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The Highlands Forum Process
Richard P. O'Neill

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The Highlands Forum Process

Richard P. O'Neill

April 5, 2001

Richard P. O'Neill is president of The Highlands Group, a consulting and analysis network headquartered in Bethesda, Maryland, with clients in both the public and private sectors. He previously served in government, in his last position as deputy for strategy and policy in the Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence [ASD C3I]. He created and directs The Highlands Forum, a nationally recognized cross-disciplinary forum of leaders from industry, academia, government, the arts, and the professions that supports development of high-level government policy and strategy. Mr. O'Neill also serves on the boards of nonprofit foundations. He retired as a captain from the U.S. Navy after a twenty-nine-year career. He has published journal articles on conflict in the information age, dichotic hearing, sensory overload, and decisionmaking.

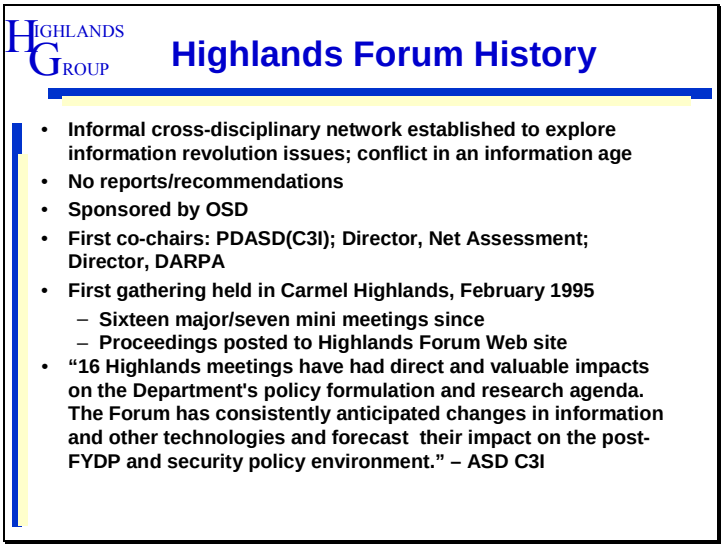
Oettinger: I'm happy to introduce my long-time colleague and friend, Richard O'Neill. You've seen his biography, so I don't need to repeat that. He has indicated that he is quite willing to entertain questions as he goes along, and, with that, Dick, it's yours.

O'Neill: Thanks for having me. I've always admired the program, and I've always read the volumes that I've seen coming out of the different seminars year in and year out, so I'm really tickled to be here and to be part of one. The topic I want to talk to you about today is probably different from most of the things that you hear about in the seminar. In one sense, maybe that's good. Also, I hope it has some value for you.

I'm going to tell you a little about a process that we created for the Department of Defense [DOD] in particular but for the U.S. government in general. As it turns out, the process was also adopted by a number of commercial entities, because we learned in doing it that they had nothing similar and that this process was quite useful. What I call it is an intellectual venture capital process, and what we really intended to do initially was create an idea engine for the DOD.

You may have a sense in your jobs or in your studies that you lack time to do all the things you'd like to do, that you have no free time on your schedule, you have a huge in-box and the inability to do original thinking or have access to original material that might otherwise help you, and certainly might interest you. So you can appreciate that secretaries or assistant secretaries of defense are pretty much bound by what comes into their in-box and by their schedulers—the people who control access to their doors. They're going to hear and see those things that have made their way through the system. It's very difficult for them to gain access to something that might stimulate a different way of doing things. What you end up with in that case is something you call "cultural lock-in." How do you break that?

The history behind this is a case from 1994 that I can tell you a little about (**Figure 1**). The genesis of this process was a time when we trying to figure out how conflict might arise in an information age setting, beyond where we are now. The current incident in the South China Sea[1] and the conflict that we saw in Bosnia are the traditional types of things that we've seen. My task was to write the strategy and policy for the secretary of defense on where conflict will likely be going in a future information-age setting.



DARPA = Defense Advanced Research Projects Agency FYDP = Future Years Defense Plan OSD = Office of the Secretary of Defense PDASD = principal deputy assistant secretary of defense

Figure 1

Quite frankly, the lesson we learned as a result of Desert Storm was that we could defeat almost anybody on an open battlefield where we had visibility as far as the eye could see. Certainly, we had standoff lethality and precision because of the information-based weapon systems that we had, from Tomahawk missiles on. We had great intelligence, surveillance, and reconnaissance [ISR] and logistics systems to support them. That was a remarkable capability brought together at one time to show what can be done in an overwhelming sense, but the situation is not likely ever to be repeated. Very few of our belligerents in the future are going to line up for us so that we would be like the Colonials with the British regiments lining up on a battlefield to be slaughtered. It's just not likely to happen.

There are all kinds of new types of conflict, though, made possible by new sciences and technology, where asymmetric competitors in particular are going to be at an advantage, because they can buy much of this technology off the shelf and then integrate it at a relatively low cost. The barriers to entry are very small, and we will probably not be in the position we are in now.

Oettinger: I can't resist, because you brought to mind an earlier visitor to the seminar. Regarding open spaces and so on, some of the technology that was developed for surveillance in Vietnam turned out to be totally useless, because you can't do much when you've got a thick tree

[1]A reference to the U.S. EP-3 plane that was forced down over Chinese territory on March 31, 2001.

canopy. It turned out not to be totally worthless, though, because by accident years later, when Kissinger set up the contractor-sponsored separating U.S. force in the Sinai peninsula, all that Vietnam technology came in handy. That was an open desert, and there it worked like a charm. You can find the musings of Chuck Stiles, who installed that stuff in the Sinai, in an earlier session of this seminar.[2] Some days the best-laid schemes of mice and men gang agley, and sometimes something turns up at the right place at the right time.

O'Neill: It's good to be lucky, too.

My task was made rather difficult, because I quickly learned in trying to write strategy, policy, and concepts for this type of warfare that I couldn't write it from inside the Pentagon. There was nobody else to talk to, and the people I did talk to pretty much were telling me things that we already knew from the past and that weren't going to be very useful. I couldn't write it inside the Beltway, so the first decision I made was to get outside the Beltway, put on a suit, and go visit people in academia and in the commercial world. The second thing I learned was to take off the suit, because people in the commercial world didn't wear them.

We convened a first session on the West Coast (or the Left Coast, as we call it) at Carmel Highlands on the Monterey peninsula, with about a dozen people. We had a lot of wine, great cheese, and some wonderful fruit, and the ocean was beating in against the cliffs, so, as I told Tony, it either seemed it was a great discussion, or it really *was* a good discussion. Regardless, the ASD said, "This is great. Let's keep this going and make this permanent." So we did, and we named it The Highlands Forum because of the location. It became shorthand for what we were doing.

It was sponsored by the Office of the Secretary of Defense. Those of you who read the newspapers and know what's been going on at the Defense Department recently may know of a man named Andrew Marshall.[3] Andy has been tasked by the president and secretary of defense to conduct a strategic review of the Defense Department before a single nickel is spent on defense this year. If you don't think that has seniors in the military and defense contractors, as well as the congressional leaders who have constituents who run these businesses, a little bit nervous, think again! Everybody is on tenterhooks in Washington right now, waiting to hear what Andy is going to say. Andy, along with the assistant secretary, established the Forum, and it's typical of him to look at alternate ways of thinking about things.

Oettinger: This guy is a miracle, by the way. He's seventy-nine. He's been in that job for years and years and years, through thick and thin, administration after administration. It's a miracle that somebody whose job it is actually to think interesting thoughts has survived so long.

O'Neill: It's amazing to me, but we're really grateful that he's still there.

We have now held sixteen major meetings that last two or three days each. We have done a number of what we call "minis," which are anything from three hours up to a full day on a specific presentation or briefing. Then we post all the meeting material on our Web site so it can be shared more broadly. We only have twenty-five or thirty people at a meeting, because these are

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[2]Charles L. Stiles, "The U.S. Sinai Support Mission," in *Seminar on Command, Control, Communications, and Intelligence, Guest Presentations, Spring 1991* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-93-1, February 1993), 77–92, [On-line]. URL: http://www.pirp.harvard.edu/pubs html

[3]Andrew Marshall is currently Secretary Rumsfeld's adviser on net assessment.

what we call "strategic conversations." To me, anything larger than that is pretty much in broadcast mode, and you don't get the give-and-take and the thoughtful dialogue that would result in new ideas, which is what we're trying to do. I'll skip the encomium here at the bottom [Fig. 1]; the ASD thinks we're pretty good, so he said nice things about us.

We try to do these in a cross-disciplinary way (**Figure 2**). Out of a group of twenty-five, on any given topic, you'll find a third or less are seniors in government—it can be the DOD, or the White House, or the State Department; we've done all those—but we try to pepper it with a variety of people who are on point to the topic that we're asking about. Then we want to go beyond that. We want to get different filters, different lenses, to look at these questions, so we'll invite science fiction writers, Nobel prize winners, movie directors, journalists, architects, and the list goes on. I'd be happy to talk to you about those, but the point is the process.

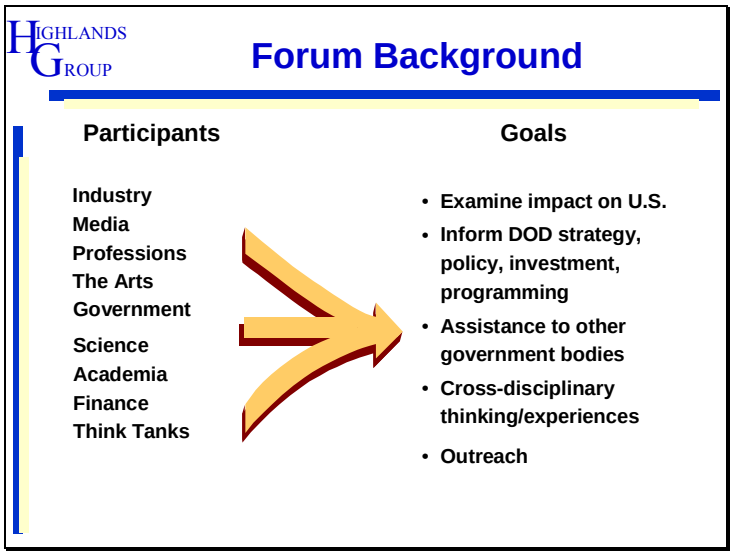

Figure 2

Student: Does that "government" rubric include anybody in the military?

O'Neill: Yes, and I'll talk about the next meeting we're going to hold, which is really relevant to your question and to my introduction, as sort of a wrap-up.

