was important to my parents that I go to college. My dad made it particularly clear to me, "You know, I've got four more behind you. You're out of here. It's time to move on and make your own way." They allowed me a degree of independence; they fully supported me while I was at the Naval Academy in many ways. They let me take responsibility for myself.

That translated for me later into accountability for my own actions. Back to my dad's

skills. I knew more than I thought: I knew about communicating in writing and messaging, which came into play many years later when I got into much more senior positions. So my parents had a tremendous influence on me across the board.

I grew up in what I call "Ozzie and Harriet's" house—white picket fence, nice little middle class neighborhood. I had no idea what was going on in the bigger world at the time. I remember going home after my first year at the Naval Academy. I went on a summer cruise, and then I had a month off in August of 1965 and I was watching TV. I'm a sports guy, so I'd been to many sporting events in and around Los Angeles, mostly UCLA events or the Rams or the Lakers or the Dodgers. But I remember in August of 1965, from my parent's living room, watching Watts burn. Watts was 15 miles from where I grew up. It could have been the moon.

That was a very significant event in my life and I've never forgotten it because "how could I live so close to what was such a disaster and not have any idea?" I'm a curious guy so I wanted to know more about that. It's something that has stuck with me in terms of my focus over the long run on people, opportunity and affirmative action and (outside politicizing the words) "equal opportunity." It really is about equal opportunity. For me, it's been about talent—there's talent there, so how do you give that talent an opportunity? Those years for me were—as I think they are for most people—incredibly influential in terms of what happened later on. As a young kid I didn't understand that.

I left home at 17. I was young; in retrospect, I was probably too young. I was a year, maybe even two years too young to go to the Naval Academy. But, that said, I was intent on going and went and survived my time in the Naval Academy.

Bob Sheldon: I want to back you up and ask where you went to junior high and high school and what kind of subjects interested you there.

Mike Mullen: I was raised in a Catholic family. I went to a Catholic grade school—first to eighth grade. The subjects that interested me the most were math subjects: math and science. Certainly in primary school it was mathematics. I had nuns who pushed me very hard.

I was never a great test taker. I don't think I really understood that. I never scored particularly well. I don't mean in classroom academic tests, but SATs were a struggle. In grade school I was with an extraordinarily bright group of kids. I can go back to the fourth and fifth grade and start to understand more about how bright a lot of my peers were. I was a pretty competitive guy so I was competing with that group.

In particular, I had a nun in the eighth grade, Sister Saint Audrey, who was merciless in her expectations. She had a big impact on me. She had a big impact on all of us, and it was mostly in math. We used to go in early and practice taking these standardized tests—mostly math tests—and stay late. Then in high school, it was the same way. Mostly math and physics. I found math to come relatively easily.

I was not a great student. I didn't have to study hard to do well. I actually really enjoyed writing a lot and so I did a lot of that (this goes back to my mom and dad). I also was an avid reader as a kid, which my parents instilled in me as well.

I did well in English but I didn't score well on English tests. I went to a good Catholic high school that was well-known for its academics—in particular math. I also took Latin and physics, chemistry, etc.

There was a math teacher there by the name of Brother Benignus, who recently passed away, who was just a magician. He could write with his left hand and erase with his right simultaneously on a chalk board like nobody I've ever known, and simultaneously explain it. The group that came with me from St. Charles went into another group of high-end students from a lot of the (principally) parochial schools in the area—an equally superb group of students there. It was a great group to be associated with and I liked it. I had an affinity for it.

I wasn't a great student but I was a good student. I enjoyed it and that gave me the underpinnings I needed to pursue an education at the college level and subsequently down the road in Monterey.

Bob Sheldon: How did your participation in basketball affect your outlook?

Mike Mullen: I played sports my whole life. I was always competitive; always wanted to win. I love sports. I was principally, as a kid, a

basketball and baseball player—both really—up through the beginning of high school. I focused on basketball because I wanted to play basketball in high school and I did.

I think with all sports: one, competition; two, push yourself; the third is training and practice. And being part of a team is a piece of it. In our lives there are a handful of people who influence us all and one of those groups, if you're an athlete, is coaches. I had some great coaches, going back to when I started basketball early in the fifth grade. That was the first "official" basketball team I played on.

I can remember the coach, who was just probably 22 at the time, but he had a great influence on me. That translated into a terrific set of coaches who were better examples as human beings than as technical coaches as I look back. They really pushed me.

You could find your limits. They would push you to your limits physically at the time, or what you thought your limits were. Oftentimes you found out that you could go farther than you thought you could.

I attended two great schools, St. Charles Elementary and Notre Dame High School, which had a great influence on me. St. Charles was the local parochial school so I was going there.

But I remember a discussion I had with my dad. There was a brand new Catholic high school opening up called Crespi. My dad was taking me to school one day at St. Charles and he said, "I really want you to think about going to Crespi." I had been so focused on going to Notre Dame and, bless his heart, he didn't persist, because I resisted that. But those two schools had an extraordinary influence on me as a young kid as did the Catholic education itself.

The Catholic upbringing, particularly rules and discipline and right and wrong, morals, ethics, values—all that stuff. That combination from the time I was six years old until I was 17—that 11, 12 years—was hugely impactful, as it is today.

Bob Sheldon: You had a choice between accepting a scholarship in California and going to the Naval Academy. How did you make that choice?

Mike Mullen: My mother would tell you that I made pretty mature decisions for a kid so

young. She would also say that I was a “perfectionist” and thus chose the “perfect” school. She would cite several which I can’t remember. But the whole issue about the Naval Academy was that I knew that because I got good grades easily, I didn’t have to study. I liked to party. I liked to have a good time socially and had run with—in high school—older kids that were a year, two years ahead of me. There was an affinity for alcohol back then amongst the group.

I’d watched too many of my friends who graduated a year or two ahead of me go to UCLA or go out to Berkeley or USC, and within a semester or two having joined the fraternities—and these were good kids, good students—they were back at the local junior college because they basically screwed off in college.

In the Catholic Church, you have this thing called “the occasion of sin.” If you’re around it, you can get drawn in. I knew that if I’d gone to UCSB, which was a party school, to play basketball, I’d have been a dead man. I’d have no future. So this opportunity came up. I knew I needed a disciplined environment.

