

~~TOP SECRET~~

NATIONAL SECURITY AGENCY

CRYPTOLOG

The Journal of Technical Health

Vol. XXI, No. 4

WINTER 1995

Inside This Issue:

Interview With Dr. David Kahn Page 1

*Scripting ATLANTIC RESOLVE
An Adventure and a Challenge* Page 5

The Nature of Analytic Thought Page 14

..... and more!

~~CLASSIFIED BY NSA/CSSM 123-2~~
~~DECLASSIFY ON: Originating~~
~~Agency's Determination Required~~

Declassified and Approved for Release by NSA on 10-10-2012 pursuant to E.O. 13526, MDR Case # 54778

~~THIS DOCUMENT CONTAINS CODEWORD MATERIAL~~

~~TOP SECRET~~

CRYPTOLOG

Winter 1995
Vol. XXI, No. 4

Published by P05, Operations Directorate Intelligence Staff

Publisher William Nolte (963-3123)

Editor..... [Redacted] (963-3123)

Graphics [Redacted] (963-3123)

Board of Advisors

Chairman..... [Redacted] (963-7712)

Computer Systems [Redacted] (961-1051)

Cryptanalysis..... [Redacted] (963-7243)

Intelligence Analysis..... [Redacted] (968-8211)

Language..... [Redacted] (963-7667)

Mathematics..... [Redacted] (963-1363)

Signals Collection [Redacted] (963-5717)

Telecommunications [Redacted] (996-7847)

Member at Large..... [Redacted] (968-4010)

Member at Large..... [Redacted] (968-4010)

Member at Large..... [Redacted] (961-8214)

Classification Officer [Redacted] (963-5463)

P.L. 86-36

Contents of CRYPTOLOG may not be reproduced or disseminated outside the National Security Agency without the permission of the Publisher. Inquiries regarding reproduction and dissemination should be directed to the Editor.

All opinions expressed in CRYPTOLOG are those of the authors. They do not represent the official views of the National Security Agency/Central Security Service.

To submit articles and letters, please see last page

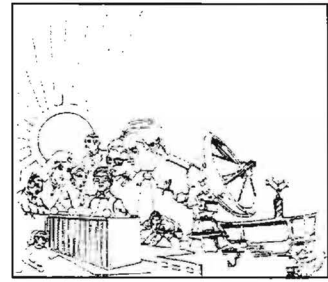


Table of Contents

Interview With Dr. David Kahn (U), by [redacted] 1

Scripting ATLANTIC RESOLVE (FOUO), by [redacted] 5

Hitting the [redacted] (FOUO), by [redacted] 11

The Nature and Process of Analytic Thought (U), by Hugo Keesing 14

Three V's for SIGINT (U), by [redacted] 17

American Translators Association Conference (U) 20

How I Helped Trigger a Greater Involvement in Vietnam (U), by [redacted] 26

Book Review (U):

High Seas, reprinted from Air War College Newsletter 30

Letters to the Editor (U) 32

SIGINT Bloopers (U) 35

P.L. 86-36

Dr. Louis W. Tordella
1911-1996
Deputy Director, National Security Agency
1958-1974



As this issue of *CRYPTOLOG* was going to press, we learned of the death of Dr. Louis W. Tordella. In duration alone, his tenure as Deputy Director of the National Security Agency stands as a remarkable event in the history of American cryptology. But even that understates his role in forging this agency and the cryptologic establishment it centers.

Simply stated, Louis Tordella ranks as one of the leading figures in the creation of the post-World War II American intelligence establishment. In its next issue, *CRYPTOLOG* will present a more detailed appreciation of the career of this great and distinguished man.

W.N.

Perspective:**Interview with Dr. David Kahn,
1995 Resident Scholar at the Center for Cryptologic History (U)**by

(U) Dr. David Kahn is a scholar, journalist, and author of a number of important books and articles on cryptology, including *The Codebreakers* and *Seizing the Enigma*.

(U) What led to your interest in cryptology in the first place?

(U) I read a book when I was a kid, and I never grew up. The book was by a civil war naval historian named Fletcher Pratt, a book with a terrific title: *Secret and Urgent*. I saw it in a window of the Great Neck library, and was attracted by the terrific dust-jacket, letters and numbers coming out of the cosmos. I read it, and the whole subject of codes and ciphers just hooked me. Of course I was at that age, 12 or 13, when I think a lot of people get hooked on their hobbies or their interests.

(U) What led to the decision to write *The Codebreakers*?

(U) Codes and ciphers and cryptology had been a hobby of mine for many years. In 1960, in an episode NSA probably doesn't like to remember, two members of the agency, Martin and Mitchell, defected to the Soviet Union. It was a front-page story in the New York Times, and I thought that this might be a good opportunity to write a piece for the Times on the background of that event, telling all about codes and ciphers and the role they'd played in history. I wrote it for the Times magazine, and the next morning I got calls from three publishers asking me to write a book on codes and ciphers with a little introductory historical chapter.

(U) I began researching the history of codes and ciphers, and there was a lot of material in scholarly journals and in other places which I found just by following footnotes through journals that were listed in the standard bibliography. Suddenly I noticed that I was in the year 1600 and on page 250 of this first chapter! Well, something had to change. So I turned it around and made it a chronological piece, and so much hadn't ever been told that the book just kept growing and growing.

(U) What was NSA's reaction to the book?

(U) Oh, NSA hated the book! NSA hated the fact that I had obtained information about NSA, what it had done and what it was doing, some of the effects it had on negotiations and things like that. NSA sent out warnings that the book was to come out, and nobody was to comment on it. That happened in 1967-68, and if you or anybody else at that time had asked me whether I would ever be sitting here and be allowed to enter NSA unescorted (only in certain areas, because I'm uncleared), and be a member of the NSA team, everybody would have laughed at you.

(U) What does one do as a visiting scholar?

(U) I have been dealing with the declassified papers of Herbert Yardley, a very colorful and important American cryptologist of 1917-1929. He was the man who founded the American cryptologic establishment, an organization called MI-8 (Military Intelligence 8), of the General Staff. After the end of World War I it was transformed into a joint Army/State Department agency, technically called the Cipher Bureau, but commonly known as the American Black Chamber, which is the title of the book that Herbert Yardley wrote after Henry L. Stimson, thinking that gentlemen do not read each other's mail, closed it down.

(U) Yardley's documents are mainly technical and administrative, and having been a reporter, I knew I couldn't just write the story from them, I'd have to go beyond them. So lately I've been going into the private papers of people Yardley worked with, expanding the research into other areas. For example, Yardley wrote about a missionary cryptographer who knew Japanese and was brought in when the U.S. was breaking Japanese codes before the Washington Disarmament Conference in 1921-22. This man turned out to be an Episcopalian minister and missionary, so I wrote to the archives of the Episcopal Church in Austin, Texas, and got a couple of articles about this man that I will be able to use when I write the story of the American Black Chamber. So that's the kind of stuff I have been doing.

And writing away at high speed, I might add.

(U) As we complete the 50th anniversary commemorations of the end of the Second World War, do you find that the role of intelligence in conflict is clearly established?

(U) Well, certainly in World War II it was pretty clearly established. It was begun to be established in World War I, when radio first came in. Radio is key to the importance of cryptanalysis because radio turns over a copy of any message to the enemy. There were a number of important cases in World War I. One case of communications intelligence, which was an administrative and not a cryptanalytic failure, was when the Russians failed to distribute cipher systems to their lower echelons very early in the war. As a consequence the Germans were able to win the battle of Tannenberg, the battle that started Russia on its long slide into ruin and revolution. There were many tactical cases of communications intelligence in WWI, and of course the Zimmerman telegram, which brought the United States into WWI and therefore onto the world stage.

(U) Then in WWII, we had all those incredible stories that everybody knows about: the winning of the Battle of the Atlantic through solution of the German Enigma machine; many battles on the Western Front, again, won by the Allies in part because they knew German plans and so forth; and in the Pacific, of course, we were breaking Japanese codes; we won the Battle of Midway, we shot down Adm. Yamamoto; and we sank the Japanese merchant fleet, which virtually strangled Japan. So yes, there's no doubt any more that communications intelligence plays a role. There's a very telling proof of this: the U.S. Army, at least, has now established communications intelligence units within each division, and they're not doing that for fun, they're doing it because the results are there.

(U) You mentioned administrative versus cryptanalytic failures; do you find that one more than another has led to breakthroughs during conflict?

I would say it depends how you define administrative failures. I'm thinking particularly of the Enigma messages. A lot of those messages were solved because we were able to guess the plaintext of stereotyped enemy messages: "Nothing To Report" and stuff like that. Is that an administrative or a cryptographic failure?

(U) We now have VENONA; do you think we're going to see declassified intelligence play a similar role in the history of the Cold War?

(U) That's a terrific question, and my answer is I hope so, and I think so. I don't know how good we were in solving Russian code, and I don't think the Russians, from what I've heard, were very good at solving ours. Nevertheless, you can read third-party codes pretty well, and from this gain information about negotiating positions in SALT and START treaties, earlier economic treaties, and things like this.

(U) We have had, for example, the revelation at the History Symposium, that because we were able to read the messages of our allies, particularly the French, and many Latin American countries, we were able to structure the United Nations pretty much the way we wanted, and I'm sure there are many other cases like that. There was a story in the New York Times just two weeks ago by Tim Weiner on the front page in which he revealed that we were listening in to Japanese telephone conversations and using this information to win economic battles.

(U) As the national security apparatus gets restructured, how much does the public have a right to know about that apparatus?

(U) It has to be done on a case-by-case basis. In some situations it's possible to give a certain amount of information out but in other cases—I knew this intellectually before; now I have more of an emotional grasp of it—that if you start giving too much material away about how codes are solved and so on, you're going to cut yourself off from your sources of information, and this is more harmful to the country than giving the information out is beneficial to it.

(U) Do you think we're where we need to be on openness in intelligence?

(U) Yes, I think things are coming along better because of openness, and I'd love to think that it was because NSA and CIA and DIA and all those other guys suddenly saw the light, but that's not the case. They're becoming more open because of the fight for budget dollars. That's pretty clear.

(U) As the history of intelligence becomes more and more accepted as an academic pursuit, what do you see as the principal lines of inquiry in the future?

(U) I can't say I see any particular individual line, I think it's just a general advance on an overall front. Many sciences or histories go through several periods, one of which is just the gathering of information, and I think we are still in this stage. There haven't been many

~~FOR OFFICIAL USE ONLY~~

theories of intelligence. I proposed one a while ago, which people seem to think is all right but hasn't gained wide acceptance yet.

(U) It's divided into three areas: past, present and future. The past is that intelligence became important with the rise of what I call verbal intelligence. Animals can see danger and prey, right? What they can't do is what people can do, namely gain information from words. We can overhear a conversation, and we know that someone is planning something good or bad for us. So it's the rise of communications intelligence that has primarily driven the rise of intelligence. If you are just looking at objects on the ground, say tanks, you can guess that an attack is coming at that point, right? But if you are reading a message saying, "We're going to attack," you don't have to think about it or guess at it, you are told. So this gives a much more forward-looking approach than just physical intelligence, looking at objects. This makes NSA look good. That's not why I developed it, but it turns out that way: that communications intelligence is the real driver of modern intelligence.

(U) As for the present, one element is that intelligence is much more important in defense than in offense. When I was writing *Hitler's Spies*, I was looking for little anecdotes, case histories, in which intelligence won a battle or something like that. And I noticed that I was finding a lot more defensive cases than offensive cases. I wondered why this was so, so I looked up the definitions of attack and defense in Clausewitz, and I found a clue there: in defending, he says, "The position or characteristic attitude of defense is to parry a blow." Well, you cannot parry a blow unless you know it's coming, which implies intelligence, right?

(U) So intelligence is essential to the defense, whereas offense, Clausewitz says, is in and of itself. You don't need intelligence in the offense. If you're an attacking army, you just march in, and you don't really need to know where the victims are if you're strong enough. Of course this is a black-and-white explanation that oversimplifies it, but I like to get it down to the basic level to clarify it, and then I can add on qualifications.

(U) Another of the common elements of today is the ultimate purpose of intelligence, which is simply to optimize resources. I'd never really heard it put that way before until one day when I was at St. Anthony's College at Oxford. I walked in and a guy named Patrick O'Brien, an economic historian, was standing there with a glass of white wine in his hand. He asked me how the

book was coming, and said, "Listen, isn't all intelligence just optimizing your resources?" It was like he hit me in the face; it was so clear and so down to the basics, that I've adopted it and given him credit.

(U) So what about the future? There are two problems with the future: everybody wants to know everything, and this is the goal we strive for but I don't think we'll ever get to that point. The other problem in the future is (or a perennial problem) that we have to get our bosses, I mean the intelligence consumers, to accept our intelligence.

(U) To accept the need for intelligence, or to accept what we give them?

(U) To accept what intelligence producers say. This will work in some cases. What I think is the situation is this: If someone's beliefs are very strongly held, there's not really anything that's ever going to change those beliefs; no intelligence is going to do that. If, on the other hand, the beliefs are not central to his personality but only deal with the tactics of, say, how we deal with the car situation with Japan or something like that, then you have a chance of persuading him that the intelligence is useful. Take Hitler, for example. There were often occasions where tactics were involved, and he often listened to his intelligence, but if you were going to tell him that the United States wasn't run by Jews, forget it! So how are you going to get around this? Well, I don't see any way to do it right away. You can't put every world leader on the couch, which is what would be required. But it's also possible that as people become more rational—and I think the world IS becoming more rational in its beliefs, for instance, people go to psychotherapists because they realize that things can be done better by reason than by emotion.

(U) Did you follow the Gates hearings, when accusations were made of tailoring intelligence to meet expectations from higher up?

(U) Well, obviously you shouldn't do that. But listen, we know what life is like. You're not likely to say unpleasant things to your boss because he decides whether or not you get promoted. That's why you need strong characters in intelligence, to offer unpalatable truths.

(U) Do you find that with people in your line of work, is there a tendency to start out with a theory or does that depend on whether they're journalists or academics?

(U) I don't know. I can tell you that I started out with a theory when I was writing *Hitler's Spies*, that the Germans had good intelligence. Well, I was totally wrong. And I was very unhappy about that because it meant that instead of maybe getting a best-seller because I was telling the story of a winner in a certain area, I was telling the story of a loser. Who wants to read that? But those were the facts. And by that time I was well into the book. I wasn't going to tailor it. I couldn't do that and call myself a journalist or a historian. I would say that most academics, unless again you're dealing with very deep-seated beliefs, would say they were wrong and revise.

(U) Where do you see your future focus: still more cryptologic history going further back, or new developments in cryptography?