The idea of the first meeting was that initially we were looking at the impact of information technology [IT] on the United States, not the impact on others of what we were doing, because it's a global phenomenon (**Figure 3**). It's not a U.S. phenomenon. We wanted to be able to inform DOD strategy and policy, starting out by looking at information in warfare and where we would make investments and programming decisions based on these ideas.

We also thought about being of assistance to other government bodies. A really good case study would be how badly we did critical infrastructure protection.

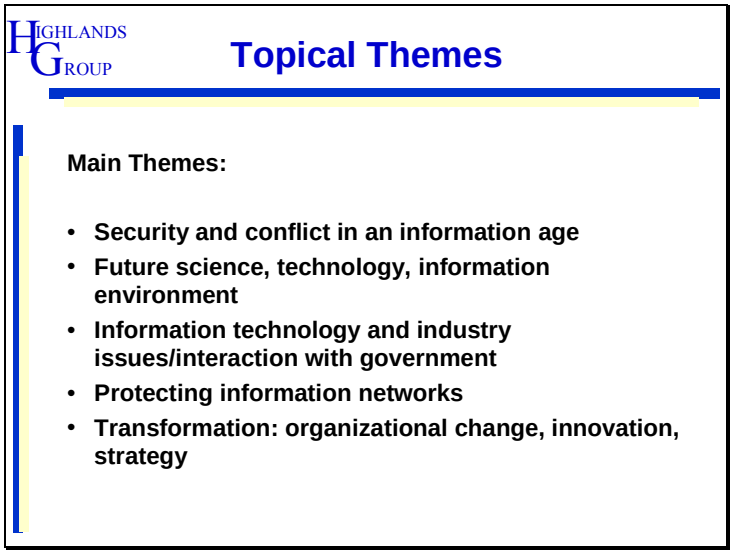

Figure 3

Oettinger: Their reading for today was the PCCIP [President's Commission on Critical Infrastructure Protection] report,[4] so they're beginning to get an idea.

O'Neill: Then I won't go any further on that, but that's a good example of how not to do it. We never did get commercial participation or cooperation at significant levels to support a critical infrastructure approach within the U.S. government. The government doesn't own these pipes; the commercial sector owns them.

Oettinger: For those of you who are interested in pursuing this a little bit further, Pete Daly, who was one of the commissioners of the PCCIP, representing the secretary of the treasury, did a paper for us on this very set of thoughts that Dick is raising and you can find it on the PIRP Web site under Publications.[5] It's this mix of oil and water that Dick was talking about. Pete expresses his frustration at the process, so if you want detail on that go to that paper.

O'Neill: I'm really not going to talk to slides much here, because I'd much rather have us talk and look, so I'll run through some of these quickly.

As I mentioned, we're looking at security and conflict in an information age. The real result of that first set of Highlands meetings (one of which Tony attended, out in Santa Fe, New Mexico) was to develop an initial set of operating concepts for conflict: how the United States would operate in an information age setting. The term "information warfare" came out of that set of meetings and the writings that they spurred on information operations and a variety of things. We then developed strategy and policy based around those, and we ended up with a variety of institutions that were formed in order to carry all that out.

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[4] *Critical Foundations: Protecting America's Infrastructures, The Report of the President's Commission on Critical Infrastructure Protection* [Washington, D.C.: U.S. Govt. Printing Office, 1999), [On-line]. URL: http://www.info-sec.com/pccip/web/report

[5] Peter H. Daly, *Soldiers, Constables, Bankers, and Merchants: Managing National Security Risks in the Cyber Era* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, P-00-3, June 2000), [On-line]. URL: http://www.pirp harvard.edu/pubs.html

We looked at future science, technology, and information environments. We still continue to do a number of meetings on those themes. Our favorite one last year was the "Future World of the Small" that was emerging. That was on MEMS [micro-electromechanical systems]: nanotechnology and molecular computing and what they really meant. As I mentioned to the group at lunch, that was a remarkable session. We had the luck of having that meeting planned the same month that Bill Joy's article on "Why the Future Doesn't Need Us" (because of the convergence of genomics, nanotechnology, and robots) appeared on the cover of *Wired*.[6] We were fortunate to have Bill Joy call and say he'd like to appear and speak at the Forum on this, and I said, "Absolutely." We paired him up with the discoverer of carbon nanotubes, Rick Smalley, who won the Nobel prize for that, and Bill Haseltine, the CEO [chief executive officer] of Human Genome Sciences, Inc. [HGSI]. So we had the convergence of all those fields represented by the people who really had led them. The discussion was quite remarkable. It ended up leading back into a session on what this means, not only in terms of defense and science and technology investment but also in terms of the impacts on the society we live in—not just the United States but global society. We try to make sure there are much broader sets of questions asked.

As I mentioned, we talked about protecting information networks; that's our work with the PCCIP and beyond, with technology and industry. What we've been working on primarily this last year is transformation. If I look at all six or seven years of the meetings, all of them are really gauged toward the notion of transformation of one type or another. Transformation is really what we're about, and we're now looking at organizational change, innovation, and strategy for the U.S. government.

The next slide is an eye chart (**Figure 4**). A lot of what we do is built around scenarios. I think the meeting that Tony attended was an interesting example of how these meetings could work. If you'll bear with me for a second I'll describe it quickly.

We were looking at what the future of information-based conflict might be, so we invited William McNeil, whom I consider to be one of the great historians we've produced here in America—he's written *The Rise of the West*, *Plagues and Peoples*, *Pursuit of Power*, and other great works—to come to the meeting and give a nonstop, thoughtful exposition of how information and technology have changed power relationships over the previous 2,000 or 3,000 years. He carried us through with anecdotes. It was wonderful stuff, talking about things like the printing press loosening the power of the church, so we had a really good sense of what those power relationships were about. In the afternoon we had Kevin Kelly from *Wired* magazine; Paul Saffo, the director of the Institute for the Future; and science fiction authors David Brin and Bruce Sterling muse on what information and other technologies might do to change power in the next 2,000 years. There's nothing small here.

After everybody's minds were stretched in two different directions in a timeline, we gave them the night to relax, and the next morning we put them into several different groups. Peter Schwartz, of the Global Business Network, brought his people to facilitate three different scenarios over the next two days: what might be possible in three different environments (**Figure 5**). We ended up with a look at what the future might be like in a world directed by NGOs

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[6]Bill Joy, "Why the Future Doesn't Need Us," *Wired* **8**,4 (April 2000), [On-line]. URL: http://www.wired.com/wired/archive/8.04/joy_pr html Bill Joy is the cofounder and chief scientist of Sun Microsystems.

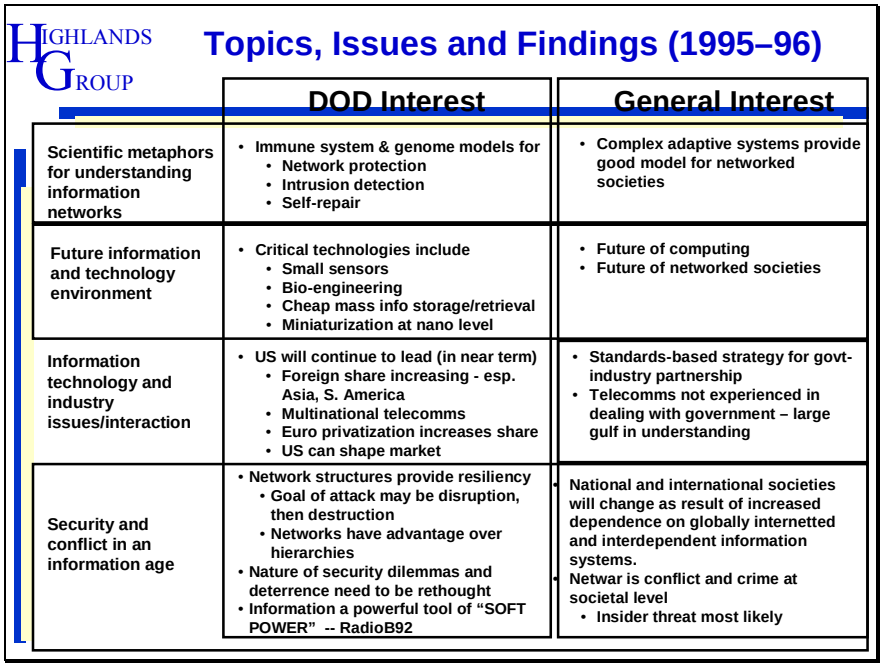

Figure 4

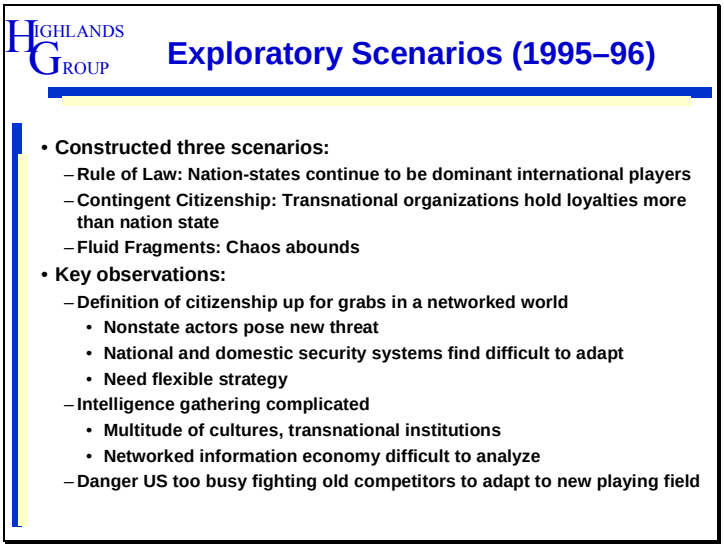

Figure 5

[nongovernmental organizations], another that might be a state-centric world, a world where there's a sort of chaotic mixing of the two and even beyond that. We had narrative scenarios, about five pages long, for each of those. We distributed them to the members, and they then found their way to the White House and to a whole variety of other places. That meeting ended up giving us the first sense of what conflict, diplomacy, and security might be like, and it did have a great deal to do with the way that we wrote our strategies for information warfare.

Oettinger: I strongly recommend Peter Schwartz's book, *The Art of the Long View*, to you.[7] It has been updated since its first edition. As Dick mentioned a moment ago, Peter Schwartz is super and the book is towering, because the scenario business is full of charlatans and bullshit artists. Schwartz just stands like a tower above all of that, and it really is a serious intellectual exercise. It's very well described in that book, so I urge you to find a moment to read it.

