

9:00am Thursday 4 Dec. PLENARY

Richard Sentner speaks 1986

AAAS Omni-Shoreham

Rodney Nichols — Intro

WDC

William R. Graham, Science Advisor to the President

National Security has an economic dimension — must support both civilian (replacement of physical & social assets) — cultural dimension of Nat. Security — emphasises moral values and aspirations.

Arms Control is an instrument of diplomacy and an instr of international relations.

Reflects relations; does not steer those relations.

Arms Control is by itself incapable of building trust.

"Differential" benefit i.e. one-sided benefit
"Common" benefit.

"Arms Control" can have "tooth-paste" tube effects on Arms development. "V2 is a consequence of Versailles Treaty!"

[Modest step — Exchange data] from
Chernobyl Experience. (We want that data!)
with Soviets

Incorporate "technological skills" into the
force structure - Qual. changes. not
merely change (reduce-increase) numbers.
1. Justify Nuclear Tests!

Nuclear is the basis of our Nat. Security.

[Theatre forces - USSR overwhelms
in Quantity]

US and Allies depend on Qualitative Superiority

Min. cost of nat. security to country and
our friends

Much of Soviet investment has gone into Air
Defence and Strategic Missile Def. "Massive
network of radars" on periphery of USSR.
ABM treaty violations

USSR certainly understands Strategic Defences

[Then pitches for SBI]

* Stability of scale-down of offensive process

[Stability of transition process]

First the offensive forces will reduce, then
the def. forces will increase

Why at limit do we need def. forces?
Verification, believability.

Third Party forces - what about them?
So we need some offensive forces.

[We are not trying to make the world safe for conventional war]

Lessons from interval between Wars I & II.
~~to~~ taught what - Quotes Walter Lippmann.
Nations disarmed after WW-I, led to
WW-II

[Applause a little more?]

Q: What are Spens view on S.U. attitude to verification?

A: 17-29% of Soviet land mass accessible
by West. National Tech. Mean of Verification
CSE - Helsinki. Many opportunities to
provide increased access. They have
all the variables under their control
e.g. transport - will be USSR even for
Third party

Q: "Suitcase bomb" - # if we can't stop
Cuban Manihumija

A: Single bombs
are hard to stop

Q: We were safer twenty-years ago.
- e.g MIRVing has increased
incredibly

A: Just says no! Unconvincing answer.
But says was brought-up in negotiation
Not ~~the~~ everything done technologically
can be defended. MIRVing may be
an example.

Q: Verification. Why is US Admin against
^{scientific} private organs. involved in verification

A: We are always dealing with Soviet Govt.
We cannot have private-Govt.
situation.

ENDS

Prof. Honeywell.

Jr. Johnson. - Dir. of Sc. Res Lab. of ~~US~~
of US Military Academy.

SLBMs - Both US & Sov Union - Will deploy
MIRVed SLBMs. First strike threats
on all, incl hard, targets
Both nations ~~both~~ MIRVed capability.

Land-based
Sov. Union will probably "mobilize" large numbers.

Cruise Missiles

Very low radar ~~#~~ section -
Range extended well beyond current 1500 miles

Satellite Survivability - May
Cobles (not Ashton)

Info. - would down to platoon level.
Papers cover these well.

Strategic Def. Societies will remain largely
vul. to strategic attack.

Diff. between B.M. & Cruise Missiles

↓
Not ~~large~~ hard
~~Particularly easy to~~
∴ easy to defend against

Speeding-up by C³I - increases elements
of surprise.

PGM. - US will continue to lead Soviets

Depends critically on the details
Systems, Deployment & Operational
Aspects

More important than Tech.
Deep strike PGMs not a long-term soln

Tactical Lasers.

CBW — Continue to be stockpiled and modernized in many nations. "Third Nation" problems.

Submarines — Quieter & more difficult to detect passively.
Subs will be more secure & more reliable.

Limit first-strike SRBMs. by limiting Testing —
Has not worked.

Unken Mobiles are banned, they cannot really be controlled.

Penetrating Cruise Missiles — Will be deployed in large numbers — Unverifiability of Sea launched & Air-launched is critical.