(U) There's an awful lot of new material coming out. For example, 25 or 30 years ago I wrote the *Encyclopedia Americana* article on cryptology. Now I'm revising it. I thought I'd just have to add a few more paragraphs here and there and take a few of the old ones out. Well, the changes in codes and ciphers and cryptology in general, communications security and intelligence, are so far-reaching that I have to rewrite the whole thing. So there's plenty to do there. One of my regrets is that during the time of the data-encryption standard dispute and more recently key escrow and all of those things, that I didn't succeed in selling a story to one of the major magazines, which I would like to have done.

(U) This is probably because in some cases the magazines had their own people working on this, so they didn't want Dave Kahn from the outside to do it. Not that they had experts on codes and ciphers, but they had computer experts and this was kind of a computer story. Another reason is that one of the problems with communications intelligence in general and security, and the reason that NSA doesn't have a much higher profile, is that at the heart of the whole thing, what do you have? A computer chip. What do you see if you see a codebreaker? Someone writing on a piece of paper or sitting at a computer keyboard. What do you see if you see a spy? You see a guy shooting someone, a guy skulking around in the shadows. That's why there are movies like *Die Hard*. You're never going to see a movie called *Think Hard*.

(U) Do you have an Internet account yourself?

(U) No, and I'll tell you why. Because—this is a word Dave Hatch gave me—it's "chronophagous." I

was talking to Peter Gross (who wrote a book called *Gentleman Spy*) just the other day; he had called me for some help. I asked whether the Internet used up an awful lot of his time, and he said it did. Maybe that's just temporary and eventually you can go in and get whatever you want, but I don't really care so much about computers. I want to get on with writing. Also, people have said to me that if you get on the 'Net, Dave, and they find out that you're there, you'll be inundated with people saying did Enigma win WWII and why didn't we know about Pearl Harbor. I write so that I can deal with a lot of people at once instead of with individuals.

(U) Whit Diffie, one of the researchers whose work was fundamental to the development of the RSA encryption scheme, called your book *The Codebreakers* inspirational. Have you followed much of the public key cryptography debate?

(U) Not closely, but several people have said to me that they have gotten into cryptology because they were hooked by the elegance of the RSA scheme (which relies on research by Diffie and Marty Hellman), which makes sense to me.

(U) Do you think you'll be able to keep up with developments in cryptography?

(U) It's a terrible job. When I was a kid starting out with this stuff, I practically memorized every book on codes and ciphers that came out, and every article. Now it's impossible to keep up with the flood of articles and even books! First of all, the books are tremendously expensive, and they are coming out—well, not as many as the journal articles, of course, but there's a dozen or so a year, maybe more, books on codes. What I do now is try to limit it to good books on the history of intelligence and/or codes, current books on the Ames case, and so on.

~~(FOUO)~~ I've given a lot of talks since I've been here, with Dave Hatch's blessing, representing the Center for Cryptologic History and letting people know about history, in various elements of the agency. I know people have an intellectual awareness that it exists, but once they meet a person and know the face, that helps spread the word about cryptologic history.

Kλ

~~FOR OFFICIAL USE ONLY~~

Scripting ATLANTIC RESOLVE: An Adventure and a Challenge (FOUO)

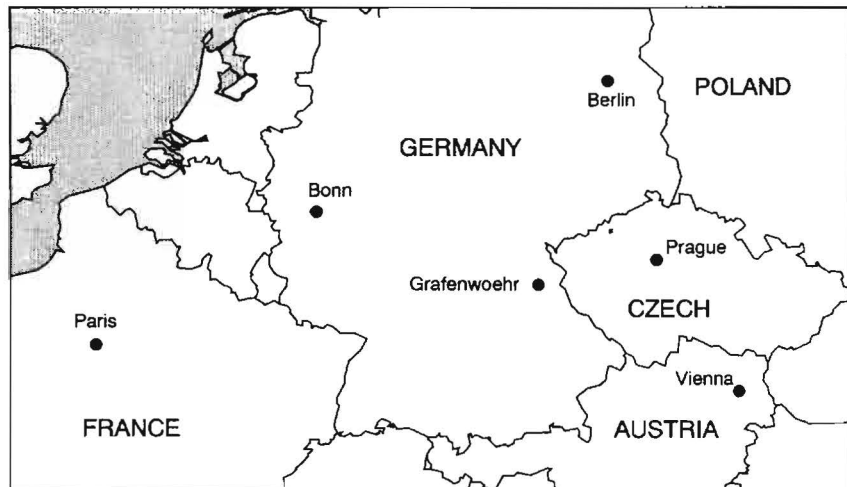
by

~~(FOUO)~~ *TDY Chance To Excel!* Now if *that* isn't an eye-catching subject line for an e-mail I don't know what is. I kept on reading and discovered that this particular opportunity included travel, which is one of my all-time favorite things to do. Specifically, a request was being made for my office to provide one body to participate in Exercise ATLANTIC RESOLVE as a SIGINT scripiter. What exactly that meant I did not know at the time, but it sounded intriguing. As I am not known to be afraid of trying new things, I put my name forward and hoped to hear good news, although I wasn't sure whether or not my being a civilian would make my chances for selection greater or less.

~~(FOUO)~~ In a matter of days I was told that I'd been selected and would soon head out to Grafenwoehr, Germany, where the exercise was to be conducted, accompanied by two representatives from G563 (NSA's Exercise Shop). While I knew next to nothing about what being involved in such an exercise would entail, I have to say I was excited about the new opportunity and the challenge of it all. As friends and co-workers got wind of my impending departure for "Graf," there was no lack of comments and advice given. "What, are you crazy? Do you know what you're in for? Graf is freezing and covered with snow this time of year. And then when the snow melts, it's one big mudslide." "You'll be sleeping outside in tents for 15 days with no heat and nowhere to shower." "I hope you like MRE's because that's all you'll get to eat." The shorter the time got until my departure, the more freely flowed the comments. I don't know if people were trying to scare me or intimidate me into politely backing out of participating, but to tell the truth, these comments did nothing but make me want to go all the more, if for no other reason than to see what it was *really* like.

(U) Although time was running short, I quickly began to do some homework. What were the objectives of this exercise? Who would be involved? And probably most important to me, what would be my role in all of this? I needed to know.

~~(FOUO)~~ I discovered that this exercise was to be the very first ATLANTIC RESOLVE exercise. It came about as a replacement for the decades-old REFORGER exercises held in Germany annually. USAREUR (U.S. Army Europe, a component of the U.S. European Command (USEUCOM)) was to be the sponsoring Command. The Intelligence Objectives for ATLANTIC RESOLVE 94 were essentially three:



Unclassified

- To exercise and validate the USAREUR intelligence architecture;
- To exercise intelligence collection, analysis, and reporting across the operational spectrum; and
- To exercise Joint/Combined Task Force (JTF/CTF) intelligence operations.¹ Personnel from five nations (U.S., UK, Germany, France, and the Netherlands) and representing all branches of the military

1. (U) "Joint" in this context means more than one military service is involved; "combined" means more than one nation.

~~FOR OFFICIAL USE ONLY~~

would participate. A JTF J2 (Intelligence Directorate) was to be established and supported throughout, and support from a Joint Analysis Center (JAC) in England would be exercised as well.

~~(FOUO)~~ As for my role, I would be part of a three-person team (the other two being the G563 folks) that would work in the Intelligence Control Cell (ICC), the single point of contact for intelligence exercise control. Units manning the ICC were to be primarily exercise facilitators. Through a combination of simulated and scripted intelligence, the ICC would translate the exercise director's guidance into a fully supportive intelligence environment. Along these lines, some ICC personnel would input taskings and directions into one of the many computer systems being used in the exercise—the magical simulators of war. Others (which included our team of three together with a team of four at the JAC in England) would script material to cover the kinds of intelligence-related activity that could not be adequately performed in simulation. (While the team of four in England was co-located with the JAC, they were a separate and distinct entity; the exercise four-some provided a service, while the JAC played the role of customer.) Still other ICC personnel would serve as liaisons to intelligence players in the training audience primarily at the USEUCOM and component level.

(U) With most of my questions answered as fully as they could be in advance, I packed my bags and on 24 October, departed for Grafenwoehr with my two new partners from G563 fresh off the plane from the States. The drive from Stuttgart took several hours but we made it there eventually, despite the normal hindrances to driving in Germany: construction delays and other "staus" (traffic back-ups) that never seem to have any identifiable cause.

(U) Once we reached our destination of Grafenwoehr training grounds, we had several objectives before we could do anything else. First and foremost we needed to try to secure some form of accommodations for ourselves. We'd been assured that there were absolutely, positively NO commercial accommodations available in any of the towns within an hour's drive of the training grounds, as all of those spaces had been booked solid for months. We were aware of the tent option, but we thought that would be less desirable than just about anything else we might be able to come up with. So we set out on what was essentially a scavenger hunt to try to track down a corner of a warm building here or a free slab of cement there.

(U) As it turns out we were fortunate beyond belief. Once we located the building which housed the SCIF which was to be our place of work for the next 2 weeks, we began questioning everyone we could about alternatives to the tents. Unbelievably, one of the women in the SCIF told me that there just so happened to be one spot available in an adjoining room to the work space. Terrific! It was an actual roof-covered, fully enclosed, *heated* room! Of course it did happen to be a tank-repair bay, so it was essential that the occupants be careful not to fall into the open pit that ran the full length of the room down the center of the floor. But that aside, it was more than I could have hoped for, based on what I'd been expecting as a result of all the unsolicited forewarning I'd received.

(U) Sharing the room with eight other women was not a problem either; the tent in which I was expecting to have to live turned out to have 30+ women. Another great aspect (it's all relative) was the fact that I had a cot on which to sleep. The three of us had brought lovely pea-green Army sleeping bags with us, but now I actually had something upon which to place the bag other than the frozen ground.

(U) My two male companions were not as fortunate as I when it came to "housing," although they too were not out in the tents. The best we were able to find for them were some unoccupied coil springs on two bunks in a barracks-type room housing 50 men. And when I say coil springs, that's exactly what they were—no mattress, not even a pad covering the springs. So the next step in our scavenger hunt was to secure some kind of flat protective material to place on top of the coils. As it turns out, the giant silver dumpsters at the end of the street provided the perfect fix: large, empty cardboard boxes which, when flattened and stacked on top of each other, would serve the purpose for 15 days.

(U) Finally, we began our search for one particular master sergeant who supposedly had been able to secure three hooded, fur-trimmed parkas for us. (*Parkas?* I guess they weren't kidding when they said it would be cold here.) Again through some unbelievably fortunate chain of events, we were eventually directed to the right room in the right building on the right street in the right section of the training grounds to our three parkas. It seemed that, despite our exhaustion and hunger, everything was as it should be.

(U) Our first taste of what this exercise was going to be about began that very same night. We found our way to the building that we were told was the home of

~~—FOR OFFICIAL USE ONLY—~~

the ICC—fortunately only a short walk away from the multi-purpose SCIF/women's housing/tank-repair-bay building. We stood there in a kind of zombie-like state as the ICC's day shift personnel gave their pass-down brief to the night shift. As it turns out, personnel had been there a full week prior to the arrival of the three of us. These folks had been setting up from scratch and getting all aspects (computer, security, admin, logistics, you name it) ready for STARTEX, the actual start of the exercise. So in a sense I felt behind the eight ball right from the start, watching and listening to these people talk about all kinds of systems and details of which I knew nothing. It was a language all its own, with new acronyms and names of people and facilities that might have been on another planet.

~~(FOUO)~~ Speaking of another planet, the scenario for the exercise involved just that. Well, actually, it wasn't another planet, but another island, a fictional one called "Atlantis." According to the scenario, the island was divided into the two "nations" of North Titania and South Titania. The North Titanian forces were identified as "red"—the hostile, opposing force (OPFOR). The South Titanians were identified as "blue"—the good guys. According to the exercise concept of operations, the North Titanian forces were designed to portray a threat that required an out-of-area joint and combined deployment to fight a low-to-mid-intensity conflict of short duration. In other words, the bad guys were trying to invade and seize the territory of the innocent good guys and bump off all their forces.

Upon our arrival, it was clear that, despite the fact that the exercise had not yet begun, people were working long hard hours on *something*. As it turned out, what I had thought was going to be one exercise was really composed of three separate exercises:

- the deployment exercise (19-27 October). During this part, all preparations were made and details were finalized regarding how the exercise should flow;
- SHADOW CANYON MINI-EX (28-29 October). This was to involve the same participants in the same roles as in the main exercise; its purpose was to

work through as many of the logistical bugs as possible in advance of "the real thing," and

- the warfighting CAX (computer-assisted exercise) (1-8 November). This was *the* main exercise and was supposed to run with the fewest glitches of the three.

~~(FOUO)~~ With all this as background, we discovered that the role of the three of us in Graf would be that of information gatherers. We would have to attempt to gain access to as much information as possible with regard to the OPFOR: what they were doing, what they intended to do in the future and when, how they interpreted the actions of the blue forces, etc. Then we would pass the information we had obtained to the exercise team of four at the JAC. This would be done primarily by fax or phone, or so we thought at the beginning. In actuality we ended up securing a computer through which we could e-mail the information to our counterparts, which was infinitely more efficient than the fax or phone could ever have been.



(U) Welcome to the women's dorm

~~(FOUO)~~ As for the foursome in England, their job would begin at this point. First step for them: THINK! They were to try to imagine

what type of report the USSS would produce on the activity (serialized product report, klieglight, or TACREP) if this event were really happening. What would that report look like? What information could an analyst at NSA reasonably expect to see? And how would it then be reported? The key to a good end-product was to incorporate all that could realistically be expected to be uncovered by SIGINT in such a war scenario (given collection capabilities, knowledge of a given nation's C³ network, etc.).

~~(FOUO)~~ The products that the exercise foursome at the JAC produced from the information we had gathered was disseminated to exercise players throughout

~~FOR OFFICIAL USE ONLY~~

the theater, including the JTF HQ, the land component HQ, the air component HQ, and many others (all at Graf), as well as the JAC in England and the UCIRF (USAREUR Combat Information Readiness Facility) in Augsburg, Germany. The people at the JAC would then extract items from the products and incorporate them into their daily summaries, which would go forward to the high-level decision-makers involved in the exercise. With the various types of reports in hand, the exercise players could then formulate strategies to be implemented by their forces.

~~(FOUO)~~ While distribution of a good volume of exercise SIGINT was our goal, at the same time it was critical that *not too much* information be revealed in the reports. It was the responsibility of all seven of us (Graf team and JAC/exercise team) not to blow the exercise by giving away too much or the wrong kind of information. We were considered part of the “white cell”; we were part of neither the red (opposing) forces nor the blue (“good guy”) forces, and as such, it was incumbent upon us to maintain neutrality as much as possible. If too much information or the wrong kind of details were published with regard to the red forces’ activities or intentions, the blue forces would immediately have the advantage. In the worst case, this could have such an effect on the decisions made by blue-force players that it could cause the exercise to end much sooner than it should have. So the responsibility to “play fair” and remain unbiased lay heavily upon the seven of us.