O'Neill: The scenario process is one way that we have worked. Another way is the cross-disciplinary approach, having everyone from science fiction writers to historians to others approach a single question. Their points of view have very different ways of resonating on that topic. You may end up with an insight that you would never have imagined before. The whole idea here is to bring other voices, as we call them, to policymakers to let them think differently, because when they go back to Washington it's back to business as usual. They go back to the in-box and don't have access to these sorts of things. If you can interrupt that cycle just a little bit and maybe make them aware of a network of people they should be talking to, or make them aware of an idea they should insert back into the process in their daily lives in the DOD or the Department of State or whatever, then you may have had at least an impact that's going to perturb that organizational process and be a small disruptive innovation.

With the PCCIP we did it another way. We invited seniors from Microsoft and Xerox, Esther Dyson from EDventure Holdings, and other people from the IT world whom the PCCIP people really wanted to include in their conversations. When the PCCIP was first formed [July 1996] we were able to bring them together and put them, other government leaders, and commercial providers of telecommunications—from AT&T and GTE—in the same room to do a role play.

Are any of you familiar with the RAND methodology called "The Day After" (**Figure 6**)? I'll describe it very briefly. The Day After imagines that you are a member of the National Security Council [NSC]. There are eight to ten of you in a group, and you've just been given a crisis that you've got to advise the president on. You've got very little time to do this, so you go through the facts of the case, you discuss it, and then you try to get a memo out to the president really quickly and say, "Here's what we ought to do." You come back out to the seminar, you report on "Here's what we did," and all of you feel pretty good about yourselves, because you've solved the crisis and gotten the president the answer. Then you find out, "Oh, crap! Something else much greater happened to make this much worse. It's beyond what we described to the president. What could we do? What should we do?" So you go back in, and you say, "Knowing what we know now [this being the day after, so you now go back to the day before], what should we do?" You go back through the process again of writing a memo to the president on "Here's what we should do." Then we pull the participants back out again to a plenary and compare notes about how the different groups saw things differently, what factors were most important to them, and what we learned about the threats, the risks, and the vulnerabilities.

It's a very illuminating process. It takes about five hours to accomplish one of these things, so you get a lot done in a short space of time. You never really get it all done, but that's the way it works in the real world. It always happens that way. People on their way to a meeting of the NSC won't always have read the background material. Some will have, and will have their own

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[7]Peter Schwartz, *The Art of the Long View: Planning for the Future in an Uncertain World* [rev. ed.] (New York: Doubleday, 1996).

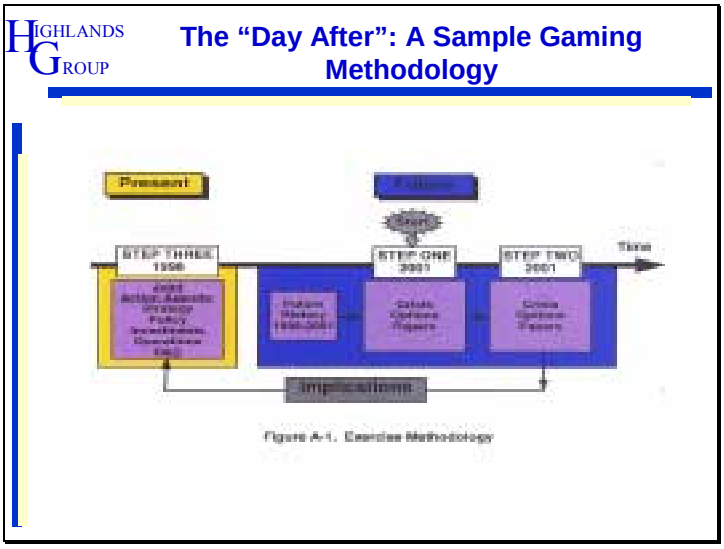


Figure 6

personal agenda that they want to accomplish, so you have all these different ideas and sources of information approaching this common problem with the goal of advising the president. It's a remarkable thing, because you do lose sight of who you are inside that crisis, and you quickly start to see yourself as providing the best information you can to the president. It's one of the most intense exercises I think I've ever seen.

Student: That practice is being brought back to collegiate-level activities in the framework of the Model United Nations, but, beyond that, in NSC- and cabinet-level simulations.

O'Neill: Have you been a part of that before? Was it useful for you at all?

Student: Extremely. What we've instituted here at Harvard, which the other people don't do, is exactly the type of plenary session you were discussing. We come out of it and we discuss what we would have liked to know in the simulation we participated in.

O'Neill: Thank you. I'm glad to hear other people are using that. It's a useful tool. I don't know if it's patented, but RAND calls it the "*RAND* Day After" methodology, so I assume they're looking for a *ka-ching*! whenever somebody says it or uses it.

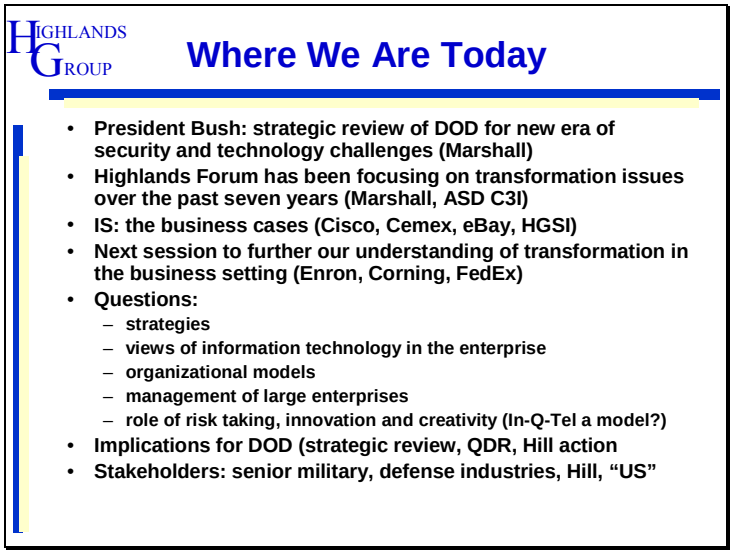
Oettinger: What Dick is describing in the context of the PCCIP is a laudable effort on their part to leaven the process. My guess is that this will be very influential in the long term, because it will have percolated in the minds of any number of people. In the short term, if you look at the constraints under which that was operating you see why it takes time for this kind of effort to percolate. In the 1999 proceedings of the seminar you'll find Tom Marsh, who chaired the PCCIP, and his view of what it took to get it going (or not going), and Kawika Daguio, who was the American Bankers Association guy looking at it from the point of view of the private sector and saying, "What are you guys in government planning to do to me?"[8] If you put together Dick's

[8]Robert T. Marsh, "Critical Foundations: Protecting America's Infrastructure," 183–208, and Kawika Daguio, "Protecting the Financial and Payment System by Dispelling Myths," 17–35, in *Seminar on Command, Control,*

viewpoint with Marsh's and with Daguio's, you can get a sense of what that process looked like from the viewpoint of a number of participants, and there are some valuable lessons there.

That's a far from ended process. It's a process that has just reached a bare beginning, and, if you look at the Hart–Rudman Commission report[9] on what they now call "homeland defense," it's sort of the next chapter on how the country would come to grips with these threats that are not classical domestic police things or classical military force projection things. Those are going to preoccupy all of you for the next X years, so it's an important area to take a look at for a time and steep yourselves in.

O'Neill: This is a homework assignment or pop quiz. At the end I'm going to ask you a little about your reaction to the process and how it might or might not work in certain settings, because it's very useful to government leaders. Let me take you to where it is now (**Figure 7**).



FedEx = Federal Express QDR = Quadrennial Defense Review

Figure 7

The president, as I mentioned, has stated that the DOD is not going to increase its budget this year until a strategic review has been completed, unless there's an emergency supplement or something. What that really says is that business as usual—twelve carrier battle groups, large-deck carriers, large guns like the Crusader gun that takes several C-5s to cart it and its logistics train anywhere (it's really not mobile, but it's supposed to be part of the new, maneuverable Army), joint strike fighter versus F-22 versus whatever—will cease. The way the military has

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Communications, and Intelligence, Guest Presentations, Spring 1999 (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-00-2, June 2000), [On-line]. URL: http://www.pirp harvard.edu/pubs html

[9]The U.S. Commission on National Security/21st Century, better known as the Hart–Rudman Commission, cochaired by former senators Gary Hart (Dem.-Colo.) and Warren Rudman (Rep.-N.H.), released its Phase III report on Feb. 15, 2001. See *Road Map for National Security: Imperative for Change, The Phase III Report of the U.S. Commission on National Security/21st Century* [On-line]. URL: http://www nssg.gov/PhaseIIIFR.pdf (Accessed Oct. 2, 2001.)

functioned for a long time is that a champion exists for a particular platform, and the military is platform centric. You're promoted throughout the system on the basis of your success in either gaining a new platform or advancing that platform through the process and operating it throughout its life span, so we're tied to that in many ways.

I think what the president is saying is that, partly because of the revolution in military affairs [RMA] you've heard about, we can look at things and operate in a different way. There are a lot of choices. Will we skip a generation of technology and move to other things? Do we still need, for example, manned fighter aircraft, or can we get by with combat unmanned aerial vehicles [UAVs]? Should we be thinking more about MEMS dust—sensors that we can sprinkle—or tagging technology so that we can follow things? An ISR system could be far more robust and more ubiquitous than it currently is capable of being.

Oettinger: There was a squib just the other day in one of the newsletters about a UAV going down the whole length of the coast of the Americas and back. That's one helluva good test. A UAV that does that and gets shot down or forced to land by the Chinese is a lot less of a risk than if you have people on board.

O'Neill: You're hitting it on the head. The political considerations behind the actions that we take with military extension, or the military instrument of foreign policy, are far less with one of these new types of technology than they would be in a manned environment. Whether it's the sight of body bags coming home or the potential for political embarrassment, whatever it is, you can create greater leverage by virtue of using this precision, lethal or nonlethal, in a standoff mode with these new technologies.

Let's look at what these mean to us. If we're going to be operating, for example, close in the Persian Gulf area, what is the asymmetric actor (even the state actor, but let's say an asymmetric actor, a terrorist) going to have available to him? What could an individual do to U.S. interests with a hand-held weapon or a barge with dynamite or something on board, whether the damage is to our image or to legitimate capital ship inventory (we lose one)? What would happen in that kind of an environment where these tools are off the shelf and easily fungible? What should we have? Should we have big-deck carriers? If they operate too close, they're a target in that kind of environment. If we're really talking about operating in the littorals of most countries, is a huge submarine that was built for the Soviet threat—to engage multiple target systems in air, surface, or subsurface media simultaneously—the kind of system we need or do we need something different? It's not that we're saying we don't need these items, it's just a question.