I had a hankering to go to school on the East Coast. Bill Bradley was the best basketball player in the country back then and he played for Princeton. I didn’t have the grades or the basketball skills to go to Princeton. But I did have a hankering to go east and then the Naval Academy recruited me to play, and it was free. It was all those things. So all that kind of lined up. My original plan was to go there for two years. You can go to a Service Academy, you could then—you can now—go for two years and you can then leave without any obligation.

That was my 17-year-old view. Obviously that didn’t pan out. But I needed the discipline more than anything else, and I wanted to go to a place that gave you a good education. So it was those two things that lined up. And it was an engineering school which I was very comfortable with. So that’s why I decided to go.

Harrison Schramm: Continuing to talk about your education, what courses, instructors, and subjects were most memorable and most influential during your time at the Naval Academy, and did your opinion on that change as you rose to senior levels?

Mike Mullen: Those who know me know this: even in that very disciplined environment, I had a good time while I was there. People ask me about regrets. One of the regrets—in fact I was having this conversation with a young midshipman the other day—I wish I’d worked harder there. But I didn’t, and it ended up being what it ended up being.

I actually really enjoyed most of the math and the science and engineering; mostly math because it came relatively easily. That doesn’t mean I crushed it. I did well. They were courses that were pretty easy for me to understand and I didn’t have to exert a whole lot of effort to get decent grades. My grades initially were terrible. Part of it was the fact that I was so young and immature.

Plebe year is a load (academically). It’s 18, 19, 20 hours when you show up there. Back then we took exams after Christmas, so you didn’t take exams until January. I came home Christmas of my plebe year and my grade point average was 0.9—significantly below the 2.0 that you need.

A lot of people didn’t give me much hope. Somehow in that exam cycle I managed to get good enough grades on the finals. I ended up with a 2.1 or a 2.3, something like that. Then from an academic standpoint I never really was threatened by being UNSAT (Naval Academy lingo for below minimum grade average) although I certainly didn’t set the world on fire. But I was most comfortable in the math, science and engineering from the get-go. Not unlike what I’d learned in high school and going back to grade school.

I remember taking a course called Theoretical Physics III and the way I described it was, “Most of the course the professor did in the third dimension writing in magic off the blackboard.” I was not a math major. I was a systems engineering major. We didn’t actually have majors; we actually called areas of focus “minors.” My class was the first class that the Naval Academy started something called minors where they gave you an area of emphasis to study, and mine was systems engineering.

The systems engineering “minor” got me involved with computers for the first time. But I’d never taken this elective class, Theoretical Physics III, until my junior year. I’d been

through Physics 1, Physics 2, and I needed to have this elective to graduate in this particular minor. So I took it. I literally for a whole semester didn't understand the course. And I was in with some powerhouses and I was lucky to pass the course, and so were they.

I remember we had a final with just five problems—it may have been three. I have absolutely no idea how I passed the final, which I did. So while I was comfortable in math and science up to a point, when you take it to that level it was an area that could easily baffle me. But I enjoyed that. I enjoyed the engineering courses.

When I got into thermodynamics or the other engineering courses, they weren't easy for me but I enjoyed them and I could understand them. Part of it, as you find out when you get older, studying makes a big difference in your ability to understand and perform academically.

I also enjoyed a Naval history course taught by E.B. Potter who was Admiral Nimitz's biographer. I was fascinated with Potter and with all of that. So that was another one that I really liked. I had a great chemistry professor that I remember my first year there who had a big impact on me. So those were the ones that I really—to say that I enjoyed them is probably an overstatement—but those are the ones that I did well in and was comfortable in.

Harrison Schramm: Do you recall where you lived in Bancroft Hall?

Mike Mullen: When I was a plebe I lived on 4-4 (fourth wing, fourth deck); the year was just a blank. It was a disastrous year. My whole family was out on the West Coast, and back then you just didn't go home. I went home Christmas but you didn't go home for Thanksgiving. My mother's sister—the one who didn't go to California and became a big band singer in New York—lived up in Westport, Connecticut, so I would go up there for a reprieve. Our company was the 19th Company. The last two years I lived over on 3-0 because I went from 19th Company to First Company. I lived in 3038 for my junior year and 3058 for my senior year. I don't know why I remember that although I could walk to the room I lived in second class and first class years.

Ironically, years later when I went back as a Company Officer, I ended up being the First Company Officer so I was right in the space where I'd lived my last two years as a midshipman.

Harrison Schramm: Can you tell us about the social aspects of Annapolis? Did you ever hang out in the "downtown" area?

Mike Mullen: No, because if you went downtown it was pretty easy to get in trouble. I obviously didn't do any of that plebe year. The memory from plebe year is a place called Chris's Sub Shop, which is where (seemingly) half the brigade got submarine sandwiches when we could do that as plebes. I actually got involved with a group of firsties (first class midshipmen, or seniors) when I was a youngster (third class midshipman, or sophomore) who had a house out in town in Eastport.

I was in that. That's where I would go. We didn't go to a pub. We hung out at that house, which was not legal (then or now). Then for a couple of years I ended up running the house for a group of my classmates for the next two years. It was not insignificant because there were plenty of houses that were illegal that got found out. Not that we didn't have our challenges in that regard.

But we kept it pretty low-key so were able to "get away with it" for a significant period of time. I was the guy who handled the money; the rent, etc. It was pretty easy for me. Even in high school I was a group leader. I could get elected. I mean I wouldn't necessarily pursue it, but I would get elected by my peers. In retrospect I was a good consensus builder and a good friend to a lot of people.

I just use that as one example. Back to the regrets—I wish I had applied my skills inside the Naval Academy as vigorously as I did to some areas outside the Naval Academy. When I say it was "illegal," it was illegal in terms of the regulations of the Naval Academy. It wasn't illegal in terms of the law. It was just a risk I took.

Harrison Schramm: You mentioned your tour as a Company Officer. How did you come to have an assignment as a Company Officer and how did that change your perspective?

Mike Mullen: Well, it's a great question. I met my wife first class year—Deborah. We

had a great year that year. She's from LA, but the reason I met her is she was with a high school friend of hers whose family had moved back to Chevy Chase, Maryland, from LA. Deb's mother and my mother met at a wedding reception of a close childhood friend of mine, and they got into a discussion. "My son's in Annapolis." "My daughter's living in Washington." So I met Deb. Our first date was the Army-Navy game on December 1, 1967.

