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David A. Schradly Interview (MORS)

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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 is made to present the interviewee's own words.

David A. Schrady, FS, is Distinguished Professor of Operations Research at the Naval Postgraduate School (NPS), Monterey, California. He served as President of MORS from 1978 to 1979 and received the MORS Wanner Award in 1984. He was President of the Operations Research Society of America (ORSA), 1983–84, and was awarded the Kimball Medal for distinguished service to the Society and profession in 1994. He was named a Fellow of the Institute for Operations Research and Management Science (INFORMS) in the inaugural awarding of this honor in 2002. He also received the Sir Charles Goodeve Medal of the Operational Research Society (UK) in 1992. This interview was conducted at the Naval Postgraduate School in Monterey, California, on 23 June 2004.

MORS ORAL HISTORY

Bob Sheldon: This is Wednesday, June 23, 2004, and we're at NPS in Monterey, California, for a MORS Oral History interview with Dave Schrady. First of all I want to ask where you were born and raised.

Dave Schrady: I was born 11 November 1939 in Akron, Ohio, raised in Canton, Ohio, and went to college in Cleveland. Ohio is a wonderful place to be from.

Bob Sheldon: Did you have some early inclinations toward mathematics and science?

Dave Schrady: I took what was called a technical curriculum, and that gave me math but not calculus, physics without calculus, chemistry, and Latin.

Bob Sheldon: What was your major in college?

Dave Schrady: First of all, I applied for a Naval Reserve Officers Training Corps (NROTC) Scholarship and got a principal appointment. I was going to go to Purdue and be an Aeronautical Engineer. However my father worked for the Ford Motor Company, and I had also applied for the Ford Motor Company Fund Scholarship. It came along af-

ter the NROTC, and it was a better package. I went to Case Institute of Technology. I really didn't want to be an engineer, but they had a program that was a lot like operations research (OR) and that appealed to me. We took more math than anybody except the astronomers as an undergraduate.

Bob Sheldon: Did you go straight from undergraduate school to graduate school?

Dave Schrady: Straight through.

Bob Sheldon: What did you study in graduate school?

Dave Schrady: OR. My thesis was on semi-Markov processes.

Bob Sheldon: Any notable professors you remember?

Dave Schrady: I went to Case somewhere in Case's heyday. The faculty included Russ Ackoff, John Little, Peter Fishburn, Glen Camp, and Ellis Johnson from the old Army Operations Research Office (ORO). Ellis Johnson was on my doctoral committee. It was a good time.

Bob Sheldon: Where did you go after you graduated?

Dave Schrady: I came here to NPS a week after finishing and defending my dissertation. NPS initiated the world's first degree program in Operations Research in 1951.

Bob Sheldon: Who recruited you?

Dave Schrady: Jack Borsting. He was building up the OR faculty at NPS. When I interviewed, the department had five faculty members counting Jack, and five were hired the year I came in, so we doubled it in one year.

Bob Sheldon: How did he happen to reach you?

Dave Schrady: He was recruiting big-time because his student body was going up and he didn't have faculty. Case was one of the schools he contacted about graduating students.

Bob Sheldon: Did you come out here to see the campus before accepting?

Dave Schrady: I came out here in April of 1965. Jack picked me up at the airport, and he was driving a four-door Mercedes convertible, an absolutely fabulous car. I was impressed. I went back to Case and I saw Bob Reinhardt in the parking lot one morning. Reinhardt was in the Math Department at Case. I said, "What do you know about the Naval Postgraduate School?" And he said, "Absolutely nothing." Well, it turned out NPS was also looking for a Provost, and the

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Robert Sheldon, FS

Group W, Inc
bs@group-w-inc.com

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Superintendent at the time, Rear Admiral Jerry O'Donnell, had Reinhardt working for him when Jerry was one of the division heads at the IDA [Institute for Defense Analyses]. O'Donnell hired Reinhardt and Reinhardt was in place here before I got here at the end of September. So Reinhardt went from knowing nothing about NPS to heading it. Reinhardt had been an early professional staff member of the Navy's OEG [Operations Evaluation Group], then (1942) called ASWORG, Anti Submarine Warfare Operations Research Group. I asked him why he got out of OR and he said the people and organizations of operational problems are too hard to predict. He liked the predictability of mathematics.

Bob Sheldon: What courses did you teach when you came here?