The strategic review is under way to do that. Part of that review questions not only the platform but also our entire strategy. It questions the strategic environment that we'll be operating in. It questions our doctrine, our policy, our manpower, and, ultimately, our organizational structures and budgets. As I mentioned at the beginning, the Forum has been focusing on what we consider transformational or transformative types of questions for the last seven years, but never specifically on this question: *this* transformation at *this* point in time.

Student: Do you know how Marshall is actually carrying out this review and what the steps are? Is the Highlands Forum involved in this review, directly or indirectly?

O'Neill: Both directly and indirectly. We're involved through this last meeting I talked about and the next meeting [Fig. 7]. Andy Marshall is our cochair, so indirectly everything that we do goes

back into Andy's system. If I'm involved with Andy in writing a paper or answering questions or doing anything, I'm involved in that review. Directly, people who are in the Forum meetings may be going back to give briefings to Andy on a variety of topics and to synthesize things. I wouldn't say that we are recognized as a primary component of the strategic review. Andy is looking at that, and all the tools he brings to bear, however he chooses to synthesize them, are what will constitute the strategic review. I don't want to overstate our role, but we are clearly an input to him and to others in the review.

Student: How successful do you think the review will be?

O'Neill: How are you going to measure success? As whether or not we get new generations of technology, change the Pentagon ethos, or change the promotion systems and manpower systems and organizational structures? That's asking for the whole enchilada. I don't know. I wouldn't want to venture a guess. It's sort of "a bridge too far."

Oettinger: It's not an unreasonable question. In a sense, the answer will be that it's better than doing nothing. I think one of the things that's important for folks to understand with regard to everything in this course is that the executive branch only proposes and Congress disposes. All these issues ultimately go through the filter of the structure of congressional committees and their prerogatives. They go through the filter of where the plants are and the boodle is. In this democratic process there are lots of steps, so if we measure success a hundred years from now we'll know better. But it's got to be done.

O'Neill: I think the timeline, the relevant range of when it's got to be done, is an absolutely essential factor. If you're saying "thirty years from now," that's probably what Andy's talking about, because you're not going to make significant changes in a year, although you may begin moving toward them. More important, if you change the process under which these questions are asked and you change the access—that is, the people who have the ability to influence the process, so it's not the same group of actors but you've expanded to accept input from a whole variety of actors—then I think that's significant. Success depends, again, on what you're asking about: over how long a period and what it is you'd like to see done. It's a tough question to answer.

Oettinger: I think it's better to think of it more as the wake of a ship. A more reasonable question is: how wide is the wake X miles out? For those of you who may be going on to do graduate theses, I was just thinking of a wonderful thesis topic along these lines. If you look at the roots of the Goldwater–Nichols process at stages comparable to what Dick is describing with regard to the RMA, at the congressional debate, at the evaluations ten years later, and at Jim Simon's lamentations over the unintended effects vis-à-vis the balance between the CINCs [commanders in chief] and strategic intelligence requirements,[10] you see that from small beginnings there's a very broad wake affecting all sorts of things thirty years later. I think that's a better metaphor for thinking about it than success or failure, because there's no way to know at any moment in time.

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[10]James M. Simon, "Crucified on a Cross of Goldwater–Nichols," in *Seminar on Intelligence, Command, and Control, Guest Presentations, Spring 2001* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-01-3, July 2001), [On-line]. URL: http://www.pirp harvard.edu/pubs html

Student: Secretary Rumsfeld has suggested that basically we have to get our strategy right before we move on to anything else. If it takes longer to get the strategy right, how does this fit into the budgetary process? Are we locking ourselves into a budgetary process that's going to move ahead?

O'Neill: Think about what the current process really is and how it works. There is a way that the process is laid out on paper, but sometimes reality is a little different from the way it's laid out. What you could say is that, if we start backwards from an acquisition standpoint and assume we're able to acquire a certain platform because it continues the way we've thought about fighting for a long time and we're comfortable with it, then once we've gotten the appropriation to buy, continue to build, or build a new generation of these platforms we know pretty much what our strategy is going to be and how we're going to operate. Sometimes you can get by with that.

At other times, which is what the review intends, let's think about what happens if we're in a discontinuity. Is there some level of fundamental shift in the technological, political, or commercial worlds that will dictate that we operate and act differently? Will we be able to act with impunity as a global military power, or will we have to act differently because something shifted fundamentally and there's a discontinuity? In that case I think it would make sense to say, "Let's look at this review first," and that's what the secretary has asked for.

What does the review mean? It doesn't necessarily mean, "Let's see if aircraft carriers or submarines or tanks make sense." What he's asking is, first, "What has changed in that environment? What's the strategic environment in which we're going to be operating?"

This is not any different from what businesses that survive in the long haul do, and I'll get to that. It's the process of what Joseph Schumpeter, the American economist, called the "gales of creative destruction."[11] Not many companies really stay around for the long haul. Not many companies are built to last, and if you look at the ones that do last, they may underperform the Standard and Poor's 500, but for other reasons there's a lock-in and they stay there for a long time. As it turns out, the most successful companies actually are the newer companies. If you look at them in chunks of ten-year timelines, you may find out that HP [Hewlett-Packard] was more successful than most in its niche for a long period of time, but in the software business, which is even more volatile, with Microsoft and the startups that have stuck around for the last five or six years, the companies that are newer are actually doing better than the others. There are contradictions to that, like General Electric or HP or IBM. Actually, IBM continually reinvents its strategy. That's what we're interested in, and that's what our next session for Highlands is going to be about. We're trying to understand how those companies that are built to last and are huge in scale succeed and even outperform others.

Understanding the strategic environment is critical for a commercial entity, but we think it's also absolutely essential for government. Even though the competition is not the same, there's still competition, and what we're saying is that in a globalized environment competition takes on brand-new meanings from a military and political-diplomatic point of view.

Oettinger: Think of a recent concrete process. There was a lot of handwringing when, because of political events in Europe, base closing abroad became kind of a necessity, because a U.S.

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[11]See Richard N. Foster, *Creative Destruction: Why Companies That Are Built to Last Underperform the Market—and How to Successfully Transform Them* (New York: Currency/Doubleday, 2001).

military presence was no longer tolerated. The Cuban missile crisis was one of the early things that sort of coincided with the withdrawal of U.S. bases from Turkey. Then the realization that this was a permanent strategic factor led to a massive transformation of the U.S. military's notions of force projection and transport to some forward deployment, like flying C-5As out, et cetera. You can look at that over the last thirty or forty years as an evolutionary response to a major strategic change.

The difference now is that if you look at the rhetoric of "network-centric warfare," which is still rhetoric, it can be put in context when you hear Dick talk about "platform-centric." Otherwise, "network-centric" doesn't make sense. "Why are these guys harping on 'network-centric?'" Ah, because they are at this moment propagandizing in distinction from the current fundamental structure, which is platform-centric. One of these days they'll either win or lose, and platform-centric or network-centric will become the new orthodoxy or it will evaporate because the entrenched interests won't have worked out. Little by little, realities like the untenability of bases, or whatever the equivalent is in the current world, will impose themselves. It's an evolutionary process. There's so much talk about revolution, which is easier to see in retrospect than when you're in it. I think when you're in a revolutionary transition you're counting in generations, so for one lifetime that's mighty slow. It's only when you look at it from the perspective of a century or two that you can say "Ah, yes, a revolutionary transformation," but it took three generations or more. It's important to keep that in mind.

O'Neill: I think that what's clearly most important about what Rumsfeld, Marshall, and President Bush (who ordered this) are really asking is, "Before we do anything else in terms of thinking about big-deck carriers or anything, what's the strategic environment? Should we be more concerned about asymmetric threats than state-centric threats? Should we be more concerned about a region of the world other than the one where we've been focused for a long time? Does the technology that's going to be available not only to us but also to those we're concerned about alter the terrain in any way? If it does, can we proceed by asking, 'Does the current inventory or force structure align with that effectively, or is there another way to do this?'" As Tony points out, they know that it can take twenty or thirty years to develop a new platform, a new doctrine, a new force structure, and the training to go along with them. It all has to be consistent with U.S. national interests and policy. If it's not, then we're not really an effective military instrument of foreign policy.

Oettinger: Let me again put in a plug for his comments about the importance of scenarios as a tool and technique in this. Much of what he's just described is scenario dependent. It's dependent on your view of what the environment is going to be. Let me single out one element that came up earlier in this conversation, which is the distaste for body bags and casualties and so forth. It is a current piece of strategic wisdom: "The American public will not tolerate body bags." I'll give you five minutes of really serious terrorist activity before that gets flipped.

If you don't believe that, history can be a very good teacher. Look at Ernest May's marvelous book called *Strange Victory*, which is his re-examination of the events leading up to the defeat of the French by the Germans in May 1940.[12] The received wisdom is that France, like Britain, was defeatist, pacifist, underarmed, et cetera. His reading, based on declassified materials from both French and German sources to be comprehensive (which is rare, because, by contrast,

[12]Ernest R. May, *Strange Victory: Hitler's Conquest of France* (New York: Hill and Wang, 2000).

Europeans tend to write from one side or the other), is that the French were measurably stronger than the Germans. The attitude toward defeatism and body bags and the carnage of World War I flipped markedly between 1938 and 1939, so that by 1939 the French were quite ready to go and had a strong belief in victory. The reason that things went to pot in 1940 turns out, in May's reading, to have been more an intelligence failure than a failure of arms. The French had better tanks than the Germans, et cetera; they just screwed up and put them in the wrong place. There was a generalship failure, too. It's only through the use of scenarios that challenge some of the most fundamental assumptions about the strategic environment that you can pretend to have something that has some robustness. Otherwise, you're just locked into one set of crystal balls rather than some other set.

O'Neill: That's the reason we try to use a variety of tools to get at the questions for these people. We use storytelling, play, and exercises to make these people sort of loosen up. They also read. These are very smart people. The notion that government bureaucrats are slow and dull is wrong, but they become so shackled to the current desk and the tyranny of the schedule and the clock that they don't have the opportunity to exercise what they really have that brought them there in the first place.

We try to give them that opportunity. For example, we bring people back from the dead. We will have John Steinbeck show up at a meeting and tell stories. Interestingly, the stories are always on point to what we're trying to get across at the meeting, so he'll tell us about the days when he was working in Salinas; he'll tell us about when he and Georgia O'Keeffe and others were doing racy things; he'll tell stories from his books. Another year Jack London showed up, and I thought it was pretty amazing. I hadn't read a book of his in a while, and I thought he was dead. We'll do those kinds of things.