(U) While we were aware of the potential for bias on our part, the members of the red forces were even more aware of it. This was immediately evident to us as we began during those first few days to meet people, ask questions, and try to put all the pieces together in our minds as to roles and functions of all players. While I can’t speak for my two coworkers, I must say that I personally was regarded with the utmost caution by members of the OPFOR. “Now who are you? And what *exactly* is your role in this?” “I don’t have to give you that kind of information if I don’t want to.” “What exactly do you intend to do with the information I provide to you?” Such questions were only fair, I suppose. The OPFOR wanted to be sure they didn’t provide any information whatsoever to anyone who could conceivably be a spy for the blue side. We were always 100%

truthful with all who asked what we intended to do with the information they provided us. Some reacted positively to us right from the start, while others didn’t really cooperate until well into the second phase of the exercise. But as they saw that we were indeed doing what we said we would do with their “secrets,” they came to trust us more and more and provided more complete and usable information than they had at the start. By the end of the MINI-EX the exercise’s intelligence directors were even calling on us quite regularly to insert scenarios into play when they realized that it was actually the only practical way to accomplish their goals.

(U) Here in what was really the only logical work space for us, we didn’t even have a computer to use.

~~(FOUO)~~ And so began our 15-day challenge at ATLANTIC RESOLVE. I say “challenge” because that is exactly what it was. In the course of the 2 weeks we hit one obstacle after another, but we overcame them one by one with perseverance. The attitude of others (particularly OPFOR members) toward us was

just one of the challenges we faced but overcame. There were many other factors that tested our patience.

(U) For example, upon our arrival at Grafenwoehr, many of the logistical arrangements for our work spaces and the equipment in them were not as we expected. During the initial planning phase of the exercise it was decided that there would be an SSO SCIF in a building near the ICC building. My team was originally supposed to set up shop in the ICC building, not in the SCIF where we ended up. Upon our arrival we saw that the ICC was already overcrowded and in constant turmoil, so the SCIF seemed like a better alternative.

~~(FOUO)~~ In addition, there was supposed to be a STU-III and fax available for our use in both the SCIF and the ICC. What we found when we got there was that the ICC had only an unclassified fax and no STU-III, which was unacceptable for our purposes. There was one STU-III in the SCIF, but it was already in constant use. The SCIF did have a fax machine, but it was broken. At this point we thought we were totally out of luck and would be unable to communicate with the scripters to pass them the information they would need to write reports. But upon claiming some space for ourselves in the SCIF we discovered the presence of two JDISS terminals there. These terminals were cleared for SCI and would have been perfect for

our use, but they belonged to the EUCOM Collection Management Office (ECMO)'s element and the JAC Liaison Officers' element in the exercise.

(U) Unfortunately, during the exercise's planning stages there was apparently some miscommunication about the possibility of our use of SCI-cleared computers. The information we received indicated that no SCI-cleared computers would be available for our use. That would have been true if there had been any way we could have worked from within the ICC (non-SCIF) building. But that just wasn't feasible, so here in what was really the only logical work space for us, we didn't even have a computer to use.

~~(FOUO)~~ If the truth be told, having our own computer would actually have eliminated the need for the four-person team in England. If the three of us at Graf had had access to our own JDISS terminal from the start, we could have done our own SIGINT scripting, in addition to the information-gathering, and none of the back-and-forth with England would have been necessary. But in the end it actually was to everyone's benefit that we did have the four scripters in England. The separation of duties between the two locations allowed the "Graf three" to concentrate fully on information-gathering, a task which could only be done from Graf. This enabled us to provide the England team with non-stop data, with an end result of significantly more products being produced than would have been if the "Graf three" had had to perform both the collection and production functions.

~~(FOUO)~~ During the first few days, the ECMO element was kind enough to grant us use of their JDISS terminal on a time-available basis. But it was evident quite early on that this would not be a satisfactory way to continue throughout the entire exercise. *We needed our own terminal!* Again by some great stroke of luck, we were able to make contact with an office back at EUCOM HQ in Stuttgart that had plans to come to Graf later that week and agreed to bring a JDISS terminal for us. So despite the frustrations of those first days, before week's end we were properly hooked up. We didn't expect anything but smooth sailing after that.

(U) In addition to the problems we faced with communications, obtaining accurate, timely, and significant scenario data continued to challenge us throughout the exercise, although we did note significant improvement in this area as the exercise progressed and as relations between all other players and our team improved. The more they understood about what it was we were there to do, the more and the better information they were willing to share with us.

~~(FOUO)~~ For future exercises of this type, however, it would be best for the SIGINT team to have one of the "complete truth" terminals. These terminals were few and far between and were always in high demand. Our lack of training on these terminals didn't help any; we always had to seek assistance from someone else who wasn't too busy to help us. If we'd had our own, we could have used it as the primary source to keep us informed on what the base ground truth was at any given time during the exercise; we wouldn't have had to rely on others' whims to find out what we needed to know.

~~(FOUO)~~ Another problem: there continued to be insistent demands to run the exercise at the unclassified level. This was simply not possible, as far as we were concerned, and we beat the subject to death. Admittedly the information we were passing along (which was subsequently being reported) was purely fictitious, but the reporting methods used clearly revealed how the SIGINT reporting business works. That alone was enough to merit some level of classification.

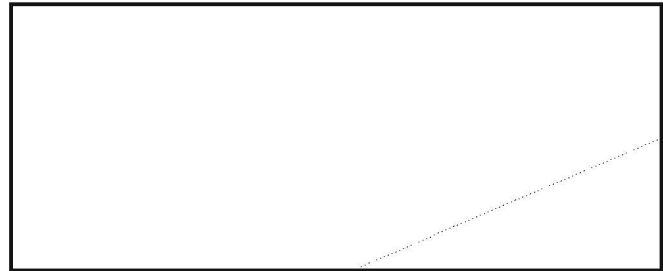
~~(FOUO)~~ With these problems behind us, we spent our time "hunting and gathering." The "hunting" part meant meeting and getting to know the members of the OPFOR, from whom we would obtain most of the data from which exercise SIGINT would be produced. But it also meant visiting many of the various other elements involved in the exercise. One day we visited the SCIF that belonged to the Commander of the Land Component Command. Also on our visitation list that day was the Corps Tactical Operations Center Support Element,

—FOR OFFICIAL USE ONLY—

which resided in one of several expandable vans filled with computers. Finally we were able to locate the Joint Forces Aircraft Control Center (JFACC), which served as the Air Component Command. The JFACC itself was housed in a huge beer-fest tent, while their SCIF was located in a van on the back of a truck outside the tent. Both the Ground and the Air Components were located about a half-mile walk from our location in the SSO SCIF/ICC building area.

~~(FOUO)~~ All our long hours (12-14 hours per person every day!) and hard work really paid off in the end. The "Graf three" relayed scenario and control information to the "England four" in close to 100 information reports, feeding them for their product reporting. In other statistics, the two teams together produced 149 TACREPs and 174 product reports covering ground, air, missile, and naval operations. These numbers, while not astronomical, represented reporting on some significant events in the exercise scenario and certainly provided some important training for the players. Even they admitted that this was the case! I was proud of our teams and the work we did; I felt we made a significant contribution that represented the SIGINT system well.

~~(FOUO)~~ And so, after 2 weeks behind concertina wire in a makeshift SCIF, working with military members from all services representing five nations, the first ATLANTIC RESOLVE came to a close. It really was a "TDY chance to excel," as it had been billed in that first e-mail. I learned an immeasurable amount about everything from how various comms systems interact, to the writing of TACREPs, to how a multi-national operation (albeit notional) is run. I even got a little insight into "the enemy mind" and how military tactical and strategic thought evolves. Would I do it again? You bet I would. Would I recommend it for others? No doubt about it. All that is required is a spirit of flexibility, willingness, and adventure. ATLANTIC RESOLVE II, here we come!



Κλ

P.L. 86-36

~~FOR OFFICIAL USE ONLY~~

P.L. 86-36

Hitting the [REDACTED] NSA's Software Reuse Libraries (U)

by [REDACTED]

(U) With downsizing and budget constraints in our near future, we need to do more and more with less and less. How many times have we heard these words and wondered, "How?" *Reuse*, although not a new concept, may be the answer. Code reuse has been going on for over 20 years but it has not been formalized as part of corporate system acquisition and development processes.

(U) When applied to software, the word "reuse" means using something again for a purpose other than that for which it was originally intended. Reuse is more than simply reusing code. The basic phases of any life cycle process are requirements/analysis, design, implementation (code), test, delivery, and maintenance. Any or all information in those phases can be reused under the rubric of *Reuse Engineering*, which comprises software activities that both utilize existing information and produce readily reusable information. With this process, we can reduce development time and cost as well as the cost of maintenance while increasing software quality and productivity. Pockets of reuse activity exist all over the Agency. We need to capitalize on those activities and incorporate reuse into our processes so we can reap its true benefits.

~~(FOUO)~~ [REDACTED] (NSA's Software Reuse Initiative underway in DT's Applied Technology Center for Software Engineering) is looking at doing precisely that through a phased approach. The first phase entails establishing a corporate-wide reuse repository with easy access and retrieval of software-related assets, which eventually will consolidate all information generated in the software life cycle. This repository will be the foundation on which we will build our reuse "process". What follows is a brief history of our previous reuse repository, and where we are today (Phase I).

~~(FOUO)~~ It was not too long ago when looking for reusable code was not an easy task. One had to go to anonymous ftp servers [REDACTED] to look for possible reusable assets. The user had to know which [REDACTED] to go to, and once there, where to go and what to look for. Then the "Common Collection Console" effort came along in 1989, when Graphical User

Interfaces (GUIs) were becoming popular and NSA management recognized the need for a common GUI look and feel. A small team was formed to try to develop GUI applications that could be reused on several projects. The software development community never accepted these GUI applications, but several major efforts succeeded in reusing some foundation libraries; [REDACTED]

[REDACTED] A reuse library was established as more reusable assets were identified, in the first attempt to bring structure to the then ad hoc reuse process.

P.L. 86-36

~~(FOUO)~~ The [REDACTED] reuse library was a centralized repository that used Web technology. Assets were now centrally located, but the user still did not know much about the assets in the repository. Then [REDACTED] teamed [REDACTED] to capitalize and improve on what already had been done, and to establish an NSA-wide reuse repository.

~~(FOUO)~~ [REDACTED] found MORE, Multimedia Oriented Repository Environment, as a possible solution to the problem. MORE was developed as part of the Repository Based Software Engineering Program (RBSE) funded by NASA. The University of Houston, Clear Lake, directs RBSE through the Research Institute for Computing and Information Systems (RICIS). MountainNet, Inc. of Morgantown, WV operates production prototypes. The MORE product moved from a software warehouse effort on the WWW to exploring, transferring, and utilizing repository technology with a directive to commercialize (MOREplus). Moving to a commercial product would add maintenance and support as well as continued alignment with anticipated WWW improvements.

~~(FOUO)~~ NSA's reuse repository, the Software Reuse Center (SRC), is on line today, with the beta version of MOREplus underlying its capabilities. MOREplus is a distributed library management tool written in GNU C, which interfaces with Web clients and an ORACLE database, and can run on SUNs, HPs, and VAXs. MOREplus is installed on the SRC's server and interfaces with various Web clients and an Oracle database. There is only one hand-coded HTML page for the inter-

P.L. 86-36

~~FOR OFFICIAL USE ONLY~~

face to the user, all the rest are generated by MOREplus. Metadata (information about the assets) resides on the ORACLE database. Now users can easily look for assets from a centralized location, but those assets can reside any where on the network. The user also can see information about the asset before retrieving it, which saves time when trying to find a candidate for reuse. Another benefit is having the assets distributed, so that the contributing organizations for those assets maintain and control them. These organizations become "remote librarians" with a *Master Librarian* overseeing the overall repository activities; this alleviates the workload of the Master Librarian and a centralized repository growing out of control.

(U) And now "more" about MOREplus. The classification scheme used is based on hierarchical Collections and Classes, and can be thought of as a library catalog system. Collections are subject- or topic-oriented and classes are type-oriented.

(U) From the user perspective, users can browse or search for assets from the top down through a hierarchy of Collections, or across across Collections through a hierarchy of Classes, more finely pinpointing what they are seeking. MOREplus also provides the user with a natural language- and pattern-match search. The natural-language search explores the entire database of metadata, whereas the pattern-match search looks for patterns in specific fields in the database.

~~(FOUO)~~



P.L. 86-36

~~FOR OFFICIAL USE ONLY~~

P.L. 86-36

(U) From the librarian perspective, additional capabilities include administrative and operational functions. Administrative functions include such things as add, modify, and delete, to name a few. A librarian simply fills in a form and submits it to the ORACLE database. Operational functions provide reports about the repository that contain useful measurements on assets, users, modifications, usage, acquisition, etc., as well as a catalog report on all assets in the repository. In addition, librarians can set up authorized users to access classified assets by login and password as well as authorized groups to access proprietary classified collections. (Even though the SRC itself is accessible by all, only authorized users will be able to browse or search for classified assets or entire classified collections.)

(U) Other features include a "What's New" function providing information on newly acquired assets; context-sensitive help on every page, with an index of all help pages; help on each field that needs to be filled out by a librarian submitting/changing assets to the repository; and manuals and tutorials.

(FOUO) K44, the previous [redacted] team, is the SRC's master librarian and has worked very hard to establish NSA's reuse repository. K44 also contributed a valuable additional capability to the MOREplus product itself: they introduced TCL (Tool Command Language) to MountainNet, Inc. TCL allows the master librarian to easily customize displayed pages and to display a classification label on those pages.

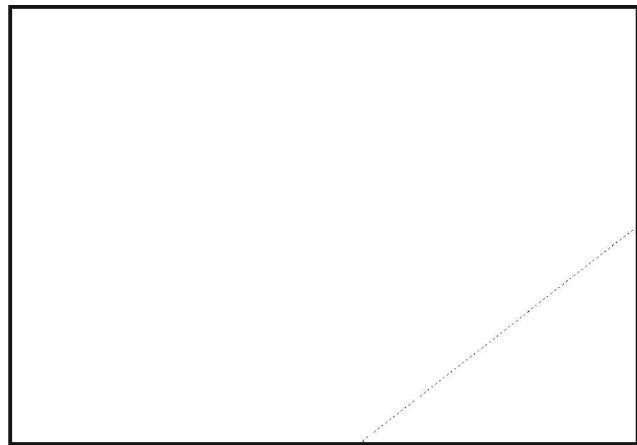
(FOUO) Other functionalities provided by the previous [redacted] reuse library includes "User Registration" and "Contribution," to name a few. "User Registration" is currently a voluntary option that allows a user to register with the SRC to be automatically notified of updates to assets of interest. The "Contribution" is a form allowing users who are not remote librarians to contribute valuable assets, these assets reside on the SRC's server, but the contributor can still maintain them.