Dave Schrady: First, let me say that the curriculum was a bit strange. The curriculum had been set up by faculty from the Math Department and Physics Department. A great deal of the curriculum was physics. The rest was statistics, calculus, linear algebra, and so forth. Consequently the actual OR courses were combinations of things that weren't the length of a term course. You might have two or three subjects in a single term course. The other part that was strange was that the term was 10 weeks at the time. There were five terms every year, so you were starting and stopping incessantly. Both the faculty and the students were in class 50 of the 52 weeks of the year. In 1967 Bob Reinhardt declared that NPS would be changing from a fifth system to a quarter system. This required the whole curriculum to be looked at from scratch. The timing was good too because by 1967 there had been 14 or 15 new faculty hired, and they were people who had some background in OR. So the courses were changing and the packaging was changing. Essentially we had a clean sheet of paper and started over in terms of designing the curriculum. It was very good.

Bob Sheldon: You had a direct hand in changing the curriculum yourself?

Dave Schrady: I think the entire faculty had a hand in creating the new program. The other thing that was going on at that time, 1967, was that Robert McNamara had been in the Pentagon for about five years at that point and systems analysis was a phenomenon that the curriculum had to respond to. This curriculum had to recognize Hitch and Entoven's form of systems

analysis. Jack was hiring economists, and we were fashioning systems analysis courses around the metrics of cost-effectiveness. In the Pentagon, the Navy found it was losing its arguments with Secretary McNamara and its response was to create the Systems Analysis Division of OPNAV, OP-96, in 1966. The first director of OP-96 was Rear Admiral Zumwaldt who later served as the Chief of Naval Operations. Other four-star officers who have served as director of the Systems Analysis Division were Carl Trost, Stansfield Turner, Dennis Blair, and Thomas Fargo, so there's quite a history of outstanding naval officers being in that position.

Bob Sheldon: Along with your teaching assignments, what kind of research programs were you involved in?

Dave Schrady: I was doing research for the Supply Systems Command—inventory models; especially inventory models for repairable items.

Bob Sheldon: The Metric models?

Dave Schrady: No. I was doing it before the metric models. I published a paper in 1967 in the *Naval Research Logistics Quarterly* giving a deterministic treatment of the repairable item inventory problem. There isn't much literature there so even that simple model still gets play. The other thing I did with the Supply Systems Command was in the area of inventory record accuracy. The Navy, from time to time, on sort of a 20-year cycle, gets criticized by the IG [Inspector General] or the GAO [Government Accountability Office] for having lost entirely too much stuff. When I started working on inventory record accuracy at the end of the 1960s, material was leaving the warehouses in Norfolk in train cars and in semi-trailers, so it was big-time theft and they didn't know it. The Navy response at the time was that 100% accuracy would be their goal, a goal created by people who didn't understand the problem. You can't get 100% accuracy. You wouldn't pay the price to get even 99% accuracy. The way you get rid of inaccuracy is to do a physical count, and this introduces its own errors.

Bob Sheldon: How did you solve those problems?

Dave Schrady: The thrust I took to it was to try to figure out what the impact of inventory record inaccuracy was and cost that impact.

Bob Sheldon: Did you travel a lot to the various supply agencies in the Navy when you did this research?

Dave Schrady: Enough, but not a lot. Let me add, however, that when I came back to the faculty, I participated in a number of Second Fleet and Seventh Fleet exercises between 1989 and 1996 in which I was demonstrating software for predicting battle group sustainability. Commander Second Fleet commented that this gave him the ability to aggressively pursue tactical logistics—for the first time.

Bob Sheldon: Did you work with the Defense Logistics Agency (DLA) too?

Dave Schrady: George Clark was DLA's inventory guru when DLA headquarters was at Cameron Station in Alexandria, VA, and I talked a fair amount with George. I also talked with the Army inventory analysts at Frankford Arsenal in Philadelphia, notably Bernie Rosenman and Alan Kaplan.

Bob Sheldon: How are your students at NPS?

Dave Schrady: One of the things about NPS that's very nice is that the faculty enjoys a mature student body. No matter what their record was as an undergraduate, as a graduate student and as an officer with five to 10 years of service, they're quite serious about doing well anything the Navy asks them to do, including learning. They work very hard, they're interesting, and they're people who have been places and done things. The faculty understands that they can learn from the students. They're wonderful people to get to know, and you don't lose track of them when they graduate. Whether it's Army, Navy, Marine Corps, or even the internationals, you make friends with them and you stay friends with them. And they don't disappear because everybody's still in the defense business in one fashion or another. I also want to note that, to my knowledge, the NPS OR program has produced at least 76 flag and general officers.