We will do scenario play, as we did at that meeting Tony took part in. We'll do The Day After scenario to try to make people a part of a current crisis. We find that sometimes these tools really do help to loosen the creative mind a lot and help government seniors discuss these ideas with people with whom they have nothing at all in common. Their professional and political backgrounds, their age differences, are marked.

There was a meeting we did on information diplomacy and security. We had a group of diplomats sitting around the room who understood pretty well how the world worked: it was because they exchanged cables with people in other capitals or back in the United States. That was the system. They rely on the system. They know how things are collected and how they're disseminated, so they trust that system and its code words. We brought into the room two twenty-four-year-old kids who probably had hair down close to their knees (maybe a little shorter than that, but not much; ponytails are always good in this kind of a crowd), sandals, and a good amount of facial hair, and we introduced them. These were kids who took their life savings, about $24,000, bought some computer equipment and a lot of wire, flew over to India, trekked across to Dharamsala, hiked up the mountain, and met the Dalai Lama. After the meeting with the Dalai Lama, they hooked him up to the Internet, and they gave him his first presence on the Web as a government in exile.

This happened at about the same time that Jodie Williams was putting forward on the Internet her petition for a land mine treaty. She is the archetypal little woman in a log cabin in Vermont, and her government was opposed to it. She ended up having the treaty ratified largely through her own efforts, using the Internet as the source, and won the Nobel peace prize. These

two kids didn't win the peace prize, but they gave the Dalai Lama an Internet presence. Then they took the rest of their equipment, and they connected his government down at the bottom of the mountain to him to create an intranet for the government in exile, so the sneaker net was no longer the way of doing things. Now they were more efficient.

Did it change the calculus between them and China? No. But it did alter the way the diplomats viewed the system: that NGOs were players and could have a voice that could be amplified greatly beyond the level at which it had previously been heard. The amplification was significant. If you take that on to the levels possible in Seattle to oppose the WTO [World Trade Organization], we're starting to learn more and more about the importance of these things.

This was several years ago. These people in the State Department hadn't really encountered that effectively before, and it was very remarkable to me that at the end of the meeting these people were embracing each other physically as well as intellectually. So, bringing different voices that are totally orthogonal to what these people were all about and what the system was allowing was an interesting tool to help them free up their minds and think about alternatives. Sometimes that leads to great decisions and different policies.

Oettinger: If I may interject, *FMFM 1* [*Fleet Marine Field Manual*], the Marine Corps warfighting manual as it was written under General Al Gray,[13] is to me a thin volume that beats a lot of ponderous, business-school-type things. It has one very important and simple message, which is that you have to live schizophrenically in today's world and, I think, always. One part of that is to do whatever the normal thing is to do tomorrow morning the best way you can, because if you don't, you don't eat, you can't defend yourself, the ship will sink, or whatever. At the same time, you've got to be doing what he's talking about, which is question everything in sight, because X years from now things may not be the way they are tomorrow morning, and if you don't prepare yourself you're going to be dead, literally or figuratively. Learning to live on both of those planes is really an enormously tricky business.

Captain John Schmitt, who wrote that manual for General Gray, lost his job as soon as Gray left as commandant, because it was thought too heretical. It says, "What should the complete Marine do in his spare time? Read books!" What a wonderful prescription! Do all the things you expect of Marines, but also read books. It's beautifully articulated in *FMFM 1*. I don't see it articulated nearly that well anywhere else.

O'Neill: I think your point is really essential, and I'd follow with two very short things that I think amplify what you're saying. That's the whole purpose of what we're talking about with this process. I think the process works.

I'd say, first of all, that discontinuities thrive on divergent thinking, not convergent thinking. That's what your Marine was really doing. The second thing is that F. Scott Fitzgerald wrote "The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function." That's what divergent thinking and what Tony is talking about are really about. That's what we try to allow people to do through this process.

I guess that gets back to the question regarding the process and where we are in the strategic review. I don't think Andy is trying to answer questions about how many carriers or how many

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[13] *FMFM 1: Warfighting* (Washington, D.C.: U.S. Marine Corps, 1989), [On-line]. URL: http://www.mnsinc.com/cbassfrd/CWZHOME/Warfit1 htm

big or little ones. That's going to come out of this process. The first question is what the strategic environment is like and, then, what things we already have or what we need in that environment.

Student: What do you see as your advantage compared to other NGOs or think tanks in Washington or in the United States?

O'Neill: I think everybody has a niche. Clearly, if you talk about The Brookings Institution, as an example, it has a great critical mass of people on a broad variety of topics who can think together, write really prescient essays or studies on a specific topic, and get them to a government leader. There is a very big need for those kinds of groups, otherwise they wouldn't exist.

Oettinger: They have a kind of liberal bias. If you want a more conservative one, you hire the guys at CSIS [Center for Strategic and International Studies] instead.

O'Neill: We don't claim to have the answer on anything. It's like in *Guys and Dolls*: "the oldest established permanent floating crap game in New York." We are a virtual outfit. There are only two of us who manage this. We do months of work on research and logistics to prepare for these meetings. We pull in the very best people we can find anywhere in the world, and they will come. We don't pay them anything. They're paying their own way to do this. These people come because they want to be a part of this process. They want to be with the other people who are going to be there, to talk with them and learn from them, because they think they're giving back something to the government.

What do we have as a niche? We have the ability to give a cross-disciplinary point of view, outside what some people call a "house solution." RAND has a certain way of looking at things, and Booz·Allen & Hamilton does, and others, and they're all very good, solid organizations. What we're able to do is take a slightly different point of view. Usually it's…I wouldn't say heretical, but we're looking at something that brings in other voices that you wouldn't normally hear or have access to. We'll include people from Booz, SAIC [Science Applications International Corp.], RAND, or others at our meetings.

We're able to do things rather quickly, rather easily, and we do them in a different way. We don't write reports. We're prohibited by law from writing reports or consensus recommendations, and we like it that way. This is strictly an idea engine, so the ideas that emerge from meetings are available for use by decisionmakers as well as by people from the think tanks. We welcome that kind of cooperation, because, truthfully, they have the *gravitas*. They are there for the long haul and are able to influence government policies with real scholarly work. We don't produce scholarly work. We produce ideas and interaction and networks for these people to take and use as they need them.

Oettinger: Let me quickly recount a personal experience in an entirely different realm. I hadn't thought of this. A number of years ago I chaired the state cable television commission under Michael Dukakis,[14] and I learned some interesting lessons, because I had to deal with lawyers in my own agency and lawyers for the cable companies and so forth. I'll tell you some things about the way administrative agencies operate, and I learned later that the same things apply to the Federal Communications Commission, the Federal Trade Commission, and all those more serious organizations than the Massachusetts Cable Television Commission (now dead).

[14]Michael S. Dukakis was governor of Massachusetts from 1975 to 1979, and from 1983 to 1991.

One lesson is that you're subject to a lot of pressures, including the pressure to obey the law so you don't go to jail. Another is that when you have a very contentious issue the question is, "How are you going to come out?" Since you don't know a priori, one of the things you do is make sure that the record is full of evidence that points in all directions. That's kind of the point that Dick is giving you: what are the possibilities? Somebody can be enormously useful in pointing out to you what the range of possibilities is. According to the most cynical or most practical view, when you run an administrative agency putting all these various things on record is important. Then when you get the lay of the land and you see where the votes are in your agency, and what the speaker of the house or the governor will do to your budget next year, you can say, "I'm going to head north." You go back and you say, "I have all this testimony for north, so now I have to get somebody who really believes in north. I will hire RAND because they are a north-going organization, or I will hire CSIS because they are a south-going organization, and they will flesh it all out and either ignore or discredit all the other directions." That becomes the basis for the next set of policy decisions, or agency decisions, or rulemaking, or adjudication favoring *this* or giving you a right to *that*, and so on.

This notion of first figuring out what the possibilities are is a perfectly normal point of view, although I admit I put it in a somewhat facetious and cynical way. You have a different kind of crew come in to flesh out the chosen possibility, and you may have yet a different crew come in to operate that possibility. There are different kinds of folks at different stages of that type of process, whether it's devising a strategy for the Defense Department or figuring out which way to look in an administrative agency. The economists in the administrative agency all believe that they call the shots. Economists point in every direction, and if you're a good agency head you hire a lot of them so you have evidence pointing in all directions. Then you figure out which way to go.

Student: How much did your involvement with the Defense Department early on help the Forum to build contacts?

O'Neill: Not so much on the contacts. If anything, I was more insulated from what we're trying to do now when I was inside the military. It took actually doing this and opening up Andy Marshall's Rolodex and Esther Dyson's Rolodex and John Seely Brown's[15] Rolodex. These people were part of the initial meetings, and they thought enough of the process to say, "Have you thought about this person or that person, or about this topic?" Then they invited me to each of their meetings, so I've been attending Esther Dyson's PC [personal computer] Forum for the last six years. It is a remarkable networking opportunity, but it's also a great intellectual exchange that goes on.

Oettinger: She's a Radcliffe graduate, by the way.

O'Neill: The exchanges that go on continually broaden the network. It wasn't like that initially. Truthfully, I was a typical Navy captain in the Pentagon. I had a certain career that shaped the way I looked at and thought about things, and the advantage I had was that I had come through a rather unusual, not fully accepted, part of that community. I was a cryptologic officer, and it wasn't like I was a line officer driving ships, so I thought about things a little differently, and as a linguist I had a certain different bent. It enabled me in the Navy to think a little differently, but I

[15]John Seely Brown is director of the Xerox Palo Alto Research Center.

didn't have access to the outside world until I really started thinking about how to attack this problem and then getting people to help me do that. It never hurts to have people help you.

The next bullet here [Fig. 7] is about IS—information superiority, which has been a strategy to underwrite the Joint Staff's Joint Vision 2020 and every warfighter out there. What it means in a nutshell, according to the secretary of defense, is "the ability to get the right information to the right person at the right time in the right format, so he can act on it." What does that really mean? I decided not to look within the government, because now I was outside government, and I was really thinking more and more about how things work in the commercial sector and then trying to bring those ideas back. The question I always had in my mind was, "Does this have any bearing on the public sector, on the DOD and others? Can you translate this in any way into something you can bring to bear on the way that we should operate?" It's different because it's less of a competitive environment, so I had to keep that in mind when I went out and asked the question. I decided that when we looked at IS we were going to see how we could better inform our strategy with this IS doctrine we were talking about. How does the private sector do this?