(FOUO) We have only just begun. Our repository will need a well-thought-out management program that includes a process for acquiring assets (COTS, GOTS, public domain), and certification and validation criteria for our assets. The Quality Assurance team under [redacted] is starting to validate existing code assets in the repository, and will assess them for quality and maintainability against industry standards. Soon users will be able to see the quality or risk associated with an asset before retrieving it. We will also need a program to measure reuse activity, beginning with the repository, to

determine whether it is successful and to continuously improve our reuse activities. MOREplus provides a starting place for us to measure accesses to each asset and accesses to the repository. What we lack is asset usage, data reflecting the reduction in development time and costs, etc.

(U) In conclusion, the goal of the first phase of our reuse initiative is to familiarize system acquisition and software developers with reuse concepts and its potential. Subsequent phases will, we hope, integrate these opportunities and other reuse methods/techniques into our system acquisition and development processes (also, these processes must be well defined and controlled before reuse engineering can be incorporated into them) so that when we build new systems in the future, we will look for reusable assets from our repository instead of "reinventing the wheel." We will also keep reuse and inclusion in the repository in mind during development. A reuse technique termed Domain Engineering will help us do just that. Domain Engineering encompasses families of systems and captures the true functionality found amongst those families. Productivity will increase as it takes less time and costs less to develop new systems within the same family since common functionality will be reused. This frees up skilled developers to concentrate on the truly critical aspects of the new system, so they need not be concerned with the more mundane routines used over and over again. Software quality and reliability will increase as known and proven assets are reused, leading to a reduction in maintenance costs. We will, in short, be able to do more and more with less and less. We will do it better, faster, and cheaper. Aren't those words everyone would like to hear?

(U) To find software-related assets, go to the SRC at <http://www.src.nsa>.



The Nature and Process of Analytic Thought

by Hugo Keesing

Popular culture has been my core preoccupation since stepping off the boat from Holland as a seven-year-old in the early 50s. Popular culture—radio, television, comic books, baseball cards—were the way I learned a new language, made friends and came to understand my environment. I listened, I watched, I read and I collected and traded. There were new things to be absorbed every day: words, facts, relationships. I took them in, but I didn't process. I never asked myself, "So what?"

When I discovered girls a couple of years later, my curiosity increased. My sources and methods, however, were unsuited for the new target. That problem began to resolve itself when I became aware of MUSINT (music intelligence), an important but lightly regarded discipline of SIGINT.

At age 12, an interest in the latest music—because that was of interest to girls—helped me develop skills which are the staple of what communications analysts do today. Let's look at a few.

In 1955, when Washington, D.C., radio stations continued to play Perry Como and Jo Stafford, I became an expert at capturing, identifying, and monitoring "foreign" signals: stations such as WKBW in Buffalo, WCKY in Cincinnati, WLS in Chicago and WOWO in Fort Wayne. I learned about the importance of a good antenna, the impact of atmospheric conditions on signals clarity, about signal-to-noise ratios.

Late at night I learned to recognize the voice patterns and musical tastes of George Lorenz (The Hound), Dick Biondi and numerous other DJs. This enabled me to identify specific frequencies without having to hear the call letters.

I learned the importance of communication attributes such as rhythm and beat. If the song had a good beat and I could dance to it, I wanted to own the record. So began my record collection.

I learned transcription. Sometimes the text was clear voice (Pat Boone); other times it had to be retrieved from garbled transmissions (Little Richard). As I tried to write down the words of songs, it didn't

occur to me then to buy sheet music. I sensed intuitively that MUSINT was better than OSINT; that open sources might not carry the real lyrics. (This discrepancy has subsequently been confirmed in at least a few instances.)

I learned cryptology. From decoding lyrical messages to cryptanalyzing enciphered letter groups such as oo ee oo ah ah (ting tang walla walla bing bang).

It was only as I became more familiar with the context for MUSINT that I began to understand the importance of the messages themselves. Song lyrics were more than words; they were the dialogue of 50s/60s courtship. Boys didn't talk to girls; they asked them if they liked certain songs, or what their favorite song of the moment was. From this information intent was deduced (whether you had enough in common to support a friendship).



What's all this "A wop bop a lu bop, a wop bam boom" I'm hearing on this thing? Maybe I need to fix my equipment.

I also gained a deep appreciation for traffic analysis: the externals of songs, who sang them, on what label, their peak chart position. Knowing that my "target" liked the Platters and Johnny Mathis was promising information about other, as yet unknown traits. The interest in externals led to collecting information about music; first newspaper clippings and record lists, then magazines and books. I still collect and still make analytic assessments based on musical tastes.

But most important, I was able to satisfy customer requirements with MUSINT. At parties where I supplied the records, or at dances where I DJ'd, I provided an important service. My MUSINT-derived knowledge enabled me to suggest (or select—I have never been averse to making my own policy decisions) the perfect sequence of songs to influence strategic decisions.

So forty years ago I began acquiring and developing skills, knowledge, and analytic abilities which have served me in the past and continue to serve me today. What was most important is that I have never thought that using this skill set was work—only fun. Which brings me to my topic: analytic thought.

Many of you¹ responded to my e-mail query, with answers ranging from a single word to virtual treatises. Despite their differences in length, you and I are in general agreement on the attributes of, and impediments to, analytic excellence.

The vast majority of you identify personal qualities with the former, and environmental or organizational qualities with the latter. Some of the cognitive attributes you (collectively) consider assets include:

Curiosity
An open mind
Creativity
Ability to visualize
Broad subject-matter knowledge
Common sense
Critical thinking skills
Mental flexibility.

This is a good blend of the **raw and the refined** (creativity : critical thinking); the **spontaneous and the structured** (curiosity : ability to visualize); the **native and the taught** (common sense : broad knowledge). In psychological terms, your responses suggest that good analysts are produced by heredity as well as environment. The corollary debate that I've heard here at NSA is whether analysis is an art or a science.

Your experience, which agrees with mine, is that analytic excellence requires both. An undisciplined, creative mind may fall as far short in solving a complex problem as an inflexible, trained mind, yet the shortcomings are not the same. If the raw material is lacking, neither training nor smart tools are going to provide suf-

1. This article is the text of a recent presentation given to the Communications Analysis Association.

ficient compensation. On the other hand, training, education, computers and other aids can have a salutary effect on a young (or not so young) mind ready and willing to learn.

There are also enabling personality traits, taken from your experience, that have a bearing on analytic excellence. You have identified persistence, desire, and stubbornness, to which I would add respectful disdain for arbitrary authority and for orthodoxy.

What, then, is the composite of an individual who has all the qualities necessary for analytic excellence? Visualize her and ask yourself how well-suited she is for an organization like NSA, with its highly structured, customer-driven, time-sensitive environment. A setting in which, according to your experience, analytic excellence runs the risk of being subordinated to the requirements of Corporate Cultures, Policy Correctness, For[at] Over Substance, and an assortment of other Management Issues. Can analytic excellence possibly flourish in such surrounding? My answer is, "Yes, if..."

What I would like to do now is to suggest some ways in which NSA can improve on the raw materials and make the work environment more analyst-friendly. While it is up to leadership to address these issues, my suggestions may also identify possible roles for the Communications Analysis Association in ensuring the health of the analytic profession.

Start with the right stuff. Do whatever is possible to recruit into the analyst ranks people who are *curious, creative, and not afraid to be different*. Filling analyst positions primarily through cross-training necessitated by changing missions or down-sizing devalues the Art aspect of analysis, just as inadequate tools and training devalue the Science aspect. I would also add that the legitimate need for security must never become a vehicle for ensuring orthodoxy.

Find out what analysts do for fun. See whether you can help them link their avocation to their vocation. There is a tremendous potential for positive skill transference, whether the hobby is music, surfing the Internet, the stock market, sports, science fiction . . . the list is endless. Once you find out what they do for fun, use it as a springboard to teach analytic techniques in ways that are intrinsically interesting to the learner. Teaching in this way will require creativity, mental flexibility, and broad subject-matter knowledge on the part of the instructor. In short, it will mean *teaching through modeling*.

Provide frequent, appropriate opportunities for analyst skills to be refined. Formal training and education are two possible ways. Rotational assignments, mentors, and individual, directed research are others. Consider allowing analysts to meet some part of their professionalization requirements through work which has no obvious link to SIGINT (but requires the use of similar analytic tools).

Reinforce behaviors that keep the raw material vital. Encourage analysts to read (on the job!), to browse data bases, to spend time in libraries. To explore new fields, to try and fail. Make sure they don't get stale or complacent. I don't get discouraged easily, but I do when students tell me their work doesn't leave enough time to read. An analyst can't afford not to read! As a supervisor, work from the premise that good analysts are, by and large, self-managing. Give them space and give them support. Getting them to stop work should be harder than getting them to start.

Provide the right level and mix of tools for each analyst. Not everyone needs or wants the latest software upgrade. I have colleagues who became paralyzed after well-intentioned techies "improved" their workstations.

Give frequent feedback and insist on high standards. There should be no tolerance for sloppy thinking. Analysts must not be permitted cognitive biases, untested assumptions, or conclusions not properly linked to evidence. Similarly, they must not be let off the hook with "reporting" vice analysis. In the current language of CIA's Directorate of Intelligence, analysis includes facts (verified information), findings (expert knowledge), and forecasts (judgments based on facts and findings and defended by sound and clear argumentation).

Finally, reinforce good writing. A poorly written analysis that fails to communicate its finding to the customer represents wasted time and effort. What is good writing? Succinct, precise, and incisive are three adjectives that come quickly to mind. My pet peeve as an instructor? Students' use of the passive voice, which hides accountability.

Can NSA afford to do this for its analysts? Jim Devine, Deputy Director for Support, makes it clear that it must. I quote from a 1 November e-mail message:



Stop using that infernal passive voice and tell me who's responsible!

"If we are going to achieve organizational success in a dynamic climate of challenge and change, our people must be more highly trained and educated, more flexible and adaptable to change, and more willing to take risks, to view problems in a creative way, and develop innovative solutions. Organizationally we must provide an environment that fosters risk-taking, innovative thinking, and entrepreneurial activity. We must prepare our people better to deal with change, to take on far more complex technical problems, and to achieve their maximum potential."

Should NSA fail to do so, it may soon be included in Senator Kerrey's recommendation for CIA: "It should survive," Kerrey said recently, "but it will need the organizational equivalent of a sex-change operation." Analysts and their supervisors will have to be in the forefront to keep such surgery unnecessary at NSA.

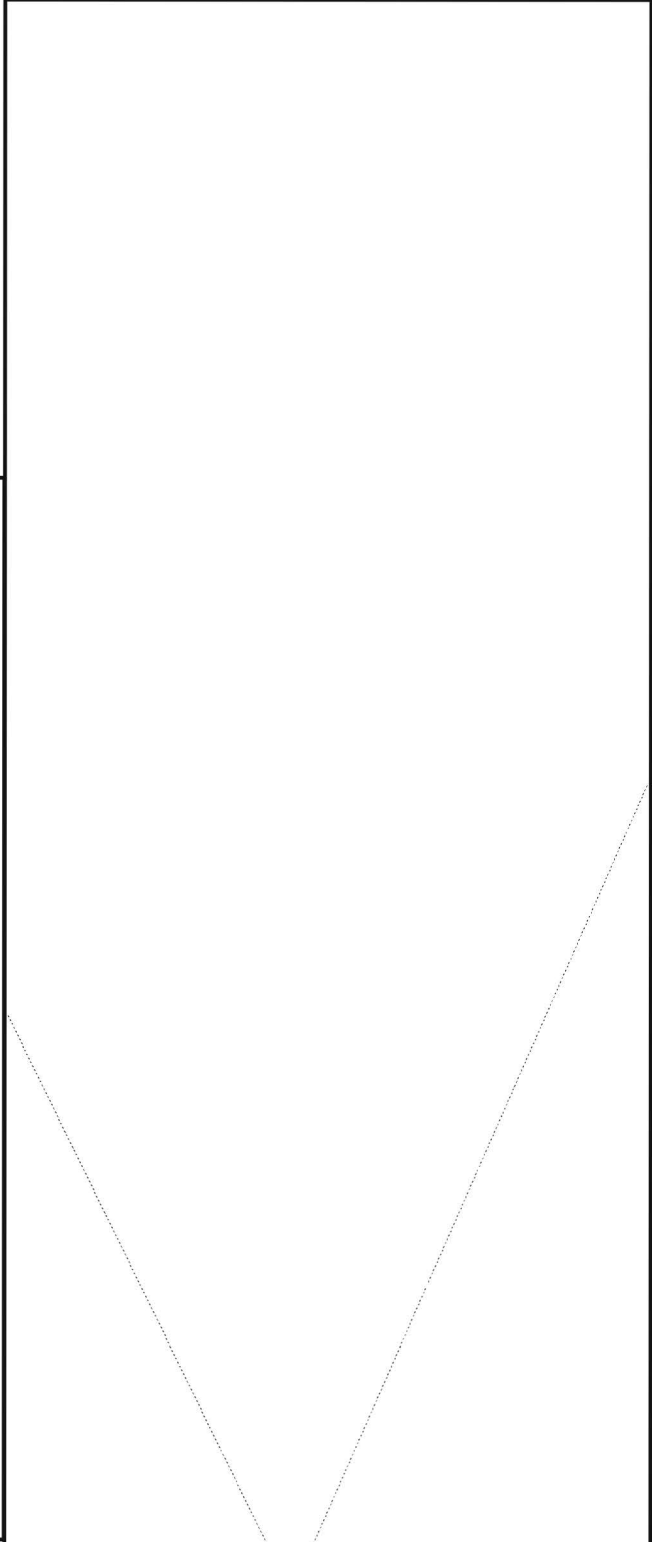
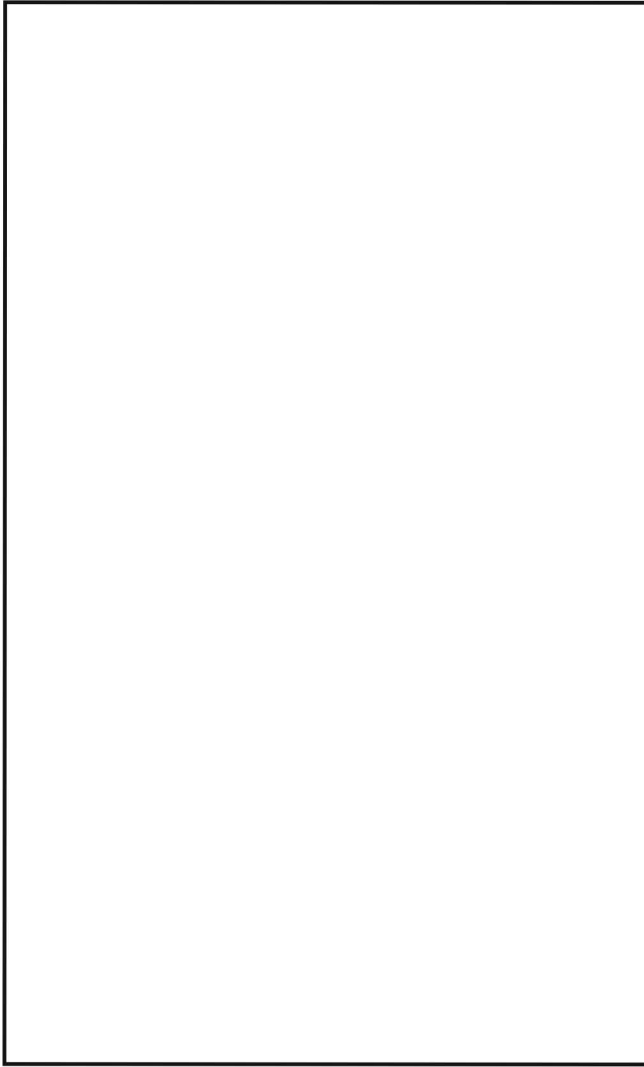
Dr. Keesing has been assigned to NSA as the Joint Military Intelligence College's Visiting Professor since September 1993. In this capacity he teaches graduate courses on research and on intelligence analysis. He also serves as thesis advisor for some 30 NSA students, some of whom have won prestigious awards for their theses. A psychologist by training, Dr. Keesing taught for four years in the University of Maryland's overseas programs, with assignments in 10 countries on three continents. His elective course in American Studies uses rock music and other forms of popular culture to teach contemporary American history.