Bob Sheldon: What are some examples of thesis topics you've supervised?

Dave Schrady: Inventory models, inventory record accuracy, repairable item inventory control predicting battle group logistics sustainability, and a number of theses since 1997 on aspects of sea-basing and sea-based logistics.

Bob Sheldon: Can you point to any decisions that have been made by the Department of the Navy as a result of your advice or your students' advice?

Dave Schrady: Mostly no, not in a direct way. In the early 1970s I was preaching that the inventory models the Navy had implemented were the wrong formulations. They reflected the standard formulations in the literature; minimized cost, without constraint. The constraints are real and the items cannot be treated independently. The assumption that you can afford to buy an economic order quantity (EOQ) isn't necessarily true. The formulation should not be an unconstrained minimization but rather a constrained optimization for a family of inventory items, subject to the procurement budget and some other workload constraints. Congress funds replenishment of items of inventory by material cognizance class, and a cog might have 50,000 items in it. Because there's one budget for the 50,000 items, each of them is competing for a share of that budget. So it's not 50,000 one-item problems, it's one 50,000-item problem with constraints. The formulation the Navy implemented in the mid-1960s is not this sort of formulation. The Navy today is still using a version of a minimum-cost Wilson EOQ model. The reasons for implementing it in 1964 had to do with the computers that were available at that time. That situation has changed completely, but the model has never been updated. It's been band-aided and there are so many band-aids on it now you can't find out what's underneath anymore. And it's unwieldy. The current plan is that Economic Enterprise Resource planning software will replace all this.

Bob Sheldon: In your formulations, do you usually end up with a nonlinear optimization?

Dave Schrady: The one I was talking about is a nonlinear programming formulation.

Bob Sheldon: Do they simulate the inventory system?

Dave Schrady: No they don't, but they could. Analytical methods are usually possible.

Bob Sheldon: Sea-basing concepts?

Dave Schrady: Sea-basing is what, to some extent, the British did in the Falklands and what we did a number of times in World War II. The current version calls for keeping combat service support at sea and not pausing to establish a logistics area ashore. This presents a set of challenges that are getting a lot of attention currently.

Bob Sheldon: One of the interesting books I read recently was *Into The Storm: A Study in*

Command by Tom Clancy and General Fred Franks. When you read about General Franks as a commander in Desert Storm, his biggest worry was logistics. Can he get the fuel to his tanks on time? Can he get the supplies and munitions forward?

Dave Schrady: Lieutenant General Franks is also quoted as saying, "Forget logistics and you lose." He got beat around the head and shoulders for his "pause for synchronization." A lot of people said, "Well, General, isn't it true that you paused because you had to wait for your fuel trucks to catch up?"

Bob Sheldon: When did you first get involved in professional societies like MORS?

Dave Schrady: My first involvement was with ORSA, which later evolved into INFORMS, the Education Committee of ORSA. Under the Education Committee I put together the visiting lecturer program and produced the first booklet on Careers in Operations Research. I became involved in MORS around 1972 or so.

Bob Sheldon: What drove you to become involved in ORSA?

Dave Schrady: I started going to ORSA meetings in 1962, so I knew ORSA and I was a member of ORSA from that time. I knew the civilian side of it earlier than I knew the military side of it. There were some meetings at NPS of the Navy OR activities where most of the attendees were laboratory people.

Bob Sheldon: Were these Navy OR meetings run by ORSA or MORS?

Dave Schrady: Neither. I believe MORS history goes back to the incorporation of MORS in 1966. That made the Navy OR association sort of redundant; it was folded into that.

Bob Sheldon: What prompted you to start attending the MORS symposia?

Dave Schrady: As academics we were interested in the professional societies and publications, and this and that. Having a society that was focused on military OR if you're an NPS faculty member made sense. I don't know when I went to my first MORS symposium. I was elected to the Board in 1972, and had been around MORS for a few years prior to that.

Bob Sheldon: Did you present a few papers at the previous MORS symposia?

Dave Schrady: Yes and Army OR symposia too.