I graduated and we both went back out to California. I deployed to Vietnam about a year later, so not right away. Then we got married in July 1970 when I got back. We had a wonderful time in Annapolis first class year. I went to sea for seven years—five of which I'm married. I told her when we got married out in California, "We're going to go to Destroyer school in Newport, and come back to the West Coast." And that didn't happen. I also told her that I was staying in for five years and we would get out. That didn't happen either. She didn't know much about the Navy.

Then, for the next three deployments, I didn't go to the West Coast. I went to Norfolk to something called the "Mod Squad" which was very exciting. Bud Zumwalt (Admiral Elmo Zumwalt) was the Chief of Naval Operations (CNO, the Navy's senior Admiral) in 1970, and he made it very exciting for a lot of young people. I got stationed on a ship that was in the Mod Squad. The idea behind the Mod Squad was each position—the Captain, the Executive Officer (XO, 2nd in command), and the department heads—were all one pay grade junior to what was normal. So the Commanding Officer (CO) was a Lieutenant Commander. The XO was essentially a Lieutenant—senior Lieutenant post Department Head. And the Department Heads were all Junior Officers (JOs, O-3 and below).

I was one of those Department Heads. So I got put in that squadron and it was a great group of ships and I met the most significant mentor in my professional life—the CO—who made it exciting to come in every day to work. This was after my first deployment to Vietnam. His name was George Sullivan and he motivated me to seek command at a very young age. I then went to command.

And I went to command because this mentor of mine had commanded as a Lieutenant and he said, "You have to go do this."

I loved command, but I had a disastrous command tour in terms of my evaluations.

I collided with a buoy very early in my Command tour as a Lieutenant. This has become a famous story. My first sea detail (a ship's procedure for entering and leaving port) after I took over in February 1973 I collided with buoy 11 in the Thimble Shoals Channel. It's not a good thing to hit anything with your ship. I received a one-day special fitness report which was essentially an "F."

That was a shadow in the rest of my evaluations while in Command. I was supposed to go for one-year command tour and it got extended to two, and then it got extended another six months so I could decommission the ship. So two-and-a-half years later I left that job and my career was pretty much in the tank.

During those three deployments—one on the ship with my mentor and then twice to the Mediterranean on my own ship—Deb followed my ship. She either flew to Europe or she took the Michelangelo from New York to Naples, third class. She traveled around Europe with a buddy or two as I was making my way around the Mediterranean, and we would meet in various ports in Spain, France, Italy, and Greece. We didn't have kids then so we had a spectacular time.

There was one fitness report in particular that was going to stop my career. When that got finalized, Deb was on one of those trips; she actually flew home early. This mentor of mine, who had been in the Bureau of Naval Personnel, knew I had to apply to the Board for Corrections to Naval Records (BCNR) to have it removed. It took me two to three years to get it out of my record. I'd gone from somebody that was a front runner to the "back of the pack." After LT Command, I said to Deb, "Where do you want to go?"

She said, "Well, I'd really like to go back to the Naval Academy." I didn't know if it was important shore duty or not. So I said, "Great," and we went back to Annapolis.

Ironically, because of the command tour I could not screen to be a Company Officer at the Naval Academy. My Commodore knew

the detailer in my community and said, "Look, this is a good young kid. You have to take a chance." So I got assigned as a Company Officer and ended up there.

That was a three-year tour, the third year of which I ended up being the executive assistant to the Commandant of Midshipmen, Admiral James Winnefeld. He was the greatest Naval officer I've ever known. My colleagues at USNA were also spectacular. It was not unlike when I went to school with great kids in the eighth grade and in high school. There must have been seven or eight or nine of us that made flag down the road.

The Superintendent (SUPE, the Admiral in charge of the Naval Academy) was a guy named Kin McKee (Admiral Kinnaird McKee) and the Commandant was Jim Winnefeld. They were classmates out of 1951 and they were both great mentors and great leaders. That was also a time when we brought women to the Naval Academy. I, on a collateral duty, was assigned to the admissions board. That was my first exposure to bringing women into the Navy. We got the telegram or whatever it was from the authorization act in October of 1975: "Women next year."

That was all the guidance we had. I ended up being a Company Officer in the First Company for two years and then moved up into the Commandant's office the third year. It was a great tour, and Deborah and I had a great time; we still reside in Annapolis. I bought an acre of land just before I left to go to the Pacific for nine years, based on a recommendation of a buddy of mine in 1978. In 1994, Deborah built a house there and that's the home we live in right now.

Harrison Schramm: You mentioned in leaving command and going to the Naval Academy that your plan was to get out. Had you gotten out of the Navy, what do you think you would have done?

Mike Mullen: I don't know. At one point I was attracted to what my dad was doing, but part of my makeup is persistence. So when I got that special fitness report, in February–March of 1973, and successfully had it removed two and one-half years later—I screened for command while I was at NPS in November of 1984. This was basically my last

opportunity to screen for Commander Command. That's how long it took me to recover—11 years.

I loved command so much that I wanted to go back to command and I was going to figure out a way to do that. When I left the Naval Academy I took a very hard tour as Chief Engineer of a 1,200-pound cruiser (referring to the steam plant). At that point in time, 1,200 pound ships were disasters; engineering maintenance was a big problem. I'd never been an engineer. So I tell young people today the two things out of that part of my life: If you want to succeed in life, you want to get ready for the future, go to command and take hard jobs.

I knew a little bit about engineering because of the LT Command tour that I had for two and a half years on a diesel electric drive ship from World War II. This was USS *Noxubee*. But I really didn't know engineering. So I figured if I'm going to command a ship someday, I better figure out how it gets from point A to point B. I became a Chief Engineer. I'd been a Weapons Officer; I'd been an Operations Officer. I needed the engineering background.

I really needed to do that. I really do believe in the military and the Navy being a meritocracy; it's not perfect but it's the best system I think that's out there. And I was able to eventually go back to sea again in command.

The Navy kept giving me great jobs, and I loved going to sea. I loved sailors. I loved seeing the world. It influenced me more than I knew from the time I went to Vietnam—my first port visit was Sasebo, Japan, on my first deployment.

I made a port visit to Hong Kong, which was fascinating, interesting, compelling. I love the Asia-Pacific areas. I love their culture. I love the fact that they cared for families. I love their values. It was something I really found myself enthralled by.