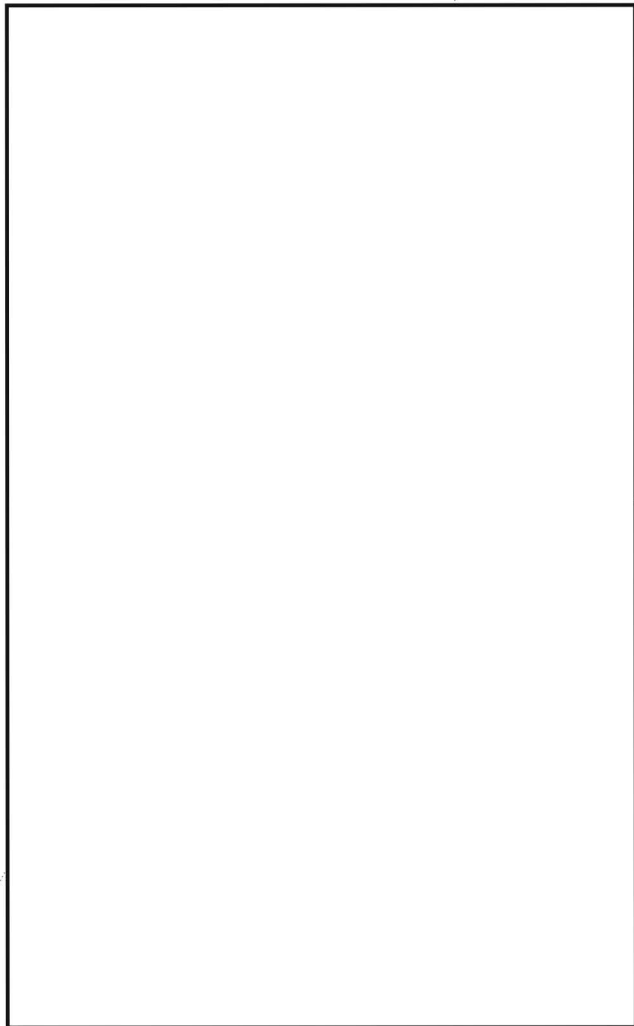
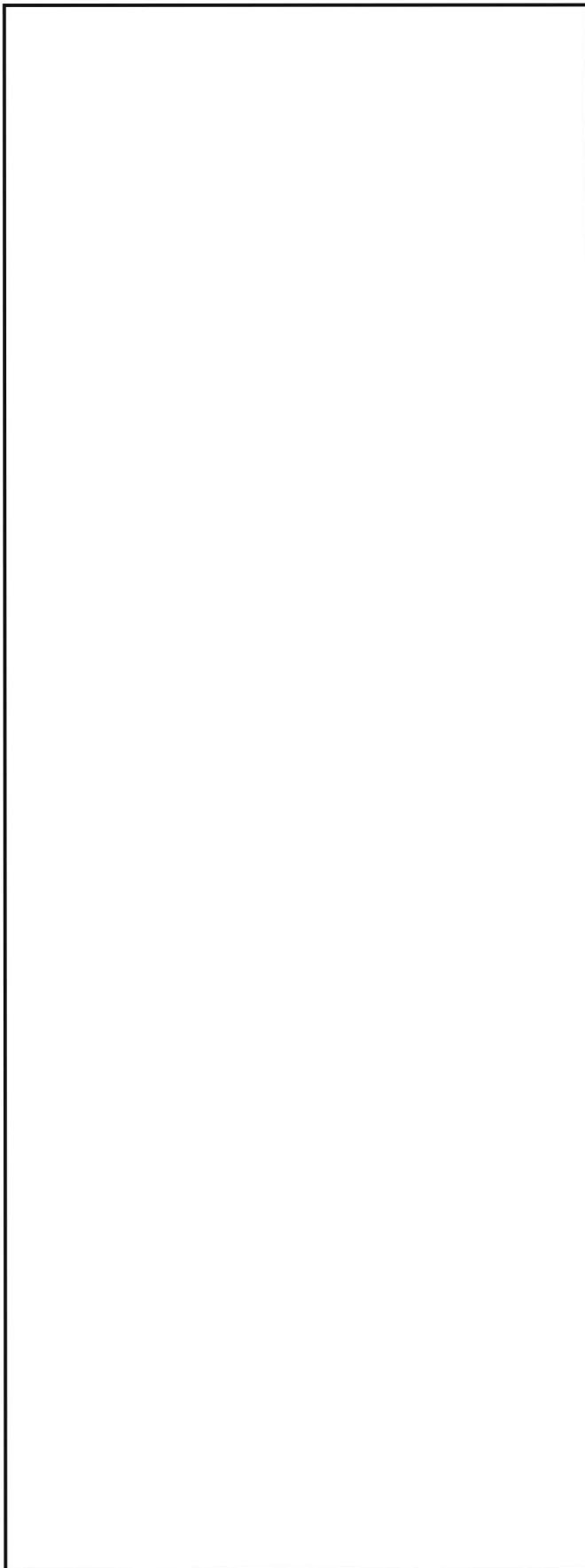
KA

Three Vs For SIGINT (U)

by

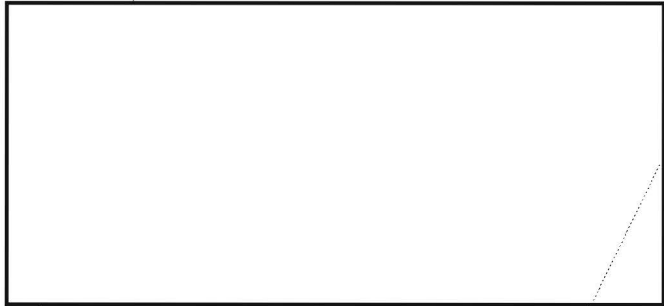
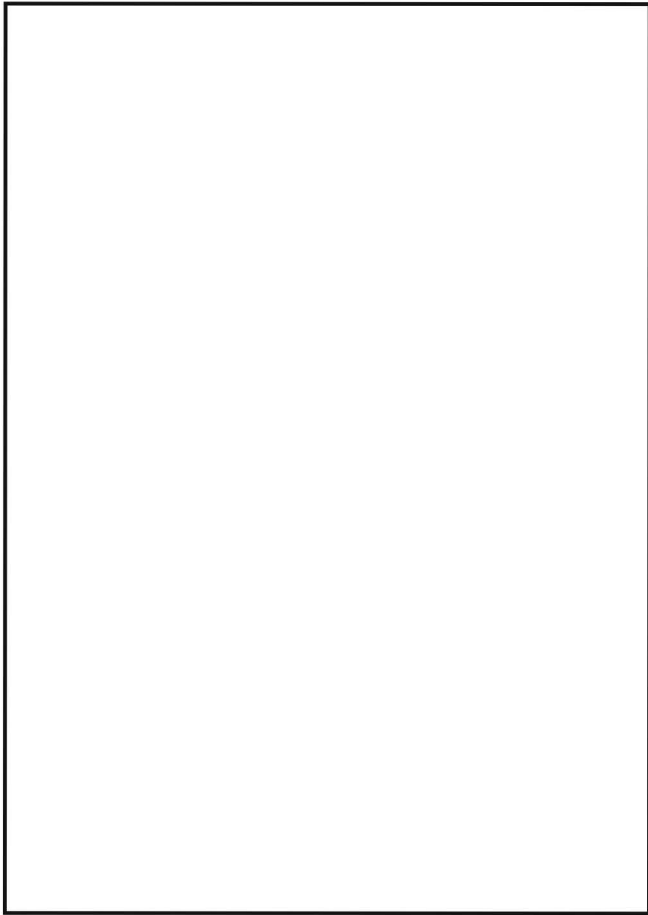
~~(FOUO)~~ *Vigilance, versatility* and *vision* are three attributes an NSA SIGINT reporter should possess in order to provide valuable intelligence responsive to consumer needs in the post-Cold War era. Reporters should have the vigilance to remain abreast of all developments regarding their target, whether political, economic, social or military in nature, but specifically when those developments affect U.S. interests; the versatility to prioritize and report on the target from varying angles, providing the consumer with key issues up front and in the most concise and understandable format; and the vision to be prepared and anticipate changes in the target as global issues constantly evolve and possibly threaten U.S. or allied interests.



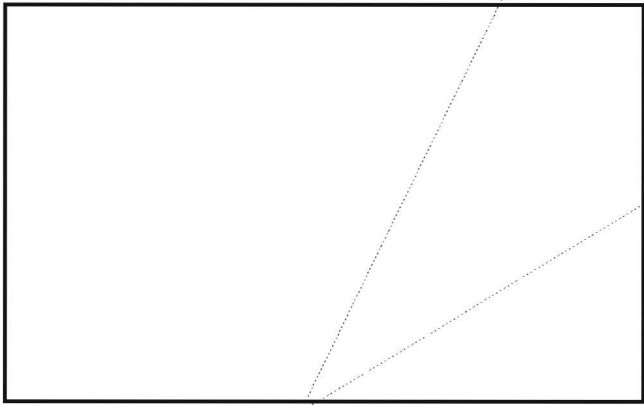


(U) According to an editorial in the Washington Post in November 1994, Russia's nationalist and imperialist tendencies have been viewed by some officials in Washington as sooner or later threatening the fragile states on its periphery and perhaps beyond. There are other officials, however, who feel Russia can be cajoled into joining the ranks of civilized and democratic states, or at least the possibility exists to justify maximum efforts toward that end. In order to formulate a proper U.S. policy toward post-Cold War Russia, policy-makers will continue to need access into Russia's near abroad.





(U) A more detailed version of this article was the winning entry in last year's International Affairs Institute essay contest.



P.L. 86-36
EO 1.4.(c)

Kλ

1996 selected calendar of events sponsored by NSA, academia, and professional associations:

<u>Event</u>	<u>Date</u>	<u>Where to call:</u>
• 4th Intl. Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems; San Jose, CA.	1-3 Feb	Email: zhang@ringer.cs.utsa.edu
• Information and Command and Control Warfare Course; GW University.	26-29 Feb	800-424-9773
• Information Warfare Symposium, AFCEA, Washington, DC.	8 Mar	703-631-6238
• Enemy Eyes: The Role of Visualization and Graphical Technology in INFOWAR; AFCEA, Central Maryland Chapt Technical Seminar; Linthicum, MD.	15 Mar	410-544-8418
• Conference on Computers, Freedom and Privacy '96; Cambridge, MA.	27-30 Mar	Email: cfp96@mit.edu
• 7th National OPSEC Conference; Tyson's Corner, VA.	16-19 Apr	301-982-0323
• Tactical Communications Conference; Ft. Wayne, IN	30 Apr - 2 May	215-674-0200
• ICASSP '96 - Intl Conference on Speech Acoustics and Signal Processing; Atlanta, GA	6-9 May	404-894-2948

(UNCLASSIFIED)

American Translators Association Conference (U)

Contributors to this article include [redacted] and a tech-track linguist whose job requires anonymity

P.L. 86-36

(U) The American Translators Association's (ATA) 36th Annual Convention was held in Nashville, Tennessee from 8 to 12 November 1995. The ATA, with its 6,000 members, is the country's premier organization for translation and interpretation professionals. The conference provided an exceptional opportunity to meet with private-sector counterparts and see first-hand the tools and techniques they use; learn different aspects of the craft, such as machine translation and interpreter training; and look for ways to improve our own work. We learned that there are many areas in which the Agency is ahead of the private sector (particularly with training and working aids), and other areas where we need to improve. Those attending from NSA recommend that the DO Technical Health Advisory Board (THAB) continue to send tech track members to future ATA and similar events.

Lessons Learned

(U) The presentations at the conference led us to several conclusions:

(U) The Agency should take a hard look at how it selects linguists.

(U) Almost every ATA member we met got started in the translation field by accident. Most were either born overseas and emigrated to the United States, were raised in a bilingual home, or spent a significant amount of time abroad studying or working. ATA members agree that translation is only half linguistic and the rest cultural; therefore translators are really cultural mediators. Convention workshops consistently stressed that to be good, translators must have four qualities:

- A well-rounded education to understand how the world works.
- At least one year and preferably longer in a foreign language country to understand the societal and cultural biases of that language.
- An outstanding understanding of the language into which they are translating.

- An excellent linguistic knowledge of the foreign language.

(U) This means that a good translator requires as much background, education, and experience as do experts in fields like computer science and engineering.

(U) The Agency is far ahead of the private sector in translator training and support.

(U) The good news is that once we select linguists, they can count on significantly more translation-specific training than their commercial counterparts. Throughout the conference, ATA members lamented the limited number of translator training programs available in the United States. Of the thousands of U.S. colleges and universities, as few as 30 offer full translation programs. As a result, commercial translators move into a field with little or no formal training or experience. ATA is beginning to recognize the need for translator self-training, but materials are only now being developed.