Bob Sheldon: What kinds of papers did you present?

Dave Schrady: Once or twice I talked about education. Mostly it was inventory though, related to my inventory course. It was just a great course in modeling, period. I would maintain that in the 1970s people were coming to hear inventory talks that didn't necessarily have a great interest in inventory. It was just the methodology. The first day in inventory class you say, "Hey guys, you know about three kinds of models; well there are iconic models that look like the thing you're trying to model, analog models that behave like it, and symbolic models where you represent the interactions with equations." Inventory's lovely because you can start with an iconic model that suggests what equations to write down, and then mathematics takes over. It's a good modeling course.

Bob Sheldon: Who nominated you to the MORS Board as a director?

Dave Schrady: It might have been Jack Borsting.

Bob Sheldon: Did you have any specific MORS activities you favored?

Dave Schrady: Toward the end of that term it must have been symposium involvement because I think my next job was Vice President (VP) of Meeting Operations or Symposium Operations. I was on the Board four years plus a year as VP and then President. I followed Dave Spencer.

Bob Sheldon: During your year as President, did anything notable happen?

Dave Schrady: Well yes, I took over at the end of the meeting at Fort McNair in 1978 and there had been some problems with *Phalanx*. I put it to the Board that MORS should take responsibility for publishing *Phalanx* from the Military Applications Section (MAS) of ORSA. Bob Miller was the Navy sponsor representative and he said, "No way, we have no business publishing an unclassified anything." And he said, "Over my dead body." Things got fairly ugly in public. But the notion that MORS would take that publication from MAS prevailed, and then I got Jack Walker to serve as the editor, and of course Jack made a wonderful publication out of it.

Bob Sheldon: What was the argument for not wanting MORS to pick up the *Phalanx*?

Dave Schrady: I believe his argument was that MORS, sponsored by the Navy, I don't know if it was all the services at that time, as a forum for

classified meetings, had no business publishing a newsletter to a membership they didn't have. Today we talk about being a member, but you can't be a member, or you cannot join MORS. You can apply for an invitation to a symposium if you have a clearance, but you're not a member per se. Anyhow Bob Miller was violently and vocally against it. So that's the way the year began, and that was fine.

Bob Sheldon: How long did it take to solve that problem?

Dave Schrady: When we left that afternoon it was over and done.

Bob Sheldon: So Jack Walker was your first MORS *Phalanx* editor?

Dave Schrady: Absolutely.

Bob Sheldon: You picked him on the spot and gave him the duty?

Dave Schrady: I had him in mind to start with.

Bob Sheldon: Did you have to twist his arm to get him to volunteer?

Dave Schrady: Jack was a wonderful man, and his position was, "I don't want to do that," but it was not a strong-held position so it was easy.

Bob Sheldon: Did you change the direction of what material went into *Phalanx*?

Dave Schrady: It probably was content issues as well, but I remember the main issue was, "We need a newsletter. We don't have a membership. We need a way of communicating with people between symposia. We need something that says we are a society." A newsletter is a way to do that. So it's got to be a decent product and it's got to have some regularity.

Bob Sheldon: What was your role as President? Did you write letters for the *Phalanx*?

Dave Schrady: I don't think I wrote letters for *Phalanx*. The letters I found most burdensome were the letters I wrote for *OR/MS Today* as ORSA President. I was MORS President in a very busy period of time. I was general chair of the spring 1977 ORSA/TIMS [The Institute of Management Science] Conference in San Francisco. I was also the treasurer of ORSA, 1977-1979, a period of time when ORSA was nearly bankrupt. Superimpose on that, I became President of MORS in June 1978.

Bob Sheldon: What caused ORSA's financial troubles?

Dave Schrady: In 1973 ORSA and TIMS decided to cooperate on several journals and on meetings. The journals were given away free and there was no income to offset the expenses. Meetings were not always financially successful either. To top it off, we were going to a computerized membership and subscription fulfillment service at the time for ORSA and TIMS, but ORSA was first. This thing was late and severely over budget.

Bob Sheldon: How did you solve that fiscal crisis?

Dave Schrady: TIMS had to agree to the changes that we had to make to stay in business. We got through the close of the 1977 business year with net member equity of \$40,000. That's how close we came to being nonliquid. When I left ORSA in 1985 we had member equity of \$1.8 million. We started doing sensible things. We started controlling costs, charging for the services, and we got through the start-up on the membership and subscription fulfillment service.