Harrison Schramm: At what point in your career did becoming a flag officer seem achievable?

Mike Mullen: It was never a goal of mine. My second command was a broken ship—USS *Goldsborough*—but all she really needed was good leadership. I think of that almost in reflection. But that was relatively easy for me. It was a hard tour. DDGs (guided missile destroyers)

were hard—1,200 pound plants. They were old, but what a magnificent ship and crew.

The leadership was what I was quite easily able to provide and out of that was supported by my peers for the Stockdale Award (Vice Admiral James Bond Stockdale Award for Inspirational Leadership). It is the only award that I think is significant in my whole career because you're nominated by your peers, and the ship did incredibly well.

At this point I'm an O-5 (Commander) and I haven't been to Washington. My friends are all telling me I'm toast since "You haven't been to headquarters." I tried to go to DC but I got jammed into a great assignment up in Newport to teach the Division Officer Course at the Surface Warfare Officers School Command. This is where you take your brand new ensigns who are going to surface ships and run them through a several-months-long training course in Newport to get them ready to go to the fleet.

Goldwater-Nichols passes in 1986, and now you have no future unless you have a joint tour. It was 1988 and I needed a joint assignment. I was scrambling. It's serious that to make O-6 (Captain), which I did, you have to have a joint job or you have no future. Quite frankly, all I wanted to do was go back to sea and command a ship again. I knew I couldn't do that right away. So I found a classmate of mine, John Lyons, who was working in the Office of the Secretary of Defense (OSD) at the time, who needed a relief. I lined myself up for that and it worked. So I had my "joint ticket" punched. That was my first tour in Washington in 1989. I was deep-selected (selected below the promotion zone) for O-6 by one number, meaning had the line been drawn two numbers below where I was I'd have been selected "on time." I was never deep-selected for any paygrade before O-6.

My single goal was to get back to sea and command. So I screened for Major Command. I rolled out to the USS *Yorktown*, which was an Aegis (Navy radar suite) ship. I was trying to get into the Aegis world and I'd done my thesis on Aegis at NPS (I suppose we'll talk about that later) and I'm an anti-air warfare (AAW) guy. I'd grown up in the air defense world. It was all about the Soviet Union. I love that world and I

was good in that world. Even when I was engineer and deployed in the Persian Gulf in 1981 in the USS *Fox*, I stood as Tactical Action Officer (TAO) in a very tense AAW environment off Iran and Iraq at the time.

So that was it for me. I had a terrific tour in the *Yorktown*, although I also had a big failure. I failed the Operational Propulsion Plant Examination (OPPE), which is the major engineering inspection for any ship. I failed it and it was my fault; it wasn't anybody else's. I had a young Chief Engineer and I gave him too much rope. He needed more guidance than I had given him. I thought my career was over at the time. Not unlike my mentor when I failed in command as a Lieutenant, Paul Reason (Admiral J. Paul Reason) who was a three-star at the time and Don Pilling (Admiral Donald Pilling) who was a one-star, thought I might have some potential. Pilling was my operational commander at the time. They picked me up and at least gave me enough running room to rectify the situation in terms of that inspection, which I did. The point is that without mentors in both of my major failures in Command (once as a LT (O-3) and once as a Captain (O-6)), I had no future in the Navy.

The first time I realized it was possible to make flag is when I got my assignment after USS *Yorktown*. I became the head detailer for the surface community, PERS-41. The odds are very much with you if you get the assignment. You have to work pretty hard to not make flag.

Up to that point I hadn't even thought about it because I was so focused on command. Quite frankly, if the Navy had said to me, "That was it." I'd have said, "Thanks. I've had three commands. I've seen the world. I've fought in wars. I've done things that very few people in history have done. Thank you very much. I've had a great life." And I'd have been on my original plan when I got commissioned which was, "I'll stay for 20." I think. I mean once I got beyond 5, "Okay, I'll stay for 20. I'll be out when I'm 42 or 43 years old and I'll figure out what I'm going to do then." That obviously didn't happen.

Jerry Brown: The Navy's had the foresight for over 100 years to create and maintain the Naval Postgraduate School and provide relevant

graduate education for naval officers. But there is a constant scrimmage between the desire for officers to have tactical experience, and to have postgraduate technical education. Recent results would indicate that the needle has swung back toward tactical versus academic. Where do you stand on this? What advice do you have for us?

Mike Mullen: Well, you know how much I cherish the Naval Postgraduate School. It taught me much more than I was prepared to be taught. Although at that point in my life, I was a Commander at the time, I was pretty senior. I was the most senior student at NPS at the time.

In fact taking an assignment to get my master's degree at NPS put my career at risk. Hank Giffen (Vice Admiral Henry Giffen), who was a very good friend of mine, was my detailee. I was XO of a ship out in the Philippines and Hank said, "You've got to come to Washington." I said, "I've been overseas. I want to get my master's." I'd only had one other opportunity to do that and I didn't do that when I first went ashore. "And I really want to get into operations research (OR)." A guy named Bill Cobb who is a dear friend, classmate, and shipmate of mine was an OR graduate in the 1970s. He and I had talked about OR a lot.

I knew that's what I wanted to do. So Giffen finally conceded. He said, "Okay, if you can find a billet I'll write you orders." So I was able to get permission from the curriculum sponsor and went against the advice of everybody in terms of not going to Washington. And it was every bit as special as it could possibly have been for lots of reasons, not the least of which was the academic challenge. I also had at this point matured enough to know that if you studied you could actually learn. It was also a great town for us as a family.

I'm sad to say that it was the first time I really had done that, and I was scared to death because I hadn't opened a book in 15 years. I ended up being a section leader. That's not a surprise. Two of the guys who ended up in my class were Doug Grau and Jack McCourt and when they were third class midshipmen, I had been their Company Officer at USNA! They were just delighted to see their old Company Officer sitting at the front of the class taking muster again.

They'd been out seven years and they were sweating. But the point is I hadn't cracked a book in 15 years, really. So I was petrified in many ways, but it was my first really full academic experience, which I will cherish for the rest of my life. I tell a lot of people that and what struck me about Monterey then was the quality of professors, the quality of instruction, and certainly the students.

As best I could tell, the professors at NPS in particular lead the OR world. It was still discovery for me about what OR really was.