(U) In contrast, junior linguists at NSA regularly receive feedback from more experienced folks on translation skills and hands-on training on translation techniques. Linguists may join the Agency already possessing some degree of the four critical skills mentioned above, but with no translation experience. They may spend their first several months working under the close supervision of several accomplished linguists; the progress of these months would take years had they been forced to learn on their own.

(U) Our linguists also have access to larger amounts of reference materials and working aids than private sector translators. This ranges from using on-line dictionaries and working aids, to drawing information from computerized databases, to being able to call central reference for help on a particularly difficult question. More important, Agency linguists can turn to colleagues for help with background and terminology questions. Even at the largest commercial translation agencies, linguists often work alone, without access to this most important human resource. In the past, ATA members had to rely on their own personal networks to

~~FOR OFFICIAL USE ONLY~~

help solve translation problems, but the Internet revolution is providing many ATA members with a means of asking for assistance from other translators. The most popular platform is the Foreign Language Forum (FLEFO) available on CompuServe, but translators may also find the sci.lang.translation newsgroup on the Internet useful. (However, as one translator at the Conference pointed out, not all the advice provided in reply to translators' questions on bulletin boards is accurate—as is so often the case with bulletin boards in general—so one must learn through experience which translators answering queries are authorities in their fields.)

(U) Agency linguists are well compensated by industry standards.

(U) Agency linguists earn more than their private sector colleagues. The average free-lance translator in the United States can expect to make about \$36,000 in 1995, or slightly less than a GS-11. The free-lancer, however, cannot count on the health insurance, retirement, vacation, and other benefits Agency employees receive. This total compensation, combined with access to working aids, dictionaries, and superior training opportunities, means that our management recognizes the value of language professionals.

(U) In contrast, the private sector generally does not value language services, and the translation field suffers from an image problem in the United States. One reason is that, unlike other professional fields, there is no national standard for translation accreditation. The more significant, however, is that most U.S. businesses do not believe translation is worth the extra cost. They rely on the high-school-level skill of someone at the company or leave translation tasks to their foreign distributor. Other companies simply publish documents and advertising in English only. ATA's position is that U.S. firms are cutting their own throats, and its members are working to educate U.S. companies on the importance of using professional translators to increase sales abroad.

The average U.S. free-lance translator can expect to make about \$36,000, slightly less than a GS-11, but cannot count on the health insurance, vacation, retirement, and other benefits Agency employees receive.

Presentations and Workshops

(U) Public Perception of Translation in the USA

(U) Lee K. Curtis stated that she surveyed several international marketing and sales directors in the United States on the subject of translation. She concluded from the survey that ignorance of good translation is prevalent despite the fact that translation is a vital asset to our economy. In fact, we at NSA are cognizant that our national security often depends on translation when it comes to staving off terrorism.

(U) Ms. Curtis cited the following reactions by businesses in the U.S. to translation:

1. Our distributor takes care of our products.
2. We have people in our company who took foreign language classes in school.
3. We can't afford translation.
4. Why? All we want to do is to substitute the English with the foreign text in our computer. Ms. Curtis gave an example of this. An American company published a commercial in the Middle East that ran like this:

Dirty Clothes - Xabwn Gsil - Clean Clothes
[Xabwn Gsil = detergent]

... but the company didn't take into consideration that people in the Middle East read from right to left.

5. We want you to fit the foreign language text into the same amount of space allotted to the English text.
6. We don't do business with anyone who does not speak English.
7. We have a computer software program that takes care of our business.

~~FOR OFFICIAL USE ONLY~~

(U) Ms. Curtis focused on such common misconceptions and shared with the attendants her views regarding "How to educate potential clients by showing them what damage improper translation may do to their business."

(U) Teaching Translation to Undergraduates

(U) Sonia Colina, a translation instructor at the University of Illinois at Urbana-Champaign, focused on "What Do Errors Reveal?" She stated that examining and analyzing students' errors reduces subjective evaluation. She compared two methods of teaching translation. In the traditional teacher-centered classroom, the teacher is the performer and corrects students' errors on the spot. In the modern student-centered classroom, the student is the performer. Students are allowed to monitor and analyze their own errors; this allows the teacher to look into the students' learning process and proceeds to design a more effective curriculum and/or course materials.

(U) A Meaning-Based Approach to Teaching Translation

(U) Two instructors from Georgetown University, Shuckran Kamal and Jacqueline Murgida, ascribed poor translation from Arabic to English to "inadequate command of English writing skills, Arabic reading comprehension, and/or sound translation principles;" plus lack of "awareness of the advantages of membership in the major professional organizations" of translation and interpretation. To remedy this situation, they proposed formal training in translation principles, on-the-job training, and joining organizations like the ATA.

(U) For formal training, the instructors presented a sample lesson of a program of study in Arabic-English translation. They required students to have at least a level-III proficiency in Arabic and to have read Mildred Larson's book "Meaning-Based Translation." Their program offered an assortment of activities. For example, they invited guest speakers to lecture on topics relevant to translation in general as well as to Arabic-English translation in particular. In addition, they selected texts from the Arabic and American media for translation, provided exercises for students to work individually and in teams composed of native English/native Arabic students, and challenged the students to edit and revise professional translations. (One NSA linguist objected that one of the examples, commentaries/editorials by George Will, would frustrate the students

more than help them improve their skills because of the complexity of Will's thoughts and writing.)

(U) Medical Terminology Management in a Multilingual Environment

(U) Helen Knight, Brenda Rudder, and Clove Lynch stressed that our technical environment requires that translators be accurate and consistent in their use of specialized terminology. To this end, Family Health International (FHI), a nonprofit organization that conducts medical research, developed a multilingual medical terminology database (TDB). It efficiently stores large quantities of terms and their definitions in different contexts to be retrieved and processed in a variety of ways.

(U) FHI's TDB distinguishes between a term and a word. "A term can be made up of one or more words and has a precise meaning in a specific context." Actually this TDB provides specific relevant and concise contexts to illustrate a term. This kind of programming can certainly improve translation quality by ensuring the accurate and consistent use of specialized terminology.

(U) Machine Translation

(U) Alejandra Koval of AT&T Business Translations' presentation discussed machine translation (MT)—what it is, where it is, and where it's going. Current perception is that MT is stealing work from translators, is hard to read, and can even be dangerous if used for manuals and instructions. But the advantages of high volume, consistency, and customization are too great to ignore. MT will not replace translators; it will redefine their role. Now and in the future, rather than translating a text from scratch, translators will do a pre-translation review, performing text analysis and dictionary building, and will quality control the machine's output in the post-editing and final review stages.¹ Obviously, MT is only as good as the dictionary provided for it. Some things, like polysemous (dual-meaning) words, will always pose problems. The key point is that MT does not replace the translator. It is a tool to be used by a translator. The person using MT will still require all the same translation skills and linguistic knowledge that have always been needed.

1. (FOUO) For information on MT capabilities available at NSA, see "Machine Translation: What Can It Do For Us?" by [redacted] CRYPTOLOG, Vol. XXI, No. 3, Fall 1995.

About the ATA

(U) The ATA is the only private-sector entity accrediting translators in the United States. As both a professional and a trade organization, its goal is to build recognition and appreciation for the translation field. On the professional side, ATA has an accreditation program whereby translators can be tested or evaluated by their peers. Once accredited, members are listed in the ATA translation services directory. However, less than one-third of the members are accredited, one reason being that the accreditation program is limited to less than a dozen mostly European languages. Accreditation tests for Chinese (due out in spring 1996) and some other languages are in the works. The test-taker is typically required to translate three of five passages on the test. Topics may include a patent and a literary passage, and passages on economics, finance, and technology. Graders try to make the examination general in nature, so that it tests one's command of the language rather than knowledge of subject matter.

(U) Aspirants must take a practice test before taking the accreditation examination because so many people have failed the latter, but no critique is provided for those who fail the practice test. Many of those attending a forum on ATA accreditation expressed dissatisfaction with this policy, considering the separate fees required to take the practice test and the accreditation examination as well as for ATA membership. Furthermore, ATA continues to have no accreditation exam for many languages (there was a session at the conference entitled "How to Get Your Language Accredited"). ATA executives promised to take into account the concerns of accreditation aspirants attending the Forum, but the matter was unresolved by the end of the conference. It was also pointed out that ATA accreditation naturally is less important to translation agencies and customers than quality work completed on time.

(U) As a trade organization, ATA gives professional translators a forum in which to disseminate information, exchange ideas, and work together to educate business on the need for professional qual-



(U) ATA stresses the importance of using professional translators to increase sales abroad

ity translations in its literature, documents, and advertising. The nature of translation work discussed or advertised at the conference confirms the notion that technical translation comprises a large portion of private-sector translation (although awards were given at the conference for outstanding translation of foreign literary works). Translation agencies, as one might expect, prefer to employ specialists in technical fields, but are often compelled to use the services of less technically literate individuals who can translate documents in their chosen specialty reasonably well. As one translator with an electrical engineering background who specializes in telecommunications pointed out, "In my field, one must visualize to which pin a given connection leads," adding that well-written translations often mask technical translation errors. He conceded that quite a few translators are able to compensate to a large extent for their lack of formal technical training by extensive reading of technical literature in English on their fields, and advised that a few technical courses at a community college could go a long way toward helping aspiring technical translators with liberal-arts backgrounds.

(U) Interpreter Training

(U) Carol Patrie of Gallaudet University in Washington, D.C. discussed interpreter training. Her school's approach to interpreter training requires students to be at the master's level and to have the language skills, experience, maturity, and discretion necessary to be a good interpreter. The Gallaudet program, intended to train students to perform simultaneous interpreting, emphasizes a step-by-step process, teaching interpreting skills as component parts. The general skills portion begins with language competence exercises to access and develop student's ability. A speaking ability test is administered to see if students can express themselves in the foreign language. Cloze exercises (filling in the blanks) teach students to finish sentences and logically predict the next sentence or idea. Other exercises help students improve how they sound, increase understandability, develop auditory memory, and learn to grasp links between ideas being presented.

(U) Usage Labels

(U) Jean Quirion, a graduate student at the University of Montreal, delivered an excellent paper on usage labels in dictionaries and the impact they have on translation accuracy. He noted that dictionary worship, meaning accepting an entry without question, is common among novice users. This is a problem, since dictionaries often fail. One reason they fail is that general dictionaries are limited to the most common words. But the more common reason for failure, he believes, is that stylistic labels have not kept up with changes in language and society.

(U) Usage labels tell us if a word is obsolete or archaic, slang or colloquial, if it is used only in a specific region, or specific to a field such as sports, religion, or medicine. These labels must also match a given culture. For example, words specific to gender or social class are much more common in European languages (including European versions of English and French) than in North America.

(U) One problem with usage labels is that they still involve a great deal of subjectivity. Another is that lexicographers must leave their field of expertise when assigning usage labels. An experienced translator must use great care when selecting a general dictionary and should also have access to specialized dictionaries. Lexicographers in general should make standardization of labels a valued long-term goal.

(U) Translation Techniques

(U) Every presentation in whole or in part recommended translation techniques that make for higher quality work. Most of this information is not new for titled technical track professionals. At the same time, hearing it reinforced the techniques taught at the Agency. Here are some examples:

* Cliff Landers, a professor of political science at Jersey City State College, recommended that non-fiction translation be treated like literary translation. His basic premise is that translators need to maintain the information content of the original text, but present the information in a literary style typical of an educated native speaker. His motto: "A good translation sounds as though it were written in English."

* Several presentations stressed how translators and interpreters act as mediators between cultures. For example, in Brazil, salaries are usually expressed by the month, but in the United States we express them by the year. Translations between these two languages/cultures must either be explicit about the time period represented or do the math and express the figure the way the target audience is accustomed to thinking about these matters.

* Another presentation encouraged translators to think in terms of semantic units rather than words to increase translation accuracy. For example, in Hungarian, one word can accurately represent three or four words in German. Conversely, it might take three or four English words to convey the meaning of one word of Finnish.



(U) The Japanese market for software is enormous

~~FOR OFFICIAL USE ONLY~~

Tips for Free-Lancers

A presentation on how to succeed as a free-lance translator contained a number of valuable tips for increasing one's marketability that could be useful to Agency linguists as well. The growing importance of desktop publishing (DTP) means that a thorough knowledge of DTP programs is an asset. Here again Agency linguists have an advantage over their private-sector counterparts in that DTP training is available through NSA's Learning Center. "Software localization" (for example, translating "shuuryoo" as "the 'done' key," instead of giving it a literal translation of "end" when writing software for Japanese customers) is a hot topic for translators into Japanese and European languages; the Japanese market for software is enormous and the European Union has required all manuals to be translated into Europe's chief languages, thus creating a huge market for translators of European languages.

New translation tools, heretofore only obtainable for European languages, are becoming available for Japanese as well for cross-application purposes, graphics, and text/string-extraction tools. A downturn in the Japanese economy brought the fortunes of Japanese-to-English technical translators to their lowest ebb about 3 years ago. Once the nadir was reached, however, the appreciation of the yen against the dollar ultimately forced Japanese translation agency executives to transfer a considerable portion of their work to the United States and elsewhere where translation costs are lower.

KA

Here are other translation events which language technical trackers may want to attend:

The Federation Internationale des Traducteurs World Congress.

Mr. Steve Sachs, a free-lance translator from Annapolis, Maryland, briefed the conference on the Federation Internationale des Traducteurs (FIT) World Congress scheduled in Melbourne, Australia, in February 1996. The FIT is the umbrella organization for over 75 national and regional translation organizations from over 40 countries. Associate members include universities and other organizations. Funding comes from member dues and through UNESCO. Conference activities are much like the ATA convention, only on an international scale. This conference is held only once every 3 years, with the 1999 conference tentatively scheduled for Mons, Belgium.

The Second International Conference on Current Trends in Studies of Translation and Interpreting.

Dr. Kinga Klauudy, President of the Translation Committee of the Hungarian Academy of Science, issued an open invitation to attend the Second International Conference on Current Trends in Studies of Translation and Interpreting. The conference is scheduled for 5 to 7 September 1996 in Budapest and is organized by the Faculty of Humanities at Eotvos Lorand University.

(UNCLASSIFIED)

P.L. 86-36

From the History File: How I Helped Trigger a Greater American Involvement in Vietnam (U)

by

(U) In the early 1960's the Military Airlift Command was still using a fleet of lumbering C-121's to ferry servicemen (we rarely saw a servicewoman in those days) to and from overseas duty stations. The C-121 was an ungainly craft that, now that I think of it, looked a lot like a Klingon Bird of Prey. Somewhat slower than the mainstay of the Klingon fleet, the C-121 took about three days to make the trip from Southeast Asia to the West Coast of the United States.¹

(U) Anyhow, it was October 1962 and an appallingly young and fresh-faced 25-year-old Airman First Class was dozing aboard one of these "Connies," as they were sometimes called, while the aircraft labored toward San Francisco from Hawaii. I had boarded at Clark Field in the Philippines, having completed a 21-month tour of duty in Southeast Asia, and was to be discharged from active duty once I arrived back in the States. On the ground stateside, Alvin Dark's Giants were about to lose a heartbreaker to Ralph Houk's Yankees in the seventh game of the World Series, and America was a lot closer to a nuclear exchange with the Soviet Union over the missiles in Cuba than many of us on the other side of the Pacific Ocean had ever realized.