Space for targetting & Damage assessments

ASAT - Open Questions. For Strategic Defence - 1 1/2 yrs ago, we took a group of people to find out what "we" ought to be doing.

Yes - there are some general stabilizing things
that can be done. [Paper from Speaker]

Retd. Lt. Gen. Brian Serowcoft by Nat. Sec. Advisor
Nixon & Ford

Chairman of ~~of~~ the Presidents (Regan)
Task Force on Strategic Forces

These days Technology tends to drive strategy.

- Machine-Gun turned Warfare into Def. Warfare
(WW-1)

- The Tank proved counter to the Machine-Gun
and fundamentally changed strategy
and tactics.

Aircraft - No longer is there a need to
defeat forces in the field
[Italian Genl] We can "jump-over" into
"Dewey" Civilians. etc.

WWII Terror Raids against Germany did not work

Notion of Assured Destruction - clear
case of a strategist having a clear impact
on strategy.

Policy & Technology are now interacting

Implicit tendency to look at the Arms Race
As ~~is~~ Technology driven. Therefore T. is bad.
Arms Race is the thermometer, not the disease

What is destabilizing the Arms Balance is
increasing accuracy & MIRVing. Tends
to make a first-strike attractive. *

SSBM — great advantage is mobility and
deception.

Triad — ICBM

Bomber

Submarine — Vulnerable (?)

Tech. is likely the stability factor
"Survivability" of Strategic forces enhanced.

SDI clearly a case where Policy is pushing

Tech., not like RDT where it was

Ass Tech. ^{Enhancement} ~~h~~ of ~~the~~ one Air Defence.

Fundamental issue is not will or will not
SDI work as designed.

but what SDI will or will not do for us and
our strategy

What relative cost. Should not be debilitating.

How does SDI enhance our Military Task.

keeping the Soviets from doing things they would otherwise do.

"Nuclear Weapons are cheap"

If SDI results in greater conventional forces in Europe, we have a serious problem

Strategic Implications of a political push on Technology.

Secretariat: Trust has follow, not lead relations between SU & US

We must seek agreements that serve mutual interests and therefore will be kept. We must put ^{telesc} effort into verification.

Q: Why move to deployment in SDI?

A: Because not likely to get money out of

Secretariat

Congress if there is something asked only for R & D! The problem is political. - Hence, in Room 6

Submarines

Ongoing Research in non-acoustic means
of ASW,

Arms Control as a solution to Tech.
imperative.

One thing this could
do is to reverse the
emphasis on MREVing.
No Military Advantage
in Striking First.

Rowcroft: World is a safer place today
than 20 yrs ago. - for a
variety of reasons -

Soviets do not believe in first strike
on the US.

Net advantage to US to remove mobility
from ICBMs.

PERRY [Ex - Under-Secy. for Def. for
R&D. Principal Adviser to
Secy of Def. on CS, Nuclear
etc]

How Nat. Sec. Policy should be influenced

by Tech. [Rather than other way]

Assured Deterrence } MAD
Extended Deterrence }

1. Substantial effort at bi-lateral efforts
at
2. Improve survivability of det. forces

by → : Mobility to CBMs,
by Replace: Bombers by Cruise Missiles

March 83 - ^{President} made dramatic shift - In
[MAD is immoral
brigade winning] this speech he advocated
SDI.

- Neutralised Nuclear Freeze Movement.

Policy leasry technology

These policies threaten extended
deterrence - it could be argued
that this exists only
in imagination

(2.) is dying or dead.

NATO Use N-Weap. to deter Conv. attack.

{ Basis was 96 divisions } regmt. projection
{ in Europe }

Three requirements for conventional det.

1) Require superior intelligence
or reconnaissance

ToF * AWACS
* JSTARS

2) US should be able to feed
Air-Superiority in Europe.

* Radars
* Air-to-Air Missiles
* Stealth.

3) Anti-Armour capability.

* All weather sensors
* Sophisticated processors

Emphasis on Semi-Conductors &
Computers

This leadership must be with the U.S.

* US advantage in this is derived from
Civilian

Must upgrade Christian industry - not in
Defence enclaves

"1. It is difficult.