As intellectually curious as I was, I also learned there that I didn't want a PhD because there was nothing in the world I wanted to know that much about. That doesn't mean that we don't need them or that there isn't great value in that. It just wasn't for me.

More than anything else, I learned about the quality of the institution across the board, which is why its care and feeding is so important. Historically, I think the Naval Postgraduate School can be its own worst enemy in the sense that it likes it out there in Monterey. It doesn't want to be tied closely to Washington, and yet Washington sends the money. Washington sets the rules.

And then what happens is everybody forgets about the Postgraduate School until another threat comes up in the budget world and everybody calls on their friends. I want the Postgraduate School—and I think certainly Ron Route (NPS President) is a great example of this and so is Dan Oliver (Past NPS President)—I want people who are running that place to have been immersed in Washington so they understand the rules and that the Postgraduate School plays constantly so that when the next threat comes up—whether it's base realignment and closure (BRAC) or otherwise—it's already decided that that's not going to be a big threat.

As opposed to, "Let's get out all the big guns as soon as BRAC threatens again and try to survive." I think that strategic approach is much more threatening to a bad outcome than the one where you're engaged. I'm not really concerned about the specifics of instruction because I have a lot of faith in NPS to sustain world-class academic standards. I feel it is critical that we have officers who have gone through the master's programs, who have that level of

degree and education and exposure and the commensurate curiosity and impact that that education brings into whatever their field is.

I think we're always going to swing back and forth between tactical and strategic. That concerns me less than the quality of the product and that the master's-level degree that you go through that includes the broad array of both the theory and the practice in the profession in which we live.

The other thing that the Postgraduate School brought when I went through and is compelling to me not just then but now is the number of allied foreign students and students from other US Government agencies. In a world that is just demanding relationships around the world, that can prove to be very important in the future for the American students who attend, not just the Navy but the other US military students as well as other agency students.

Jerry Brown: Admiral, in your Institute for Operations Research and the Management Sciences (INFORMS) interview you said that the best thing we taught you is how to "frame the problem." Could you elaborate on what you mean by frame the problem?

Mike Mullen: I think it goes back to my data analysis professor, Bob Read. Bob "wrote the book" on the comprehensive nature of the fundamentals of analysis from data analysis to statistical analysis to those courses where I could start to get lost—stochastic modelling, those kinds of things. Although ironically, it was back in my Naval Academy days that I remember was the first time that I could put an engineering system together. Where you could monitor it, you could adjust it. I could see a future for automation. There were stacks of IBM cards that were two feet high as I recall, sticking it in that IBM 360 in Ward Hall at the Naval Academy. I was able to start to form what I would call a whole system woven in that undergraduate training, and then from the standpoint of the graduate school work at Monterey, see analytically what the pieces were that I needed to put in place to understand a problem.

Getting the data. What do the statistics say? What are the knowns, unknowns; what are the variables? What are the assumptions? What is the difference between linear problems—I almost hate to say that word because it's still

a course that shakes me to the bones (linear programming, taught by Jerry Brown)—and the nonlinear aspects. It gave me such a clear—in ways I didn't really even understand at the time—such a clear understanding of all aspects of a problem, particularly as I became more senior, that impacted me in ways that allowed me to ask very incisive questions that, quite frankly, over time very few people had answers to.

This caused the folks I questioned to go back and reframe the problem or add, or maybe complete the framework in order to accurately understand as best we could what the problem was. In the current world of information explosion, one of the things I teach at Princeton now and one of the things I talk to young audiences about all the time is where are you going to get the facts? Where is the data? How do you know what you're looking at? Is there any truth to it whatsoever? I think all of that for me has evolved from the combination of undergraduate and graduate education. I look at OR as a practical application against real problems that are very serious. And that's what the OR curriculum did for me.

Jerry Brown: You brought up some changes as you became more senior. As you became more senior and had to take on more strategic challenges, did you find quantitative assessments to be weighted less in the final decisions and outcomes than other policy concerns, or was policy analysis more about policy and politics than analysis?

Mike Mullen: No. Actually I think it would take me to bring it to the floor, but once the question was asked it was there to be included, meaning the quantitative piece. My overall sense right through the time I was Chairman of the Joint Chiefs of Staff was that the "policy analysis" was basically "policy analysis" and I insisted on that more so probably than I knew. Then the politics would go wherever the politics would go, whether they bought the analysis or it had impact or whether they'd just ignore it.

On the military side, it was a relatively clean shot, I think, to get it on the table. Then when it's on the table, particularly as Chairman, you're the only military person in the room, it can be overwhelmed by the politics of the situation.

But that's the system we have and I didn't have a problem getting it on the table or pulling it up from the system to get it.

Jerry Brown: Have you ever had the experience of being the only OR in the room when some cluttered slide appears and everyone looks at you?

Mike Mullen: Well, yes. Because usually I'm the one that will talk to a cluttered slide, and I grew to loathe PowerPoint because in far too many cases it wasn't thought through. It certainly wasn't analyzed and we have become a culture of "how many words can you put on a slide." This is a really tough issue for any leader. When you ask hard questions, you'll get back two inches of PowerPoint slides.

It's embedded in the philosophy of, "I know that anything he wants to know is in that thousand pages so my job is done." I used to say, "I need to know the important stuff in those thousand pages because I don't have a lot of time. I don't have time to read that." And that's a tension between any leader and his or her staff. But I think what the education gave me was the ability to sift through a lot of that pretty quickly.

Back to my engineering framework, it's pretty easy for me to think about a problem systematically and to see if whether or not any kind of systemic approach has been taken and then to be able to say, "These are the holes that are there." Or, "What about this?" which could be key considerations in a given situation.

Jerry Brown: For more-junior analysts, from whom I'm sure you've been subjected to many such presentations, how do you advise them to deal with presentations, especially when they're doing technical presentations or presentations of the impact of technical work to senior policy types?

Mike Mullen: Back to the junior level, the ones really crunching the numbers, if they're doing it well they really should see the highlights, the breakthroughs, the real difference makers in their analysis. I like threes. There should be three points—you don't have to lock it down to three—but three points that really jump out in your presentation. I'm very understanding about the lives of senior people.

The key is "How do you get a senior's attention?" You need to be able to highlight those

three things and hopefully have a senior that may want to ask the question of, "Well, how did you get to that?" So in their work—and this is for me OR101—you do the analysis so that the real differentiators jump out, the pieces that really solve the problem jump out and for a young man or woman to then be able to present that in a way to make a senior curious enough to say, "Where did that come from?" And really dive in.