I decided to look for six completely different examples from business, different types of industries that would tell us something about how they viewed the use of information—not IT, but information—and then IT either to create a market space or create and then dominate a market space. What did they see as the usefulness of information? How did they see it transforming their organizations? I did a lot of research for a number of months, met a lot of people, and chose six companies. There were two that I didn't put on the slide [Fig. 7], but these are four interesting companies.

Cisco, you would say, makes sense. You can see how I would choose that.

Human Genome Sciences to me represented the purest form of information that I could think of—the human information, the genome. I studied how they take that information and build an information strategy around that to make it commercially viable and then put the research and technology into it. That's a different way of using IT as a tool.

Then I chose eBay, which I think you can see is a pure IT player. They use IT to create communities and bring people together to create a commercial environment. They certainly dominate the market space. There's nobody out there that competes with them effectively in the auction space. They are *it*. You can look at Yahoo!, Amazon, and a whole bunch of others, and they have a minuscule effect on the market compared to eBay.

The last one I chose was Cemex, and I think this is a great story and a great company. Does anyone here know what Cemex is all about? It's a Mexican cement company. Do you know the story of Cemex? Then this is a good case study to tell you. I know we're getting short on time here, so I'll make it brief.

Cemex was a really small, horribly inefficient cement company, based not even in Mexico City, but in Monterrey, Mexico. They couldn't get their act together. They weren't on time. They had a very small share of the market and one simple product, called Redi-cement. If you know the construction business, you know that Redi-cement is something that you need to have ready when the client calls for it, no sooner and no later, because the mixing is very delicate. It's got to be there. There's a big competitive market for this, and when you're doing construction of big buildings the construction agents will bid to find the best agent they can to get Redi-cement to their site on time, as they need it.

Mexico was starting to go through a building boom. So the CEO of Cemex, a gentleman named Lorenzo Zambrano, met with one of his officers, a guy named Gelacio Iniguez, who was a U.S.-educated IT specialist. Zambrano is extremely enlightened; he's a remarkably cosmopolitan guy. They had the sense of the bigger world, and they could see things that maybe they could add to their company's mix (so to speak) to make them somewhat more competitive.

Where did Zambrano and Iniguez go? They went to Houston and looked at the Houston emergency medical—911—center to see how they did dispatching. Then they went to Detroit. Why would they go to Detroit? They went to the home of Domino's Pizza to see how Domino's delivered in an on-time fashion with a guarantee that if they didn't deliver on time you'd get your pizza free. These are not traditional thinkers! You talk about being outside the box, if that's a term you like: these are guys who were willing to go in very different directions from their competitors, but they had nothing to lose. They were at the bottom, so they did those things. They bought some IT, they put GPS [Global Positioning System] receivers in all their drivers' trucks, they gave them radios and then later migrated to cell phones, they put them out around the city, and they employed the concept of swarming, which they learned at the Santa Fe Institute. They used complexity theory to get their trucks to swarm to a site at exactly the time when the Redi-cement was needed. They knew exactly where each truck was, so they could be most efficient in getting the truck over to the right point, because they would be faster than their competitors. They were able to do that. They guaranteed their clients that if they were more than twenty minutes late for any delivery, the clients would get 20 percent off their bill.

They went from 26 percent on-time delivery in March of that year to 97 percent on-time delivery by the end of the year. It's pretty remarkable. They became not only a very powerful player in the cement business but also the number-one cement manufacturer and deliverer in Mexico. They're now the third largest in the world. They are moving out into shipping. They own a fleet of ships. They are in twenty-six countries. They have built a new business called Cemex Networks, where they're teaching other companies in a variety of businesses how to use IT and organizational change to improve their business and become dominant in their market space.

Oettinger: I can't resist imagining that the ones who wouldn't learn got encased in the product!

O'Neill: They're in New Jersey. You know the story.

This is remarkable! This is not only about using IT, but also about understanding organizational change—the way that they were structured—and a strategy not just to improve the company but to dominate the market. They dominated and now they have multiple products. They are a truly amazing story.

We brought in Cemex, Cisco, eBay, and Human Genome Sciences to talk with our government seniors about how they saw the use of information, organization, and IT all working together in a strategy either to enhance what they were doing significantly or to dominate. It was a pretty interesting session, I have to say. It worked out very well. It led me to believe that we were on interesting ground and we could now pursue this for what the president and the secretary of defense wanted to do with regard to transformation of the DOD and the strategic review.

I looked around for the most admired, most innovative, and most successful companies, and I found a number of polls—you can find a poll on whatever you want. I looked at *Forbes*, I looked at *Business Week*, I looked all over the place, and I started comparing numbers on how corporations are doing in their space, not just if they are admired and a nice place to work. I

found three companies, one of which is not on the slide, that were in all of those categories. They dominated their market space, they were successful even over the long term, they were innovative, and they were among the more admired companies.

Three stood out year after year, the last three years in a row: GE [General Electric], Corning, and Enron. Enron was a little electric company that took advantage of deregulation. They understood that the rules of the game were changing and they got there first. They are now not only the biggest brokers in energy services—gas and electric—in the country but they're also moving to become the dominant player in the world. They've now taken the process that they understood, that they learned by creating this new company, to become brokers of bandwidth. You name the commodity and Enron is a broker in that space. They generate rapid action in these spaces by using IT in their information strategy and as the model to succeed. I would say that despite the California energy crisis, or maybe because of it, they're doing even better. This is a very good company.

You probably think of Corning primarily in connection with housewares: Corningware dishes. They've sold that business off. They decided to focus on a core business, and it's fiber optics. They're moving in a variety of markets and a variety of technologies to take advantage of their core knowledge, and they are amazingly successful.

Oettinger: They're eating Lucent's lunch.

O'Neill: Exactly right. They may end up owning Lucent by sundown today.

The third company I put on there was FedEx [Federal Express]. FedEx created an interesting market space not long ago, and they've become a dominant player. We're going to have them, along with Corning and Enron, come and talk with our senior military people.

Oettinger: That raises a point that I think is important. All of the companies you've mentioned are by and large successful, and it suggests that somehow one could become successful in a logical way. As you said earlier, it also takes luck, and some of these folks are successful in part because they've been able to overcome even bad luck.

FedEx is what triggered this in my mind. You may want to ask them about their fax machine, ZapMail, which was a two-year experiment that Jim Barksdale headed up and that failed. They were just lucky that they were big enough to absorb that loss. One of the major distortions of case studies is that they tend to be about the victors, and the 95 percent of folks who try and who fail stay unrecorded.

O'Neill: I think your point is a critical one. Every one of these companies we talked to would tell you (maybe not publicly, but they'll tell you if you ask them) that the single largest factor in their early success or in their being one of the companies that's built to last has been, and always will be, luck. It isn't grand design. In fact, the dot-com startups were just luck. For the ones that lasted, maybe it was good management and maybe it was luck.

Oettinger: I would say smarts and good management are necessary conditions, but they are hardly sufficient.

Student: What are the implications for the restructuring of the Defense Department? You're talking about building a framework or baseline…

Oettinger: You're looking at one of the major insurance policies that the DOD has. You think of the military as rigid, saluting, stultified, et cetera. This guy's working for them. To me, that's a sign of extremely good health. That's the whole point. That's why he's here and Andy Marshall is at the DOD. They're not unique. There are lots more like that.

O'Neill: I want to remind you that I said that we don't produce reports or recommendations. To address your question, we also don't have the answers just because we invite these companies to come and talk about what they think were factors in their success. They're not standing up and giving briefings. We don't do briefings. We do exchanges, we do small moderated discussions, we just do really informal kinds of things. It's a strategic conversation. Whatever ideas come out, that's great, but we don't have answers. I'm not even sure that there are answers or that these experts would know what the answers are. Even if we had one of the great amanuenses of the world, sitting there taking notes and trying to make sense of it all, he'd say, "I see *this* developing theme," or "I don't see a developing theme. I'm not sure what the answer is." The point is that what we're allowing them to do is open up their minds in this environment, see whatever it is that makes sense to them that they can then apply, and help them think about things differently. That's all it is.

Oettinger: I would hazard a generalization about survivable institutions, which include, so far, the U.S. military, Harvard University, IBM, GE, et cetera. They are all organizations that have in daily life an appearance of great discipline and efficiency but underneath have an enormous amount of chaos. This is as true of this university as it is of IBM. IBM has this image of blue-suited, white-shirted, et cetera, which is true. The sales force always has been that way, but behind that there have always been mavericks. It's a company that from its earliest days encouraged aggrieved managers to call a board of inquiry, so to speak, on their superiors without penalty. The Siberias in IBM have been virtual. I remember a good buddy who screwed up the account here in Cambridge. They promoted him. He got a raise in salary, and he was put in northern Vermont. He loved to ski. His family never knew that he'd fallen into disgrace. He rehabilitated himself, and they started to bring him back into positions of greater responsibility.

In an environment like that, people will take risks. They know that there is some price to be paid, or there wouldn't be an incentive, but it's not a fatal price that forces them to play everything so close to their chests that they don't take any risk. So IBM over the years has been very well organized to have this predominant mode of an organized phalanx saluting almost like the military, but there's a great deal of insubordination and revolution and pockets of this and that.

Of course, universities like Harvard are built that way. It's a good thing Rudenstine is leaving,[16] because he was trying to orchestrate too much for my taste, which is a sure recipe for destruction in an institution like this. Why does Harvard stay alive today? Because it can collect $50 million from the Ford Foundation for doing something routine, but it's an endowment. Fifty years from now, the dean will be dead and the Ford Foundation president will be dead, but that $50 million will still be in Harvard's coffers and will migrate to something else. Lasting institutions have the schizophrenic ability to do both tomorrow morning's stuff very rigorously and, at the same time, nourish these odd little random pockets of ferment.

Think about the Internet. The Internet grew out of a random sprinkling of Defense Advanced Research Projects Agency money out to MIT [Massachusetts Institute of Technology].

[16]Neil S. Rudenstine, president of Harvard University, 1991–2001.

You can't write a proposal that says, "Randomly sprinkle some money on bright graduate students," but that's how it happened. That's luck, and the notion that if you sprinkle enough money on enough bright people there's a good probability that something will happen some place.

O'Neill: Let a thousand flowers bloom.

Just look at this quickly [Fig. 7]. The types of questions we're looking at involve strategies, views of IT in the enterprise, organizational models, and management of large enterprises. They help us to think about large enterprises, because they are fundamentally different from other-size companies.