Carnesale — Hawks, Doves & Owls — Book.

Technological dimensions of getting from here to
there, Five important points.

1. Vulnerability of Society — major
change
2. Vulnerability of Military Forces
3. "Collateral Damage"
4. Time - Scale — ~~Hours~~ Minutes.
5. Degree of control — In peacetime
excellent, in war-time, terrible

Credible "No First Use"

Other Nuclear Weapon States — New

Defence against Nuclear Forces,

Defence against what? What about def
our societies.

Substitution of Weapons

Non-nuclear Strategic Weapons

Very-High-accuracy Conv. ~~explosive~~ weapons

Non-weapon technologies -

Info-technology to be spread into
the the Sov. Union.

Agricultural changes

Energy

Greatest hope is some kind of ^{political} accommodation

Technology can impede or hasten
this accommodation

Most important objective of Arms Control is
reduction of risk of Nuel. War.

Lower reducing the risk of Nuel. War
will cost more in Conv. Weapons BUT

it avoids CATASTROPHES.

- No strategic problem to which 500 Midgetman
is a solution.

Technology should not be confused
with complexity

SECOND SESSION. 2:15 pm: 04 Dec '86

SD1 ~~Abrahamson~~ Abrahamson: Complex subject
Difficult subject.

Presentation & briefing.

- The Soviets have the only operational AADM system.
- The Soviets have massively re-done their Radar system. — operational in the next few years
- The essence of US idea is to have a credible 2nd strike

CIA estimates

- Velikovo
- Spending \$1 billion/year on lasers
- 10,000 Scitech in lasers/weapons
- Many more operating (~10) laser test sites
- Particle-beam weapons — deployable in the 90s
- Strong RF (EW)

In many areas Soviets same research.
In some areas they are ahead of US.
However we ^(US) are ahead

- Computers
- Micro-chips

Bottom-line they have been efforts long before March 1983.

[F-16 - three years from Development to Prod'n.
" Much of technology was on the shelf!] - Abrahamson was Programme Director

What is the value of partial defences
What & how do they contribute to stability?

Strategic Confidence - first USP

It could be effective - Very effective.
"Things should not threaten".

[Co-operative Transition to Mutually Assured Defence]

Biggest problem is Political.
- Explaining what SDI is, is very difficult.

Q: How does one ensure piece-wise, time-wise, stability is assured during de-localation.

Defence is not a physical fact - It is in the minds of people. When you add defences to offences, you multiply your options.

Next speaker - Mömbberger, NL (1981)

Chairman of a Study Group. Sponsored by American Physical Society on Directed Energy Weapons.

Study is, in this sense, restricted to 58T.

Reserve

- Classified briefings

- Unclassified info - incl. Soviet Literature.

Unclass. report to go into the Review of Modern Physics.

→ Kumar Patel

Co-Chairman

Vice-President of Research at Bell Labs

C/N Patel has copy of report with Classified parts marked

~~We did~~

~~What is the best US~~

Radar $\frac{2}{3}$ size of Wash Monument. IVSSR

Stated the SDI Numbers.

Schlesinger: Prof. Blöbergam — "lots of luck"

→ Strategic Merits of SDI

1) The Strategic Merits of SDI are currently unknown

It will depend upon evolution of political conditions

2) These depends on future research and future political conditions

3) ^{SDI} Has been brought-down to Ground level

- Camp David / Mrs T.

- Congress

SDI did not originate in 1983.

SDI-related work began since Eisenhower

~~Military planners will always plan for a possibility of failure of defence~~

- 1972 both sides recognised inadequacies of the technologies.

Since 1972, major changes

1972 was based on presumption

that Soviet expansion of their offensive system would be stopped if US stopped

2. ABM deployment.

Soviet efforts in the defence area. Much of what US is doing is "catching-up" with Soviet efforts, not the technology

3. History of NATO

- The protection of continental US can be accomplished by $\frac{1}{3}$ to $\frac{1}{2}$ current US Def. budget

- Nucl. War will come from mis-calculation

- Complex geo-strategic conditions. We are not bi-polar

Extended Def. since 1974.

First ^{to} use by the West, dissuading Soviet Union from conventional move against Europe.