They're the keepers of the keys because you're not going to have senior people doing analysis anymore. And it's their relationships with their seniors to be able to provide compelling output to solve really difficult problems that is driven by stats and data and good analysis that would get a senior to a better decision. Once you get into that cycle, you'll find seniors going to that person more and more. How do you create those situations? That's the challenge.

I also come from a position that—and this is tough on a big staff and it's tough at a very senior level—that there's always somebody out there—some young person—whose voice I want to hear, whose views are really critical and that the staff has basically snuffed him or her out because it disrupts the staff approach to life and the staff approach to, "Here's what we want you to know." So the key for leaders is finding those people who are out there and listening to them.

The other thing that the education taught me, and I do talk about this a lot (I probably don't give the education enough credit) is I really want to hear from the dissenters. Let's say it's the intelligence world. You've got 17 agencies in the government, and intelligence-wise they bring you these national intelligence estimates, and it is a conglomeration and eventually a consensus. That's fine for getting to what the intel community sees, but I want to talk to the analysts who disagreed.

Not because I necessarily agree with them, but I want to understand the logic they went through to disagree with an outcome. I may seize on that and explore more or I may not, but I want to hear that voice and I want to hear the diversity of that voice in these major decisions. Young analysts, I think, have a tremendous opportunity to influence outcomes even

though sometimes they get stuffed. The question is “How can you bring those forward?”

Jerry Brown: Some people ask, “Why should we have analysts in uniform? Why not use contractors?”

Mike Mullen: Maybe I would be a great example of that. First of all, you want uniformed leaders who aren’t so young anymore and who grow up and have this background. Secondly, you cannot underestimate the value of this kind of expertise within the uniformed services. And in the leadership positions both to be able to ascend to them and have that kind of understanding. I spent far too many years in a town that generates output from contractors that fulfills the need of the contract but doesn’t fulfill the need of the decision maker.

That doesn’t mean that contractors aren’t dedicated people. I think you forsake significant impact of those who have to make the decision by just turning it over to contractors and then taking that in transition to the military side and then trying to execute it or do something with it.

Jerry Brown: Now that you’re a director on the boards of General Motors and Sprint and you’re getting a view of how the private sector works, does this change your view of how efficient or effective Department of Defense (DoD), as the largest employer and the largest organization in the western world, is operating?

Mike Mullen: Not a lot. GM has a couple of hundred thousand people. It’s a big outfit not unlike DoD. It has its strengths and weaknesses in its bigness.

I think big organizations have those characteristics in a world that is demanding agility, flexibility, and speed of change to meet the needs that are out there. Certainly I see that in these other big organizations as well. But in terms of characteristics, there are many that are very much the same. One of the areas that I tried to explore a great deal as a senior officer is the area of risk and risk management. I found risk assessment at the strategic level very challenging inside DoD and I find it to be true as well in these big organizations on the outside.

Jerry Brown: Can you connect the dots for us between some major decision that you were involved in and OR? In particular, technically,

what set of tools did you apply and how did that influence you in a major decision?

Mike Mullen: I think on the practical side rather than the academic side, and one of the biggest ones obviously is how I would come down on the Bin Laden raid. That backed up from my point of view to the time I first took SEALs to sea, which was in 1997. A small SEAL unit that was attached to the *George Washington* battle group and the curiosity I had about them and their missions and how they think about it.

Very quickly, even for that small group, I think about their missions in terms of the overall system in which they’re operating, even for a small training mission—in terms of how they organize, train, and equip to then how they go practice to how they feedback, how they improve, etc. I had an affinity for SEALs back then, and that grew as I became more senior. When I was a detailer, the SEAL community worked for me—ostensibly meaning they had their offices where my offices were. Effectively they worked for a two-star SEAL out of San Diego.

I got to know a lot about their career paths and I’m incredibly curious about that. Then I take them to sea, and then I end up being the more senior officer over time and become much more familiar including with my assignment as the CNO. We’re at war, I’ve got SEALs at war and now I want to know what they’re doing, and I want to understand it from A to Z.

I think it was 2004, before I became CNO, I went to Iraq for the first time and I sat with a British explosive ordnance disposal (EOD) guy—a grizzly old guy, former enlisted. He was an officer at the time and one of the world’s experts on explosives. He said, “Look, the enemy is changing their tactics over a cup of coffee at the local café and we’re sending our stuff back to Indian Head or—you pick the place—back to the US to find out what’s wrong with our system. And we’re way behind in speed.” That moment just completely flipped me upside down in terms of things we needed to do that had to do with the “speed of war.” How do I catch up and surpass this enemy from a system standpoint?

Stan McChrystal (General Stanley McChrystal) started to do this with the Special Forces. The SEALs were involved in that. I started to pay

a lot more attention when I became CNO to what in particular my black (covert) SEALs were doing in terms of the overall systems and the analysis, the speed in the intelligence community to the operational community. I could see it as clear as day. When I became Chairman, obviously heavily embedded in these operations to understand, I knew almost every single commander in the Special Operations Forces.

A little-known fact is the night of the Bin Laden raid there were 14 other operations the Special Operations Forces executed in Afghanistan simultaneously with the Bin Laden raid. There were none with the extraordinary strategic risk of the Bin Laden raid, but several that were physically and geographically more difficult. But we had done thousands of these operations. So I knew that system from front to back. When I would go to Afghanistan, I would never go without going to Bagram and arriving around midnight when they were all getting up, to understand these operations.

That system was something I understood. I understood what underpinned it, and that gave me the background including getting ready for the Bin Laden raid. Going out and watching a rehearsal, and seeing it firsthand myself. So in ways that actually I hadn't even thought about until you asked that question—it's back to how do you frame a problem? I could frame this one. I could see every aspect of it. I knew who was in it. I knew where the risks were.

I knew what you needed to do in order to do it well. And that whole background was there, I think, in significant part because of my education and the whole approach I take to things. So that's one.

Harrison Schramm: Which of your achievements while you were in uniform do you think is your most lasting contribution, and do you think historians will agree with you?