Finally, among the things that we like to stress in the Forum are risk taking, innovation, and creativity. It's just our nature. You're talking about a culture, because the Forum actually has developed a culture over its seven years. One of the participants in this particular meeting is going to be the CIA [Central Intelligence Agency], and we'll ask them to give us their point of view: what were they thinking about when they decided to create a venture capital firm from within the CIA called In-Q-Tel?[17] They put it out in Silicon Valley to try to take advantage of the speed of the commercial market that wasn't present inside the science and technology community of Washington, particularly in the CIA. They couldn't react fast enough. Technology was changing too rapidly. So they hired Gilman Louie, the CEO of Hasbro Toys, to become the CEO of this venture capital firm, which the CIA will fund publicly. That involves a different way of doing things organizationally and a certain amount of risk taking. Certainly they're open to public ridicule, which they got for quite a while, but now they're delivering some things that have made people think twice about it.

Is this a legitimate way to create something? It's like creative destruction. You destroy the structure of what you have a little bit by creating something new over a period of time inside or outside the organization to spur the organization. So we'll hear from Gilman Louie and what's going on with In-Q-Tel.

What are the implications for the DOD in terms of the strategic review, the QDR, Hill action, and the stakeholders? We're going to have senior military people there. We'll have a couple of the CINCs and several of the senior flag officers. We'll certainly have a couple of defense industry people there, and we'll have some folks from the Hill, such as Congressman [William M.] Mac Thornberry [Rep.–Tex.]. I think that Senator Joseph Lieberman [Dem.–Conn.] will join us as well.

Oettinger: Notice this: he's got the lion and the lamb rubbing shoulders. In the normal course of daily routine, people from the Hill, military officers, and DOD civilian officials aren't supposed to talk to one another.

O'Neill: I didn't ask for permission. I just invited them. Maybe I should have asked. It's better to ask for forgiveness.

Oettinger: That's another important rule. You know that one, I trust.

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[17]See Rick E. Yannuzzi, "In-Q-Tel: A New Partnership Between the CIA and the Private Sector," *Defense Intelligence Journal* **9**, 1 (Winter 2000), 25–38, [On-line]. URL: http://www.cia.gov/cia/publications/inqtel (Accessed on Aug. 26, 2001.)

O'Neill: The last point on the slide is "US," and when I say "US" it's "just us folks." We try to find a variety of people, such as the architects, journalists, and authors I mentioned, to sort of pepper the discussions, and sometimes we invite folks who don't have any reason to be there: a doctor, a lawyer, a schoolteacher. We've had all kinds of folks join us, because they have really interesting points of view that are totally different. Unless you consider a somewhat different mix of views, you may miss something. Maybe that person doesn't say anything for two days but, finally, just sort of meekly raises a hand and asks a question, and it's one of those things that transforms the moment.

There's also a reverse function there. We try to do a certain amount of education backwards, out from the group to people, who then go off and become influential in their own neighborhoods, businesses, industries, regions of the country, or whatever. They become more informed about an issue, and they're able to help articulate a viewpoint at a time when it's a growing public policy question.

Oettinger: By the way, this is a very important element, because the connection between the military and the civilian world is getting more and more tenuous. This ability to pull together various civilian constituencies with the military and the reverse flow of having these folks wander out back into their industries with some understanding of what the military strategy, budgetary issues, or whatever problems are is, in the present context, invaluable.

O'Neill: I put this last slide up for you, Tony, and for everybody else here (**Figure 8**). These are questions I always ask myself, but I also like to ask any audience I talk to. You don't have to answer every one of them, but if any of them strike you as worthy of discussion for a few minutes, I'm always looking for good, smart people to help me think this through. I can get too close to my own process so that I think, "Yes, this is great, and it's the right answer," but maybe it isn't. So, having given you what I can, my best shot, I would just ask if any of you have thoughts on any of these things.

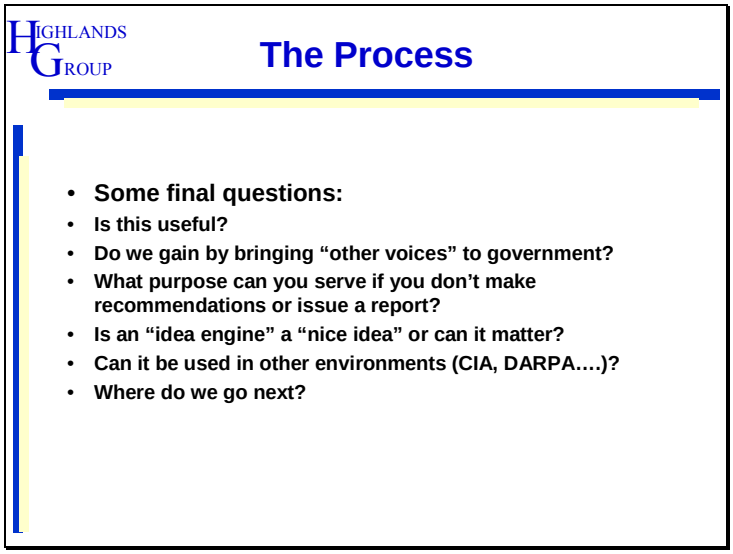

Figure 8

First of all, is this a useful process, and is the process at all different from other things that you know? Do you think that we gain by bringing these "other voices" to government, or is it just sort of nice gift wrapping on a Christmas package? Do we really serve any purpose if we don't come up with recommendations and reports? After all, if we're going to come to some conclusion after these discussions, isn't that what we should be doing? You don't want to leave ideas flopping on the table like a fish you just caught and threw on the deck of a fishing boat because you don't know what to do with it. Shouldn't we have reports and recommendations?

We call Highlands an "idea engine." Is an idea engine just a nice idea or can it matter?

Oettinger: Half your grade depends on your response.

Student: I spent a couple of years doing think pieces at a company you mentioned earlier and some time doing the same kind of thing in the intelligence community. My initial reaction is that the idea engine is great. You don't need to have recommendations or reports, but I think that what's critical is some way to track the follow-up. You need some way to measure performance where years later you ask, "We had this conference. Did it make any difference to the policymaker back in Washington? Did it make a difference inside the Beltway?" It's not an easy task to try to measure this performance, but maybe you can get some feedback, some way to see if your spending all this money and time made a difference.

O'Neill: You're right: it is truly difficult to measure. In some ways I'd like to be able to measure it; in others, I think it would be self-defeating. There is an element of both.

Oettinger: Why is your answer not the simpleminded notion that they keep hiring you?

O'Neill: The assistant secretaries of defense for C3I have continually sponsored the Forum for seven years. They do keep asking me to come back. Our record amounts to seven annual approvals. It's sort of like the one-year contract for a baseball manager: the Dodgers keep hiring Tommy Lasorda back after twenty-six annual contracts. They see great value in this process and have been steadfastly supportive.

I'm looking for some other metric like what you're asking for. Is there some other way to think about that? The earliest example I can give you is that the first three meetings we did resulted in the writing of a group of DOD policies, strategies, and doctrine for the services on information warfare. Had it been done inside the Beltway, I think it would have been done differently. The fact that it was done in conjunction with people who understood the environment differently—not only U.S. citizens, but also foreign citizens, and people who were developing corporate IT—meant that we were getting other points of view.

We weren't looking at political stripes when we did this. We brought in people who were looking at privacy and security issues. One of the things that was shocking to the American public was that we weren't pilfering Milošević's accounts electronically when we in fact could. The reason was that we have a real policy dilemma over that issue. That dilemma came about as a result of discussions over the years about what constitutes an act of war in the information environment. What should we be doing? We started all those discussions a long time ago through a process like the RAND Day After game. A number of papers were written by John Arquilla,

David Ronfeldt,[18] and others as a result of those meetings. We developed a policy and a doctrine on information warfare, but we also left several issues unanswered that were of concern to people, so we're not going to take action. Is that a measure of success? I think it is, actually: a better, more enlightened policy than might have been developed otherwise.

I can't track every meeting to an outcome, but I can give you one or two examples like that. Others are going to be works-in-progress for a long time to come. As far as the transformation of the DOD is concerned, ask me in thirty years and I might tell you if we had any impact at all. I don't know. I'd like to think that at least we're giving alternate points of view to people who have to make those kinds of decisions. What they do with them is always going to be based on their judgment.

Student: How much continuity is there from forum to forum in terms of people? If there isn't a lot of continuity, do you see that as a possible weakness in terms of having actionable things come out of the meetings?

O'Neill: That's a tough one. It's a great question, and it's one I wrestle with all the time. We have about a thousand users on our Web site. It's an access-granted site. All the material that we've ever generated for the meetings and everything in between—original papers, real audio clips from discussions, interviews with people who we think are really interesting, book recommendations and reviews—are up there. We've held seventeen meetings with twenty-five to thirty people at each, so you get the formula really quickly. If you do the math you see that a lot of those thousand people have never been to a meeting.

We do have some repeat participants. I'm discouraged by my sponsors from inviting the same people over and over, and I understand why. You want to get new people all the time, but there is a group learning that goes on if you can maintain some small number of people, other than me, to be your pulse: to ask, "What are you learning? What are we doing? What are you getting from this?" I think it would be inappropriate for me to be the only common link through seventeen meetings, because my point of view is going to be totally subjective. I don't mind getting other subjective points of view, but I'm getting several subjective points of view as a measure of how we're doing—well or not well—and what we are learning.

I do have some people—I would say probably a dozen—who have been to a lot of meetings. There are probably a couple dozen who have been to multiple meetings, and I pretty much pulse that regularly. Nobody except me has been to all the meetings.

Student: A quick follow-up to that is that I know that, historically, the Council on Foreign Relations has maintained a policy of confidentiality during the meetings, so that different insiders can speak freely, rather than speak for their organizations. Do you have a policy like that?

O'Neill: We do, and we break it. The way we break is that we post everything on the Web page, so that when somebody gives a presentation you know what he or she said. When it comes down to the give and take, the questions and answers, you'll see "Question" and "Answer." You'll know who gave the answer, but if it's a multiple-person discussion around the room, and not just a question to the presenter, you don't know who the speakers are and we try to keep it that way.

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[18]John Arquilla and David Ronfeldt, analysts at the RAND Corp., are the authors of, among other books, *In Athena's Camp: Preparing for Conflict in the Information Age* (Santa Monica, Calif.: RAND Corp., 1997).

I also do some selective editing, and that's my role as a censor. It's very limited. I seldom do it. Usually it's for proprietary information: if people leak a piece of information they wish they hadn't about a proprietary piece of technology that's under development, I guard for them. The rest of the group is pretty good about that, so it's well protected. Occasionally, very seldom, participants say something they wish they hadn't, and I'll send them the transcript of what we're doing and say, "I read this through, and I got the sense that you might want to see this before I post it." They respect that.