(U) As the engines changed pitch and the plane began to drift down through the clouds toward the Bay area—where within days my military career would be brought to a close—my mind wandered back over the last year and a half and some of the weirdness it had witnessed. I won't dwell on the run-of-the-mill absurdities that routinely befall your average unaccompanied serviceman, but I must tell you that in October 1962 I was still not absolutely certain that I hadn't triggered a

1. (U) Interestingly, Lt. Col. John Paul Vann, whom Neil Sheehan called the closest the United States came in Vietnam to a Lawrence of Arabia, would never have made it to Vietnam in March 1962 if he had boarded the C-121 that was scheduled to transport him and 93 other officers and men to Saigon. Vann had forgotten to have his passport renewed and was pulled from line just moments before he was to step aboard the plane. The C-121 disappeared over the Pacific, all aboard were lost, and Vann took a later flight. Sheehan's *A Bright Shining Lie: John Paul Vann and America in Vietnam* is highly recommended reading.

heavier American involvement in Vietnam than had existed when I first arrived in the Philippines.



(U) The author in Saigon in the spring of 1962

~~(S-CCO)~~ It happened like this. My primary duty at the 6925th Radio Squadron Mobile at Clark Air Force Base was to analyze and report on the activities of what passed for an air force in North Vietnam—or the Democratic Republic of Vietnam (DRV), as Hanoi liked to be called in those days. And what an air force! Because the 1954 Geneva Accords on Cessation of Hostilities in Indochina specifically ruled out the introduction of combat aircraft into Vietnam, North Vietnam had no tactical aircraft worthy of the name and wouldn't take delivery of their first MiG-17's until August 1964. The largest plane they had at the time was the Ilyushin-14 (Il-14) transport—a twin piston-driven, 25-passenger, light transport which, I am reliably told, cost so much to operate that there was no way it could be made profitable. (The Il-14 was one of the early efforts of Sergei Vladimirovich Ilyushin, who went to his reward in 1977.) The DRV had 14 of these CRATES, as NATO so aptly named them, gifted to them by the old Soviet

Union and the East Germans. Four of them were used to fly the two milk-run civil routes south out of Hanoi to Vinh and Dong Hoi and west toward Na San and Dien Bien Phu (farm animals that couldn't be stowed in the overhead compartment or stuffed under the seat in front of you couldn't be carried on). The other ten Il-14's were sent down by the Soviets especially to be used in the airlift into Laos from the DRV in support of the Communist Pathet Lao.

(S) They also had about a dozen An-2's: single-engine biplanes that look a lot like the crop-duster that chased Cary Grant into a cornfield and then crashed into a fuel truck in Alfred Hitchcock's *North by Northwest*. The An-2 in fact began its career as a crop duster in the USSR in the late 40's, and eventually came to be used in such diverse roles as parachute training, rescue and ambulance work, aerial survey, short-haul passenger runs; you get the picture. The DRV used the plane for all these and more, and some weird things happened with their An-2's. Like the time that the Pathet Lao didn't get the word that a couple of An-2's would be coming over and landing at their site in Laos. The first plane encountered a hail of Pathet Lao machine-gun fire; it took a few hits before aborting its approach and heading back to Hanoi. The second An-2, observing all of this, didn't even attempt a landing. We soon noticed the North Vietnamese being a bit more conscientious about disseminating their pre-flight information to the stations who would be directly involved.

(S) By far the weirdest event, though, was to occur years after I left the service [redacted]. This was the bombing raid carried out by a couple of DRV An-2's against a TACAN transmitter installed by the U.S. Air Force in 1966 in northeastern Laos. The transmitter, located atop a mountain known as Phou Phathi, was used as a navigational aid by U.S. aircraft, and the North Vietnamese were obviously aware of its importance. Sure enough, on 12 January 1967 they sent a couple of their An-2's over to try and destroy the transmitter. It boggles the mind: biplanes strafing, launching rockets against, and dropping bombs on the site. And get this! Their mission failed [redacted].

[redacted] An inspection of the wreckage disclosed that the Vietnamese had installed launching tubes in the floor of the An-2's and were apparently



(U) The DRV often used its biplanes in imaginative ways

dropping their "bombs" by hand through these tubes. Some of the blood-spattered navigational material that the Vietnamese pilots were carrying was passed through our office [redacted] and I was able to get a first-hand look before sending it on to Fort Meade.³

EO 1.4.(c)

(U) But my own story mainly involves one of the DRV's Li-2's, those scaled-down versions of one of the most reliable planes ever built: the C-47 (or DC-3 as the commercial version is known). The Soviet Union obtained manufacturing rights for the DC-3 during the World War II era and built over 2,000 of them (designating them Li-2's) between 1940 and 1945. The 25 or so Li-2's that the DRV operated during the early 60's had been sent down by the Soviet Union to participate in the Laotian airlift, but, as with the other planes in their inventory, the North Vietnamese used the Li-2's in a variety of roles.

(S) As we know, the Vietnamese were also very big on doing things the simplest way (remember the hand-dropped bombs and the thousands of loaded bicycles that were pushed down the Ho Chi Minh Trail?), and this extended, in the early 60's, to the numbers and

3. (U) An excellent and engrossing account of the fall of Lima Site 85 was prepared by James C. Linder and published in *Studies in Intelligence*, Vol. 38, No. 5, 1995.

EO 1.4.(c)

callsigns they assigned to their aircraft. So it was then that two of their Li-2's and two An-2's had huge identifying numbers painted on their fuselages: numbers 01 through 04. (These four planes were used frequently on missions into Laos to provide an air service into the Plaine des Jarres area, and the large numbers were probably meant to keep the nearsighted Pathet Lao from firing on them.) When communicating, these planes identified themselves by the large numbers painted on their sides and used the simple international "Q" signals to communicate the nature of their activities. "Q" signals were used to indicate departures, arrivals, pass-over points, estimated times of arrival, and the like.

~~(S)~~ Sometime in the first half of 1962 (or it may have been late 1961), Li-2 01 flew from Hanoi down to Phnom Penh, capital of Norodom Sihanouk's Cambodia. We were monitoring the flight service net that handled the flight and knew when the plane departed Hanoi and landed at Phnom Penh. And then things got strange. In the middle of the plane's first night in Phnom Penh (something like 1 a.m.) the Li-2's communicator used his manual Morse key to send the message (using the international "Q" signal) that the plane had taken off from Phnom Penh. (It looked something like this: "QTA 0100") This was strange because the DRV's planes did precious little night flying in those days and stranger still because we didn't intercept any more communications from the plane that night or see any other indications on the net of where it had gone or what it might have been up to. We also didn't see any confirmation of the plane's landing back at Phnom Penh, although we later detected it leaving Phnom Penh and flying back to Hanoi.

~~(S)~~ I dutifully reported all of the activity by Li-2 01, including the nighttime departure from Phnom Penh for points unknown. [redacted] also charged with reporting on the activities of the North Vietnamese Air Force, independently reached the same conclusion and reported that the Li-2 had left Phnom Penh that night on an undisclosed mission. It's essential to my story that I point out here that the North Vietnamese on occasion had used the "Q" signal "QTA" to mean "The correct time is _____." That precedent, plus what I knew then of other proclivities of the North Vietnamese pilots, left me with a nagging doubt about what had actually taken place that night. Had the plane actually taken off from Phnom Penh or was the radio operator merely checking communications? But why engage in comms checks at 1 a.m., and why had the Li-2 gone to Phnom Penh in the first place? And after all, I wasn't the only one to report that the plane had departed in the middle of the night.

~~(S)~~ A lot may not have been made of all of this if, on the morning after the mysterious departure message had been intercepted and reported, an aerial observer in South Vietnam hadn't spotted what he took to be parachute panels on the ground between Saigon and the Cambodian border at a point just minutes flying time from Phnom Penh via Li-2. Putting two and two together, U.S. military intelligence analysts in Saigon concluded that the North Vietnamese Li-2 must have flown from Phnom Penh in the middle of the night, crossed the border into South Vietnam, and paraded something to the Viet Cong before returning to Phnom Penh.

~~(S)~~ Well, that did it! Now the stuff had hit the fan! Up to this point, North Vietnamese planes had flown no further south in their support of either the Pathet Lao or the Viet Cong than an obscure airfield at Tchepone, located in the northern part of the Laotian panhandle just about due south of the North Vietnamese port city of Dong Hoi. But now, we apparently have that pitiful North Vietnamese Air Force flying its planes almost into Saigon itself in support of the VC.

~~(S-CCO)~~ Not long after this incident, the U.S. Air Force (of which I was a member, remember?) transferred a C-130 into Saigon, from where it began staging in an attempt to intercept North Vietnamese air communications related to Hanoi's nighttime air supply efforts on behalf of the VC. As fate would have it, I was a Vietnamese linguist and, because there was a shortage of such linguists, my tour in Southeast Asia was extended by 90 days and I was sent to Saigon (involuntarily, I must add) to help man the missions. I was a member of the C-130's back-end crew many nights while the plane made endless orbits over the DMZ separating North and South Vietnam. We never intercepted a single word of voice traffic to confirm that the North was flying missions in support of the VC.

~~(S)~~ So! Did the Li-2 actually fly that nighttime paratroop mission or was he just transmitting the correct time? And were those really parachute panels that the aerial observer spotted the next morning?

~~(S-CCO)~~ We continued to search for North Vietnamese communications in support of air operations in the south but had found none by the time I left Saigon in October 1962, and the American troop presence in South Vietnam had quadrupled by Christmas. Oh yes! Shortly before I caught my flight out of Saigon for the Philippines and then home, I overheard the following conversation in my tent between a couple of G.I.'s, who, as far as I could determine, were not cleared for any

level of intelligence (certainly not codeword).

G.I. #1: Hey man, why is it that the United States is sending all these troops over here?

G.I. #2: Hey, don't you know nothin'? It's because of all them li-yooshins that's been droppin' supplies to them Viet Congs.

True story.

(FOUO) [redacted] who prepared for his Air Force and NSA careers by poaching game in the hills of east Tennessee as a teenager, graduated from the University of Maryland with a degree in international relations and is now recovering in P054 from a stint as [redacted] under Gen. Odom. He has served the agency in many capacities since entering on duty in 1963 but intends to retire this summer and devote his time and energies to his newly acquired addiction to zydeco and Cajun music.

KL

(U) We direct our readers' attention to the second paragraph, which gave us quite a sense of déjà vu. We couldn't have said it better ourselves.:

From the History File: Editorial Comment by Dr. Sydney Fairbanks (U)



(U) So many kind inquiries after the Journal's health have been made of late—stimulated apparently by rumors of its early death—that we take the liberty of being rather specific on the subject. The number of articles promised has roughly doubled with each successive issue, and the mortality from all causes (most of them “classification” difficulties) has been less than one in three. Because it is extremely difficult to get the average article written, independently criticized, checked for security, discussed, rewritten, illustrated and typed in final form, all within three months, we are still operating in an economy of scarcity; but the transition to an economy of plenty, when the articles that were not ready in time for the last issue are enough to fill the next one, may arrive quite soon. When it does, the Journal will be on an adequately firm footing, and we find our progress in that direction gratifyingly rapid.

(U) The difficulties attendant on printing the fourth issue have finally been resolved. We apologize for the delay, and wish to thank our readers for their patience.

(U) Please note that this is not, as would be expected, Volume I, Number 4, but Volume II, Number 1. The ordinary periodical in our situation has to weigh the reasonableness of having the first numbers appear in January against the inconvenience of mailing out form letters for the next century explaining the break in sequence. Because of our limited distribution we hope to escape most of this. Nevertheless: Readers please note: There is NO Volume I, Number 4.

(U) It is impractical to list by name all the kind and patient people who have spent hours in advising us informally on specific points, but without them there would have been no Journal, and we hope they will accept a blanket recognition.

Reprinted from the NSA Technical Journal, Vol. II, No. 1, January 1957

Book Review (U)



High Seas: the Naval Passage to an Uncharted World, by Adm. William A. Owens, USN

pub. 1995, Naval Institute Press, Annapolis, Md.

Reviewed by Col. Richard Szafranski, USAF, National Military Strategy Chairman, Air War College

Reprinted with permission from the Air War College Newsletter, Vol. 20, No. 4, Fall 1995.

(U) Perhaps the most visionary and articulate officer serving in uniform today is the Vice Chairman of the Joint Chiefs of Staff, Admiral Bill Owens. Admiral Owens—along with Mr. Andy Marshall, the director of the OSD Office of Net Assessment and superintendent of the Revolution in Military Affairs (RMA), and Dr. Alvin Toffler, world-renowned author and thinker—also addressed the Air War College Class of 1996 at the beginning of the academic year. A big chunk of Admiral Owens' vision is captured in his book, *High Seas*. That a serving flag officer has the time to write a book is itself wonderful, even acknowledging the help of his assistant, Dr. Jim Blaker. That the book is both useful and good is even better. Its 178 pages are a must-read and a quick read.

(U) *High Seas* gives us insight into the present national security environment and the one that Admiral Owens argues is like to emerge over the next several decades. Using a straightforward analysis and "what's going on here" format, he describes the things the United States armed forces need to worry about in the near and farther future. Major superpower fighting having been averted, the primary danger now comes from what Admiral Owens describes as "regional predators." These are land powers threatening the family of nations by threatening the stability of a region. Because they are land powers, we need to focus more closely on our ability to influence or defeat these land predators. All of our armed forces must attend to the job of supporting land operations. Consequently, he eloquently explains the need for real naval presence—as distinguished from the "virtual presence" of air and space

forces described in the Air Force's Global Presence—as a requirement for influencing events on land. Our own "virtual presence" was far less well argued and, to some, much less convincing. Admiral Owens asserts that the focus of naval operations for the foreseeable future is not "sea control" (the "why" of a bank-breaking 600-ship Navy), but on helping control the land from the littoral. The Navy's new vision might be described as "from the sea for battlefield support." The potential predators, he tells us, are all reachable from the sea along the littoral. He is supported in this observation by the historian John Keegan in *The History of Warfare*. Keegan notes that of the fifteen decisive sea battles in the history of the planet, all but two appeared on the littoral. In fact, Keegan notes that the terrestrial battlespace historically resides along the littoral between the tenth and fifty-fifth degree of latitude in the Northern Hemisphere and stretches from 90 degrees west of Greenwich to 13 degrees east.