Mike Mullen: Well, it's hard to not say the Bin Laden raid. I'm sure from my perspective that was the most significant event although every time I get asked a question like that I point out the highs and the lows. That was the high without any question, although I remind people 10 weeks later I was in Arlington burying 13 SEALs who had gotten shot down along with

another 25 soldiers, sailors, airmen, marines, and eight Afghan soldiers in Afghanistan.

I personally feel—and this goes back to the leadership piece—I had two major thrusts as Chairman. One was to give the best military advice to two Presidents, and I feel very strongly that I did that. Secondly, I wanted the men and women who were fighting and dying to know they had somebody at the top who cared about them and their families and represented them well. I have gotten feedback over the years that an awful lot of young people knew who I was, and felt positively about what I was doing to represent them.

I think there's no higher praise from anybody who's served in a leadership position than those young E-2s and E-3s feeling that way. My wife Deborah spent—we both did—an extraordinary amount of time with young families in particular in these two difficult wars. So that's what I would say. I would actually say that was my biggest achievement and that's the one I feel best about. I think historians probably won't. It isn't something on which historians necessarily focus.

The historians may say (the repeal of) "Don't Ask, Don't Tell" because of the changes associated with it. Certainly, I know that also wasn't part of my plan but it worked out. Time and circumstances and lots of things made the changes possible. I would think that leading the military, and certainly as a sailor in two ground wars as well as the third war with respect to the terrorists, that's where I made my mark.

Another comment I'd like to make is generally I'm regarded as a neutral guy, an apolitical guy. That is not easy to achieve in a political town and I focused on that a lot. And I think it has been generally assessed that I hit the mark on that.

Harrison Schramm: Do you have a favorite book?

Mike Mullen: I'm not sure favorite is the right answer, but probably the most important book I ever read, I read about 10 years ago. It's a book called, *A Peace to End All Peace* by David Fromkin. I was in Jordan on a trip and the ambassador there was David Hale. I think it was 2004. I said, "So what are you reading?" And he said, "Read this." What he told me is, "When

President Clinton picked Madeleine Albright to be Secretary of State, he said "Read this book." It's the story of the fall of the Ottoman Empire, from about 1913 to about 1923. I was struck that we're now in Iraq with the results of the decisions that were made 100 years ago. It's a compelling book; one, to know how hard the Middle East is; two, to know how important decisions that get made impact 100 years later. For whatever my ability is to participate in these decisions, I want to get them right so that somebody's not looking back 100 years from now saying, "How did they not get this right?" Thirdly, how a guy like Churchill, who was a pretty revered guy, could make so many bad decisions.

Part of that is Churchill was always in the arena. I'm an "in the arena" Theodore Roosevelt guy. This goes back to command—I've always wanted to be in the arena—you don't seek criticism but you certainly like being there. You get criticized and that's fine. That's part of the process. So that was probably the most impactful book that I've read.

Another one that is along the same lines. I've made 27 trips to Pakistan because I think now it's the most dangerous country in the world. It has a huge impact on what we're doing in Afghanistan, and I read a book called *Freedom at Midnight* (by Larry Collins and Dominique Lapierre) which was the story of Mountbatten going down there for six months when the decision was made that India was going to be independent, Pakistan was created, and the border was drawn quite randomly. It taught me an awful lot about the relationship between Indians and Pakistanis and Hindus and Muslims.

So in the world that I was living in, those two books had an enormous influence on me. I'd recommend them to anybody not just for interest in the region but for understanding the degree of difficulty of the world we're living in right now.

Bob Sheldon: One common weakness for operations research analysts is being able to communicate their advice to decision makers. How do they build up that communication skill?

Mike Mullen: You have to work at it. It goes back to what my parents taught me. I learned

to communicate. I learned the importance of communicating. I've never been afraid of the press. My parents taught me about the value of the "fourth estate" (the news media) and as Chairman (I did it as CNO but more so as Chairman) I found I had a "bully pulpit" and an international and a national audience and I took advantage of that in particular for leaders in the military. We have to stop talking to and about just ourselves. We need to talk to America.

One of my biggest concerns is the drifting of the US military away from the American people. The American people didn't have to buy-in to these wars. We're a volunteer force. We're becoming more and more well-compensated. We're becoming more and more like the French Foreign Legion, which is the outfit that the leadership says, "Go off and fight our dirty little wars and let us get on with our lives." I think that's a disaster for the country.

I spent a lot of time talking to people who didn't know anything about the military. My wife and I went on *The View*. I went on Jon Stewart three times, *The Daily Show*. I went on David Letterman, who was mostly unaware at that time about what we'd been through, and to his credit, wanted me to come on because he knew that there was a lot that needed to be said. I was decent at communicating. I always believed in that.

Always with my troops, whether it was informally walking around the deck plates, or formally. Whether it was in writing or whether it was speaking. It's a whole new ballgame at the Chairman's level because you're dealing with the issues of the day. This goes back to Vietnam; I will always wear the scars of Vietnam. America didn't support the military back then. I wanted the American people to understand who its military was and I wanted to put a face on it.

I argued heavily, along with Secretary of Defense Robert Gates—meaning Gates and I were in the same position—to open Dover Air Force Base so that the American people could see, if the families wanted, their young ones who had died. I wanted the American people to see the face of this for the families. My wife and I went to funerals routinely at Arlington. Deb would go every single week.

I tried to go once a week to meet with the families so that they knew this wasn't just some big impersonal Department of Defense but there was a face and there was a human being behind the military.

Communicating in a thousand different ways is absolutely critical. We're living in a time quite frankly where we need to because if I'm not doing it for the military as a leader, somebody else is and it may not be somebody that I want.

Jerry Brown: I have a question from Dave Schrady. The Navy had the foresight over a hundred years ago to create a graduate school to provide relevant graduate education for naval officers. In practice however, there is a constant skirmish between the desire for officers with relevant, useful and needed graduate education and the warfare communities' lack of support for graduate education for their officers. Your career as an operational specialist with graduate education is very much the exception. (The unrestricted line officer community is better than the aviation community and the submarine community in allowing promising officers to include graduate education in their career path.) How do we address this?

Mike Mullen: We have to constantly address the issue of graduate education for all of our officer communities. This is especially important with the uniformed leadership at the most senior levels. We have a willing population of young officers, as rarely is it the case that a college graduate who is an officer does not seek a master's degree. It is also a proven requirement for many to be promoted and/or screened beyond a certain paygrade to sustain promotion and assignment in a career path. We need to continue to be creative in how graduate education is taught. NPS was very creative in establishing the curriculum for Joint Professional Military Education (JPME), for example. I also think that NPS could do a better job advocating for itself, especially with and through graduates who end up in senior positions in DoD.