Bob Sheldon: What were the highlights of your year as MORS President?

Dave Schrady: The first meeting was at Newport, and the second one was at West Point. Highlight of the West Point was not only the end of my term as President, but giving the Wanner Award to Bernie Koopman. That was terrific. The West Point superintendent at that time was General Goodpastor and it was just a very memorable thing.

Bob Sheldon: Who was your Executive Director at the time?

Dave Schrady: The Director then was Ed Napier.

Bob Sheldon: Did you have a good relationship working with him?

Dave Schrady: Of course, I mean Ed was a prince.

Bob Sheldon: And then you passed the reigns on to your successor. Did you stay actively involved in MORS?

Dave Schrady: I think I was active just one more year as the Immediate Past President. I handed over to Jack Englund. He was President of ANSER [Analytic Services]. Charlie Woods followed him.

Bob Sheldon: Any other contributions to either society?

Dave Schrady: Not directly, just through symposia and meetings. However, in 1988 I became Honorary Treasurer of the International Federation of Operational Research Societies (IFORS) and stayed in that role through 1997.

Bob Sheldon: Was MAS pretty active at that time?

Dave Schrady: It was. It has been, with some ups and downs, one of the major sections of ORSA.

Bob Sheldon: Here at NPS, have you kept teaching the same courses?

Dave Schrady: When I came back, I had been gone from the working faculty for 13 years.

Bob Sheldon: When did you leave here?

Dave Schrady: I didn't leave here, I left being a working faculty member; I became the chairman of the Department of OR in 1974.

Bob Sheldon: You took over for Jack Borsting?

Dave Schrady: Yes, when Jack became the Provost. Then from 1976 to 1980, I was the Dean of Academic Planning and the Dean of the Information Policy Sciences Division. There were two divisions created, so not everybody and not all 12 departments reported to the Provost. That lasted until the summer of 1980 when Jack left to go to OSD [the Office of the Secretary of Defense] as the Comptroller of the Department of Defense. I became the acting provost, and then in 1982 I was appointed by the Secretary of the Navy as the Provost, and stayed in the job for a total of seven years. I then took a sabbatical starting September of 1987. The purpose of the sabbatical was to try to find out if there was life after administration. I went to the Royal Military College of Science in England. Very nice. My contact was Ronnie Shepherd, a World War II British Army analyst. Ronnie wasn't teaching at the college anymore at that time, but he was with Royal Ordnance, and still in a building on the campus. He passed along my requirements to the right faculty at the military college, and my wife and I ended up with an appointment as a visiting professor at Cranfield University and a house on campus.

Bob Sheldon: I know Ronnie was associated with ISMOR [International Symposium on Military Operational Research].

Dave Schrady: Ronnie has passed away but he was the initiator of ISMOR. The 20th ISMOR was held last August (2003).

Bob Sheldon: Did you go?

Dave Schrady: Yes.

Bob Sheldon: So you lived on-campus there for six months? And what were your responsibilities there?

Dave Schrady: I gave a few lectures, but mostly I was a student. I was trying to read myself back into mathematics, and other things. I subsequently found that it was fairly easy to get back into teaching, much harder to get back into research. When I came back to the NPS faculty in 1988, I became the academic associate for the Operational Logistics (OL) curriculum, and decided that my research would be in the area of logistics. I would teach in logistics, and my service would be as the academic associate for the OL program, so I had everything sort of lined up and going in the same direction.

Bob Sheldon: You enjoyed living in England?

Dave Schrady: Oh absolutely. I put 10,000 miles on a rusty Fiat in five months. Scotland, Wales, all over England.

Bob Sheldon: Did you visit some of the other universities there to check out how they were teaching math?

Dave Schrady: I talked at the University of Southampton, and at Edinburgh University.

Bob Sheldon: You came back and renewed your interest in inventory theory?

Dave Schrady: No. The last time I taught inventory was in 1976, and I swore, because some people remember, that I would never do that again. But the OL Program has an inventory course in it, and I decided I needed to get back in the business of teaching inventory. I wrote a hundred-page text on inventory theory and Navy application.

Bob Sheldon: How did you find your applications, from your students, or from the people you worked with in the Navy?

Dave Schrady: No, was information I had from the 1960s, and all I had to do was update it. As I said before, the Navy hasn't changed very much.