(U) Because land control and helping deter or defeat regional predators is the new focus of the Navy's operations, Admiral Owens argues that the Navy must better understand Air Force and Army operations. Without saying it directly, he suggests that because the Navy has its own army (our United States Marine Corps) and its own air force (in the form of naval aviation and sea-launched cruise missiles), the Navy constitutes a joint and integrated force by definition. Thus, Naval Expeditionary Task Forces (NETFs) may be, or even are, best suited for influencing the land from the littoral. The NETFs can do this, of course, without reliance on overseas bases, the Achilles' heel of short-

legged, land-based air power. His discussion of strategic bombing campaigns on pp. 96-100 is reasonable and he asserts that "no single service can do this alone."

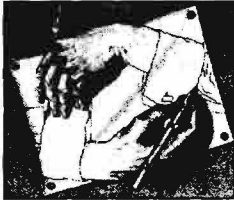
(U) It is about here that Air Force airmen ought to say "Ahoy!" and reconstruct the logic train car by car: regional predators are the threat, these are land powers reachable from the littoral, the Navy's role is to help win on the land, the NETF has joint and unified forces, the NETF is self-contained and not reliant on overseas bases, and even strategic bombing is a joint activity. So what is the niche, the value added, of a separate Air Force, some of our paranoid airmen will wonder? One answer, of course, is "very little," if we follow the logic train to its unspecified destination. This possibility looms more clearly as he describes the Navy's "Force 2001" and "Force 2021" and the need for real naval presence in four regional areas. He suggests that floating mobile bases (artificial islands) are or could be the power projection bases of the future. He concludes that we control our own destiny and asserts, "We should try to do two things. We should design military forces, and use the ones we have, in ways that do not goad others to challenge us militarily, and we should build military forces that are unchallengeable. These are the basic assumptions on which I founded most of the discussions in this book." The armed forces of the future are a "system of systems" in Admiral Owens's view, and naval forces are a, or even the, key component in such a system.

(U) Is there a hidden agenda here? A more appropriate question is, "Is a general or flag officer worth his or her salt without a hidden agenda?" Of course not. Sun Tzu admonished the general to remain "inscrutable."

Admiral Owens is, pardon the respectful pun, a salt worth his salt. The hidden agenda, my guess is, is to infuse our "blue water" force with post-cold war relevance by using the end of the cold war to reframe its mission as a "brown water" one, but to make this point in such a way that it's as much "between the betweens," as John Boyd would say, as it is between the lines. Littoral operations will remain important, yet the littoral that counts in the future may be the regions of air and space that surround the planet as much as it is the coastlines of the planet. If the force provider of air and space power is reduced to just another air arm, then there is insufficient justification for preserving it. What I think Admiral Owens misses, as Dr. Grant Hammond of the Air War College has pointed out, is the structural fallacy of the notions of jointness built around the "seamless integration" of land, sea, air, and space. The reality, Hammond asserts, is that there really is a seam between the earth and the aerospace and we can neither define it away nor wish it away. Someone, some force element, has to be expert in operating in and controlling the media of air and space. The Air Force has no desire to be the Navy, and others who are not airmen must trust airmen to be expert about air power, just as we must trust sailors to be experts about ships. Jointness doesn't mean that "you collapse into us." It means "we do this together, but if it's an air or space operation we ought to have the lead."

(U) So I recommend that you read this book and read it very carefully. I would not buy it, but only because it's outrageously expensive for its size. If you disagree with this assessment, feel free to contact me on the Air War College's new Internet connection at rszafanski@MAX1.au.af.mil.

Kλ



Letters to the Editor (U)

P.L. 86-36

EO 1.4.(c)
P.L. 86-36

Re: The Future of Cryptanalysis (U)

~~(TS-CCO)~~ [redacted] article in the Fall 1995 issue of CRYPTOLOG—at once thoughtful and incisive—led off with an assessment of the state of the art. He called 1994 “the best year for cryptanalysis since the Second World War.” Before his readership got all puffed up with self-importance and began high-fiving everyone within reach, however, he set the tone for the rest of the article with a caution.

[redacted]

~~(TS-CCO)~~ We turn the clock back to 1979. NSA Director Lt. Gen. Lew Allen had charged the Scientific Advisory Board with

[redacted]

[redacted]

(U) The cryptanalytic struggle continues as before; only the names change. The components of success remain the same, and the reasons for failure (lack of resources, security leaks) recur decades running.

Tom Johnson, Center for Cryptologic History (968-6156)

Re: Foreign Language Testing (U)

(U) I would like to comment on an article that appeared in the fall 1995 issue of Cryptolog, Foreign Language Testing at NSA: Time for Change. In it, the author makes a number of inspired recommendations for improving the way language testing is conducted at NSA. However, in doing so the author also makes some assumptions about how the work of PQE committees is conducted, and I believe that not all of these assumptions are valid.

(U) I should point out that I am aware that all PQE committees operate differently, and that many take on their own personality based on their leadership and the level of expertise and enthusiasm of their members. I was a member of a highly motivated PQE committee that counted among its members experienced linguists with advanced degrees in that field. In addition, we had 11 very vocal members who loved to argue and convince their fellow committee members of their point of view. Very few decisions were made that were not unanimous.

(U) With regard to suggestion 1 ("Use, in tests, only those texts for which three or more experts independently agree on the level"), I believe that our committee, all 11 of us, agreed on their level. While all of us took LG-020, Language Levels and Their Application, two of our committee members were also full-time language instructors at the NCS. On a daily basis, they selected texts for classroom use based on their language level, and they were quite good at it. Therefore, we were very confident that the texts we selected for use in our tests were the appropriate level—we had too many checks and balances for this not to be the case.

(U) Suggestion 3 ("Require test designers to "socialize" at the start of each testing cycle, discussing several texts that are in the pertinent foreign language and that have previously been determined to be at the various levels") certainly took place in our committee. We had not one, but two or sometimes three meetings to select an appropriate text, discussing a number of samples each time. In addition, we discussed samples that had been put forth in previous rounds, to be sure that we were selecting the best

available text. Again, the personality of this committee, and the committee leader's commitment to let every voice be heard may have played a role in the extent of socializing that our committee undertook.

(U) I agree with the author's contention that an analyst's inability to render a text in "idiomatic English" may sometimes be the reason for failing to pass a PQE. However, our committee invited every analyst who took a PQE to meet with a member of the committee for a counseling session. I believe that our committee members were astute enough to determine whether an analyst was having difficulty understanding the foreign language or rendering it in English, and if not, then such a counseling session would have revealed such deficiencies. During the course of the counseling session, the committee member could recommend that the analyst enroll in either another language course or an English writing course, as we often did. Also, when analysts at field locations took PQEs, our committee was required to send them a detailed analysis of their exam, including areas needing improvement. We often recommended in these analyses that analysts seek to improve their English writing skills in addition to their language skills.

~~(S-CCO)~~ I also must comment on the author's assumptions about the scoring of translations. I maintain that syntactical errors are indeed more costly than lexical errors, which is why more points are deducted for this type of error. In the example "the dog / bit / the man" versus "the man / bit / the dog" the nouns are, as the author points out, in the wrong relationship to the verb. However, this error becomes much more egregious when an analyst is drafting a SIGINT report and mistakes "Ecuador / attacks / Peru" for "Peru / attacks / Ecuador." Simply being in the wrong relationship to the verb has rendered these nouns on the complete opposite sides of a war—too costly a mistake to be made by a supposedly "certified" analyst who passed his PQE.

(U) In addition, I disagree that mistakes on repeated instances of the same word should be penalized more than once. One of the advantages of having a long testing period for PQEs is that analysts thus have an opportunity to go back and

~~HANDLE VIA COMINT CHANNELS ONLY~~~~SECRET~~

reread their translations. A careful analyst will note these translation discrepancies and go back and change previous occurrences of the word. But a misunderstood word that happens to appear more than once in a text should not be repeatedly penalized.

(U) I do appreciate the author's suggestions for improving the PQE system. However, some aspects of the system are not broken. Certainly better training for PQE members would help, but my experience with a PQE committee introduced me to a whole team of energetic, motivated individuals dedicated to improving the quality of certified linguists at NSA.

P.L. 86-36

[redacted] B051

[redacted] A905, responds:

(U) It is heartening to learn that the language PQE committees have so many motivated and capable people who are sincerely trying to follow good test design procedures. I agree with [redacted] that not all aspects of the PQE system are broken. Her comments, however, reflect a misunderstanding of some of the points I covered in my paper, and I welcome this opportunity to clarify these.

(U) The first point she addresses is the selection of texts for use in PQEs. She describes a process in which "vocal members . . . argue and convince their fellow committee members of their point of view" as to text level. This is not independent decision-making; true independence means that everyone comes to the same conclusion on their own, without having to be convinced or cajoled. It is unlikely that all members of a given committee will be equally outspoken or equally adept at getting their way, thus there is a danger (especially on committees smaller than the one she describes) that one or two dominant personalities will sway decisions to their viewpoint, for good or for ill. The "unanimity" thus gained may lead to a false confidence in the final decision. On the other hand, when several people arrive at the same conclusion without debate, they have a more solid basis for confidence in the outcome.

(U) As for diagnosing the causes of poor test performance, I would simply point out that not all aspirants avail themselves of the opportunity to receive counseling. Moreover, it is questionable whether all those who act as counselors (1) are able to make such diagnoses during the counseling session and (2) always attempt to do so. It would be much more desirable to have a testing program in which diagnostic information is obtained through the tests themselves.

(U) Regarding the scoring of translations, [redacted] example of a possible syntactic mistake serves only to demonstrate that this type of error can sometimes be serious. I provided examples in my paper of actual mistakes from my test data, which show that syntactic errors are sometimes NOT so crucial, and that lexical errors sometimes ARE. Lest this deteriorate into a my-anecdote-is-better-than-your-anecdote sort of shouting match, let me reiterate that there is no empirical data to support our current translation scoring system, and I find no sound basis in current linguistic theory for assuming the absolute primacy of the grammar over the lexicon. It is axiomatic to psychometricians that it is irresponsible to base testing decisions on intuition alone; the choice of a scoring system is no exception to this. (These comments also apply to the issue of whether or not to penalize repeated mistakes on the same word.)

(U) I hope that PQE committee members will continue to work to ensure fairness in language tests at NSA. The good in our testing system should not be ignored, but neither should we shrink from questioning our current procedures. This honest questioning should not be seen as disparaging to anyone now involved in language testing, most of whom are, as [redacted] rightly points out, "energetic, motivated individuals dedicated to improving the quality of certified linguists at NSA."

[redacted] KA

P.L. 86-36

~~FOR OFFICIAL USE ONLY~~

SIGINT Bloopers (U)

(U) Having warned against excessive dependence on spell-checkers, we find ourselves with a new category that appears to be a variation of the Homonym Pitfall, but resulting from *not* using spell-checkers: Writing Wrongs. Such as:

(U) "Negotiations faltered over the issue..."—Wonder whose falt it was?

(U) "Possible Presense of Commandos Noted"—is a "presense" some kind of ESP?

(U) One country has "charged that U.S. hypocracy was increasing." Let's see, would this be government by injection, or by Madison Avenue ad-men?

(U) This column, having condemned the use of "diffuse" for "defuse," should probably accept responsibility for confusing one office into producing a brand-new word, "disfuse," instead: "Officials attempted to disfuse a tension ..."

(U) In the "But I Ran Spell-Check!" category:

(U) A country allegedly began to "access" its chances of joining an international organization. (Wonder where they keep those chances?)

(U) Elsewhere, a government crackdown "served as a lightening rod for international condemnation." Lighten up, guys, or we'll use this rod on you.

(U) Another report warned that the security situation was still "dangerous and very unpredicable." Ever tried predicating a situation? (Kids: don't try this at home.)

(U) One staff office issued an action memo explaining that "Our tact here is to avoid any potential surprises." Must have been from the Agency's Tact Force.

(U) A field site reported on the deployment of "fixed-wind aircraft," which apparently defy the laws of physics.

(C) Perhaps we are too severe in our dislike of neologisms, but we really must protest against the proliferation of the prefix "narco-" in reports and collateral relating to drug activity (strictly speaking, to use "narcotics" for marijuana and especially cocaine is inaccurate, but that's a subject for another column). A few Selections From The Narcodictionary:

(TSC) "The jailed narcojournalist, whose role in the narco-cassette case..." (Are narcocassettes those tapes of music that require a Parental Advisory sticker?) This gentleman's documentation of rampant "narco-corruption" led to the embroiling of his nation's president in what has been dubbed the "narcodollar scandal." It must have been widespread, considering the employment of "narcosubmarines" (the mention of these vessels always makes a certain '60s tune run through our heads). On another continent, "narcoviolence" was feared when the well-known "narcotraffickers" metamorphosed into "narcoinsurgents." But our favorite has to be the dubbing of a now-departed Caribbean-nation junta as "narco-putschists."

(C) On a tangent, one office issued a summary of "counter narcotics activity" using "counter narcotics" as two words throughout. Perhaps these are those narcotics available without a prescription.

(U) Of course, NSA is not alone: State Department bestowed on Emile Jonassaint, puppet head of the government proclaimed by the Haitian military, the title of "Faux President." (For some reason, though, Aristide was never referred to as Le President Actuel...)

(U) A State Dept. cable refers to an act of sabotage being "against Islamic valves." Presumably these valves are not metric.



(U) We all live in a narcosubmarine

Kλ

As before, thanks to all contributors; examples may be sent to P054 in Rm. 3E027, Ops. 1, or via e-mail to cryplog@p.nsa.

Editorial Policy:

(U) Technical articles are preferred over those relating to management, shorter over longer (under 3,500 words). Emphasis should be on improving NSA's technical performance; articles should be aimed at explaining developments in one's career field to those outside it. Readers are invited to contribute conference reports and reviews of books, articles, software, and hardware that relate to our missions or to any of our disciplines. Editorials are also welcome, as is humor. Submissions may be published anonymously, but the identity of the author must be known to the editor.

Submitting Articles:

(N.B. If the following instructions are a mystery to you and your local ADP support is no help, please feel free to contact the CRYPTOLOG editor on 963-3123s or cryplog@p.nsa.)

~~(FOUO)~~ Send a hard copy accompanied by a labelled diskette to the editor at P054 in 3E027, Ops. 1, or send a soft copy via e-mail to cryplog@p.nsa.

Guidance:

For maximum efficiency (as far as possible within the limits of your word processor):

- Do not type your article in capital letters.
- Classify all paragraphs
- Label all diskettes, identifying hardware (operating system: DOS, UNIX), density and type of word processor used, your name, organization, building, and phone number.
- FrameMaker format is preferred; ASCII text is also fine. J334 has a conversion service that converts Interleaf, WordPerfect, OfficeWriter, and MS Word into FrameMaker. Just attach the document to an E-Mail Compose Window addressed to convert@nsa.