Jerry Brown: Was there anything in your NPS OR curriculum that, based on your three decades of senior Navy and DoD leadership, led you to want NPS OR to change?

Mike Mullen: I would not advocate for much to change in the NPS OR curriculum. I am

admittedly not very current, but I found OR to be such a wonderful skill in examining practical, real-world problems. This was a great strength, which is at the core of what OR is. I would only make changes that would enhance that core strength.

Jerry Brown: If cost was a factor in your decisions, how did you consider cost? That is, cost, versus completing the mission, regardless of cost. We're trying to connect analysis with policy.

Mike Mullen: I always considered cost as a factor in the overall sense of priorities that I was considering. I was less skilled at "costing" but I did have a real sense for what was reasonable and what made sense versus what did not. In particular, I tried to integrate cost into my "value proposition" for whatever I was considering. It would depend on the mission as to whether or not there was a limit on cost, so it was always an important consideration, much more difficult to stop once the mission was underway, which is why you want to have the cost discussion early and get it right. A skill that was particularly relevant in my world of programming was being able to box in the cost estimates, knowing that program managers always underestimated what a program would actually cost.

Wayne Hughes: I recall you did not think much of small missile combatants for the US Navy when you were a Captain and visited NPS as the Surface Warfare Officer detailer. Have you changed that viewpoint as the fleet is more and more a set of big, expensive, multi-purpose warships with large crews but fewer and fewer of them? As the number of ships shrinks, is there a role for (1) fleet frigates of, say, 3,000 tons and (2) small missile combatants of, say, 800 tons for littoral operations? Specifically, do they look like second-generation replacements after we complete 32 littoral combat ships (LCS)?

Mike Mullen: I'm still not a fan of small missile combatants per se, though I could live with a small number of them (15-20) in the 800 to 1,000 ton area. What has always struck me, even from my days of operating with our PGs (gunboats) in the 1970s, is their seaworthiness, or lack thereof. They became "not mission capable" quickly in relatively low sea states

when compared to frigates or destroyers. I do think we should have a class of frigates around 3,000 tons. Maybe I'm too old, but 3,000 tons is not "small." I don't think LCS fills that bill, so the idea of something after the 32 hulls would make sense to me.

Jerry Brown: Unmanned aircraft have caught on like wildfire in the Air Force over the past decade. Where should the Navy stand, not only on increasing the number of drone aircraft, but also on developing remote-controlled small surface vessels capable of dealing with the swarms (and swarm tactics) of light coastal forces emerging in China, Iran, and other places?

Mike Mullen: I am a fan of unmanned platforms and the technology they employ. That said, I am a believer in keeping the human element in the loop. This was a particularly disturbing trend in warfare in Iraq and Afghanistan in that "remote" strikes became more and more common and easier and easier to conduct, especially for our political masters. I want the human in the loop when we are pulling the trigger, especially in these days of urban warfare.

AFTERWORD BY WAYNE HUGHES, FS

In 2014, NPS-OR attempted to declassify Commander Mike Mullen's NPS-OR master's thesis, "The Stationing of AEGIS in the Battle Group: An AAW Model (U)," March 1985. The request was denied. Remarkably, after nearly 30 years, there is still material in this work of significant current military value to us.

National Security Operations Research (NSOR) Editor and NPS Professor Bob Koyak is happy to announce the publication of Admiral Mullen's thesis in our MORS-supported, SIPRNET journal.

The following is an unclassified introduction by Mullen's thesis advisor.

The Value of Admiral Mike Mullen's Operations Research Master's Thesis: "Stationing of AEGIS in a Battle Group: An AAW Model". By Wayne P. Hughes, MORS FS, Operations Research Department Professor of Practice, Naval Postgraduate School

There are two reasons that Admiral Michael Mullen's thesis is an exemplar of what a valuable

study should look like. First, Mullen was a Commander when he finally had a chance to go to graduate school here. Although this made life as an operations research student quite challenging, his fleet experience was invaluable for constructing a practical study. Nor did anyone have to tell him there was an important tactical problem to solve; his operational experience told him so. Second, when it was time to do his thesis, Mike had absorbed the analytical skills needed to solve a real fleet problem.

When then-Commander Mullen wrote in 1985, the Aegis anti-air warfare (AAW) system was installed in a growing number of CGs (cruisers) and DDGs (destroyers). Aegis performance for a single ship had been tested and retested. The unanswered question Mike tackled was to design and measure the performance of AAW screening configurations with different numbers of Aegis ships facing different air-, surface-, or submarine-launched anti-ship cruise missile (ASCM) threats. He did so in the best way possible, first by applying his analytical model for likely cases against the Soviets, and second by describing his method so it could be adopted by fleet staffs and used for other locations, force compositions, and combat missions. Our research centers have the tools to tackle such problems, but I was impressed with the extra value of Mike's work because of his recent experience at sea.

His approach was first to make a large number of simulation runs using what in the 1980s was a highly detailed simulation. Soviet bombers closed and fired air-to-surface missiles at an American task force comprising an aircraft carrier and a varying number of Aegis ships protecting it. The simulation included combat aircraft patrols acting as the first layer of defense, the Aegis ships serving as the second layer with their surface-to-air missiles, and point defenses in both the carrier and Aegis ships serving as a third layer to engage the small number of surviving missiles. The compositions and performance values on each side required an experienced officer like Mike, who because of his operational background was able to limit the number of cases to realistic force compositions, alternative formations, and fleet-accepted effectiveness probabilities. Selecting the best MOEs also required an officer with both

operational and analytical backgrounds. With his runs in hand, Mike could then apply statistical methods to arrive at practical (not optimal—whatever that means) defensive formations and make estimates (properly caveated!) about task force survival probabilities and bombers destroyed.

So much has changed since the collapse of the Soviet Union and the rise of China that in

most respects the thesis is obsolete. But there are technical details about the still-deployed SPY-1 radar in the appendix so that the thesis cannot be declassified. Perhaps it is time for the fleet to commission a new classified tactical decision aid that covers protection of surface formations from the current set of Harpies, DF-21s, and very hot, sea skimming ASCMs.