Bob Sheldon: How many pages is the book?

Dave Schrady: It's about 115 pages.

Bob Sheldon: And used as a textbook here?

Dave Schrady: I don't call it a book; it's class notes, but it's single-spaced, typed.

Bob Sheldon: How many times have you taught that course?

Dave Schrady: Since then about four times.

Bob Sheldon: Mostly Navy students?

Dave Schrady: Yes, mostly Navy and Marine Corps.

Bob Sheldon: What other courses are you teaching these days?

Dave Schrady: There's a new course called Logistics Systems Analysis that's in the Systems Engineering curriculum. I also teach a decision and data analysis course, and that is why there are so many statistics books on the shelf.

Bob Sheldon: What level of statistics do you teach?

Dave Schrady: It's not a theory course; it's more of a "how-to" course. They've had a quarter course in probability, and this is a quarter course in statistics, and data analysis.

Bob Sheldon: Do you have real-world examples for them to solve?

Dave Schrady: Absolutely. Show them what it's good for and they'll be interested in the material.

Bob Sheldon: What kind of examples do you use?

Dave Schrady: Everything from the relationship between spare parts funding and aircraft mission capable rates, to personalizing Type I errors in hypothesis testing with mandatory drug testing and false alarm rates in search. There are ample military examples that can really motivate the subject.

Bob Sheldon: So you still enjoy teaching here?

Dave Schrady: I do. The best part of NPS is the students.

Bob Sheldon: So you have a while before you reach Professor Emeritus status.

Dave Schrady: That's coming down the road.

Bob Sheldon: What are your current research projects?

Dave Schrady: Sea-basing, expeditionary maneuver warfare including closing forces to the sea base, assembly of troops with their equipment, force deployment from the sea base to objectives ashore, and sustaining both the force ashore and the sea base itself.

Bob Sheldon: What factors or variables are you studying?

Dave Schrady: The important variables are the transporters and connectors (air and surface) that carry troops and equipment, distances, speeds, capacities, force characteristics, and more.

Bob Sheldon: So the V22 and the helicopters, and the speed and weight of supplies they can carry?

Dave Schrady: Yes, but surface connectors as well. The Marine's new truck isn't flyable.

Bob Sheldon: You mentioned keeping contact with a lot of your former students. What kinds of comments do your former students give you?

Dave Schrady: It depends. The best comment and one that I hear often is that the curriculum at NPS changed their common sense for the better, that they see problems and decisions in a more structured way.

Bob Sheldon: Let me wrap up by asking what kind of advice would you have for new people involved in MORS or the military OR profession?

Dave Schrady: I would urge them to get involved. It's definitely a thing where you get out of it what you put into it. And that's not even true because there are times when I've definitely felt that I got out of it twice or five times what I put into it. Some of my most effective learning experiences I've had have been from watching the leadership ahead of me in these organizations deal with issues. I think I learned a lot from them; I had the privilege of working with some really outstanding people. So definitely get involved. Do as much as you can and see where it takes you. It has always struck me that anyone in education is pretty far from the front lines and therefore not so interesting. Something pertinent, I think, is the impact of NPS OR graduate education on the practice of military operations research. Without proper data, it has always seemed to me that 20–25% of all the attendees at MORS symposia are NPS grads. I've thought that I hope we are doing a good job because the impact is so significant. Also pertinent is the significant number of flag/general alumni of the NPS OR program. The next CNO [Chief of Naval Operations] ADM Mike Mullen [now Chairman of the Joint Chiefs of Staff] is an alumnus.

Among others are Secretary of the Air Force James G. Roche; ADM Ozden Ornek, Chief of the Turkish Navy; Lui Pao Chuen, Chief Defence Scientist, Singapore; Secretary of the Army Thomas E. White; ADM Mario J. F. Braga, Brazilian Navy; ADM Chalin Sakornsinsin, Royal Thai Navy; LTG David Heebner, Army Assistant Vice Chief

of Staff; GEN William S. (Scott) Wallace, Commanding General, United States Army Training and Doctrine Command (TRADOC); VADM Patricia Tracey, Director of Navy Staff; VADM Choi, Ki Chul, Vice Chief of Naval Operations, Korea Navy; and Marshall Carter, Chairman of the Board of Directors of the New York Stock Exchange.