Oettinger: Dick's response to your question is very much like what my response would be to a similar question about this seminar, and I think for very similar reasons. By and large, the stuff that's highly classified or is highly proprietary is very sharply defined, very time sensitive, and very situation dependent, and is not policy related. As a consequence, the people who have spoken at the seminar this year and in the past, and whom you'll hear for the rest of this semester, all carry in their heads all sorts of proprietary, classified, et cetera, information. I have never had anyone turn me down on that basis, because, as you can tell, the conversation you hear is on issues of policy and attitude and so on and it's hardly ever classified or proprietary. I think that, almost by definition, at the kinds of things he runs people come and don't think about spilling their company's secrets or the government's secrets. It simply doesn't arise.

Student: I didn't really mean classified or sensitive information. I just meant that if you have a job in government you may not want to speak on behalf of the government.

Oettinger: You see lots of disclaimers in our stuff, and I bet he has them too, about "I'm speaking for myself as an individual, not as a representative of XYZ corporation or XYZ agency." Everyone understands that.

O'Neill: Everything that we ever did in conferences is up there on our access-controlled Web site, including special briefings. There are some fascinating ones there, like "Information Management in Complex Emergencies." That is a paper that Nik Gowing, the BBC [British Broadcasting Corporation] anchor, wrote when he was up here at the Kennedy School after doing two years of research on the Great Lakes crisis in Africa. He looked at how the different parties, such as the United Nations High Commission on Refugees, used information to help them in their mission, and how they also used information and blocked information politically. He studied how they were prevented from using information by the belligerent forces and how the belligerents used information and IT. It turns out that the leader of one of the belligerents had studied information warfare at Leavenworth in the United States—not the prison, but the Army Staff College. It's a fascinating paper. It's about seventy pages, and I really recommend that you look at it.

There are interviews with people such as John Seely Brown, Steve White, who developed a digital immune system recently for IBM, and Kristofer Pister. That was one of the most fascinating interviews I've ever done. He's an associate professor of electrical engineering and computer science at Berkeley, and he's the guy who developed "smart dust." It's tiny little dust particles, MEMS size, millions of these things that are all individual computers and sensors that can float out of an airplane, a balloon, whatever, and are dispersed by the wind and report back to a source via satellite. These are not science fiction. They are here today. Pister is working with nanotechnology to get the particles even smaller, so you can inject them into the body to do things such as target specific cells.

These are the kinds of people and the kinds of ideas that are going to change the landscape. It might be political, like Nik Gowing, who is bringing us some ideas about what is going on in Africa. We didn't realize what was going on in Africa. Nobody paid attention to Africa. It wasn't in our national interest to pay attention to Africa. He puts it right in front of your eyes and says, "This is ugly, but look at it."

Then we have the archival vault. Everything is there: the audio clips, et cetera. In addition to the interviews, the most recent posting results from when I asked a number of people from a variety of fields to tell us what they thought would be a great challenge to the DOD, either in the coming year, or one term of an administration, or a decade: take your pick. I asked David Ackley, who was looking at living computational systems that he and others have said actually exist.[19] It's really remarkable. John Arquilla and David Ronfeldt talked about net war. Does anybody read science fiction? David Brin wrote a wonderful book called *The Postman*. He also wrote a nonfiction book called *The Transparent Society*, which is about where all this IT, from cameras to sensors, is leading us.[20] We have Arnaud de Borchgrave, who is the CEO of United Press International and is also with the *Washington Times* and the CSIS in Washington. We have Bill Haseltine, the CEO of Human Genome Sciences, and Danny Hillis, who started Thinking Machines up here in Cambridge. He developed the first huge parallel processing machine, then went to work for Disney as the head of research and development, and now he's got his own company called Applied Minds.

I said we do international things. P. C. Lui—Lui Pao Chuen—who is the chief defense scientist of Singapore, James Adams of the United Kingdom, Oscar Bartoli of Italy, and a number of others have participated in our Forums.

If you know the military you might know Admiral Bill Owens, who was the vice chairman of the Joint Chiefs of Staff. He wrote a really interesting, provocative book called *Lifting the Fog of War*.[21] It's a nice indictment of the way we've done business and maybe has some good suggestions for the way we should be doing business. He's also the kickoff speaker at the next Highlands Forum on transformation.

Oettinger: He also appears in the seminar proceedings.[22]

O'Neill: He's also the vice chairman and co-CEO of Teledesic. We have Kris Pister, the guy I mentioned to you with the smart dust, and Michelle Van Cleave, who was on Senator [Jon] Kyl's staff, and who is a major voice on infrastructure protection and intelligence.

Oettinger: You'll find her twice in the seminar proceedings as well.[23]

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[19]David H. Ackley is associate professor of computer science at the University of New Mexico.

[20]David Brin, *The Postman* (Toronto and New York: Bantam Books, 1985); and *The Transparent Society* (Boston: Perseus/Addison-Wesley, 1998).

[21]William A. Owens and Edward Offley, *Lifting the Fog of War* (New York: Farrar, Straus & Giroux, 2000).

[22]William A. Owens, "The Three Revolutions in Military Affairs," in *Seminar on Command, Control, Communications, and Intelligence, Guest Presentations, Spring 1995* (Cambridge, Mass.: Harvard University Program on Information Resources Policy, I-96-2, January 1996), 29–48, [On-line]. URL: http://www.pirp.harvard.edu/pubs html

[23]See Michelle K. Van Cleave in *Seminar on Command, Control, Communications, and Intelligence, Guest Presentations* (Cambridge, Mass.: Harvard University Program on Information Resources Policy): "Intelligence: The

O'Neill: You and I overlap. Tony gives me interesting people to meet, too.

If you looked at the topics that our meetings have covered over the last few years there are some unusual titles. You might laugh, or ask what they are for. "The Mind, the Brain, and Computing" is one of our favorites. "Microsensors and Networks, the Convergence of Biotech and Infotech" led to the "Future World of the Small." A meeting on innovation led us to where we are now on transformation.

We recently held a mini-meeting with a guy named Bill Cheswick, who was at our critical infrastructure meeting years ago and who developed something called dynamic Internet mapping. He has mapped the Internet from his site at Lucent, where he works in the labs, to show dynamically where the Internet is going and where the connections are, trace routes, and do all kinds of things. He maps in some very unusual ways. While watching CNN [Cable News Network] on one screen in his basement and running his mapping software on his machine on the other screen, he was able to synchronize perfectly with the Net to watch where the networks went up and down in the former Yugoslavia during the bombing. He could see when the power went out, when the grids went, and when the reconnectivity sprang up. He showed with the mapping that when the networks went down in Yugoslavia, they immediately came back up again going from Yugoslavia to Maryland, and all the traffic around the world went through Maryland, ostensibly through the embassy. Interestingly, a whole bunch of other routes in the region popped up in Maryland also, not necessarily at the Yugoslavian embassy. It isn't worth exploring where that might have been, but, nevertheless this is a wonderful map. He also uses it to help corporations look at their intranets to identify leakages through firewalls and a whole variety of things. It's a great tool.

The next one was with a woman named Judy Estrin. Judy is year-in and year-out among the top five most powerful women in business. She was the chief technology officer of Cisco until last year. She's on the boards of Disney and FedEx and Sun and a whole variety of others. She's a great technologist. She started a new company called Packet Design, which develops technologies and spins companies out. They don't keep the new technology in house and work on it; they spin out a company or they license it. The first piece of technology they developed is something that sits inside your network and prevents denial-of-service attacks. For critical infrastructure people that's big news. We brought her into the Pentagon to talk to people before they lease this stuff and see what we could do together. It was very interesting. The discussion of that, plus some maps of Bill Cheswick's and some other things, are going to be posted this coming week.

Student: Have you thought about expanding your audience at forums to the next generation of humans, such as teens? Could you have some of your professor contacts bring in their most brilliant eighteen- or nineteen-year-olds to get a whole different cultural perspective based on age?

O'Neill: Four years ago we really thought about doing that. We had a fourteen-year-old whizzbang of a kid join us for "The Mind, the Brain, and Computing," which I think was the most fun meeting we ever did. There was no agenda at all. We just put him, five neuroscientists, four computer scientists and artificial intelligence specialists, a philosopher, an ethicist, and a

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Science and Technology Connection," in *Guest Presentations, Spring 1993* (I-94-5, August 1994), 121–138, and "Information Protection and Assurance" in *Guest Presentations, Spring 1999* (I-00-2, June 2000), 159–182; [On-line]. URL: http://www.pirp harvard.edu/pubs.html

doctor into a room with Andy Marshall for three days, and wherever the conversation went, that was great. Whatever questions we ended up with at the end of the day started the next day's discussion.

We thought about bringing in more young people, but, quite truthfully, because of inertia or whatever, we just haven't done it. We have been lucky to do two meetings a year and get to the topics, because this takes a lot of preparation and a lot of work. We just haven't pursued that. Andy Marshall is happy to do that, and the guy whose son we asked to come to this meeting is happy to continue. We've got all kinds of ideas, from inviting inner city to inviting kids at magnet schools. Even better, the people who participate—one of our Nobel winners, a couple of our journalist friends, and a couple of scientists—have all agreed that they would mentor the kid whom we brought in for the year. That's big doings.

Would we benefit from their ideas? Yes, I think we would, but we just haven't gotten that program going. It's not that anybody's saying no. We just haven't gotten to it. Thank you for bringing that up again; it's a terrific idea.

Oettinger: You ought to talk with Joann DiGennaro at the Center for Excellence in Education in Vienna, Virginia. She might be able to help you with administrative issues. She's got her finger on a long list of bright young people, and the machinery with which to deal with that.

O'Neill: Thank you very much. I'll do that.

Oettinger: I hate to cut this off, but with the pressure of the next class looming I must. I want to thank you, Dick, and present you with a small token of our large appreciation.

O'Neill: Thank you!

Acronyms

ASD	assistant secretary of defense
C3I	command, control, communications, and intelligence
CEO	chief executive officer
CIA	Central Intelligence Agency
CINC	commander in chief
CSIS	Center for Strategic and International Studies
DOD	Department of Defense
FedEx	Federal Express
GE	General Electric
HGSI	Human Genome Sciences, Inc.
HP	Hewlett-Packard
IS	information superiority
ISR	intelligence, surveillance, and reconnaissance
IT	information technology
MEMS	micro-electromechanical systems
NGO	nongovernmental organization
NSC	National Security Council
OSD	Office of the Secretary of Defense
PCCIP	President's Commission on Critical Infrastructure Protection
QDR	Quadrennial Defense Review
RMA	revolution in military affairs
UAV	unmanned aerial vehicle

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