Def. must be examined in its geo-political complexity.

European cohesion is ^{of} vital importance to US.

~~Mrs T. came~~ when

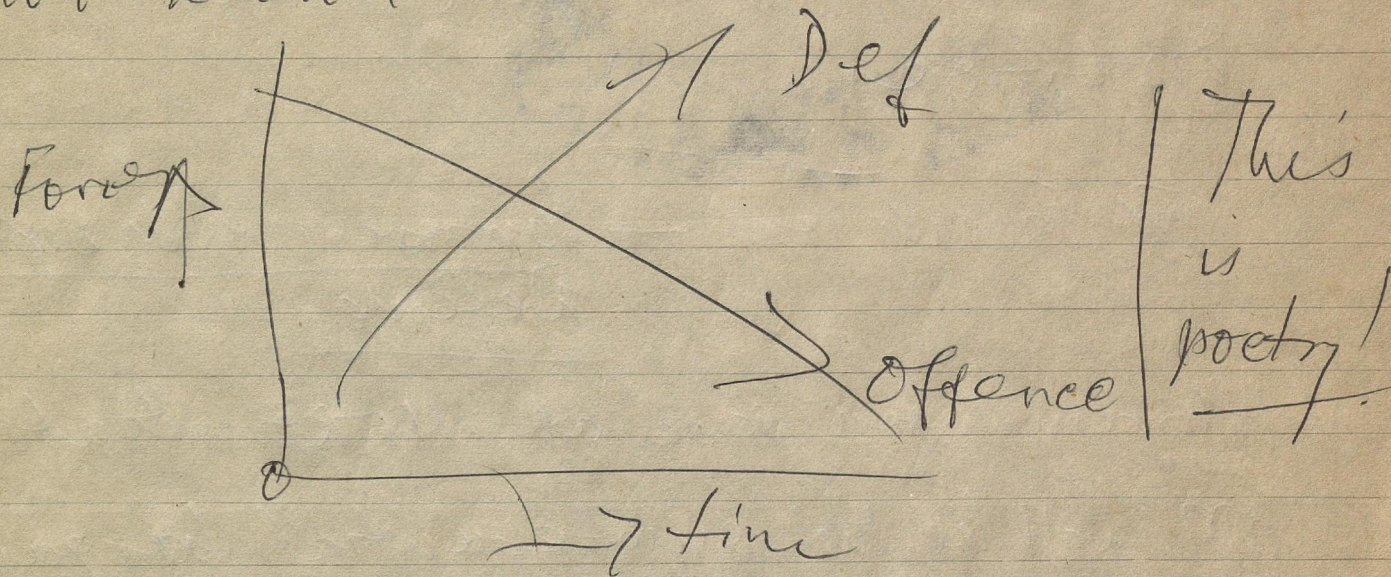
Mrs T. came to US to see

- a) Strategic Def was intended to strengthen deterrence and not to undermine it.
- b) Europe would support R&D, but no deployment until OK, with Russian
- c) Emphasised need to provide continuing deterrence

Now - Look at the whole situation
in multi-polar world.

Strategic Merits of SDT remain unknown.

Resolve the tech. uncertainties. Future
not known.



- Effectiveness, Survivability.

Imp. for bargaining power. For Arms

Control. Will deployment actually
increase stability. This can
be known only from results
(R&I)

Emotional & psychological stability is
a new serious problem. We must
"guard" against this.

Abrahamson

1985: SDI < 2% of US Dept. of Def
Budget

SDI leverage on
national R&D is quite small - no
distortions

Dr. Franklin Long - Controversy inside Dept of
Defence

Abrahamson said at MURB that
SDI will be the quintessential bargaining
chip.

Main msg. of Rejchawick is that substantial
progress is still possible. What is the situation
of the ABM treaty. US axis SDI.

Schlesinger: Yes SDI will survive Reagan Admin.

Popularity of SDI is when the President
says: "We are protecting people, not
weapons"

This is NOT true. Pizzak apart.

10 Dec 1986. 5:00pm

NAS - Soviet Academy
[Long - Arbator]

MARQUET (SD) Office

Key technical issues that need resolution

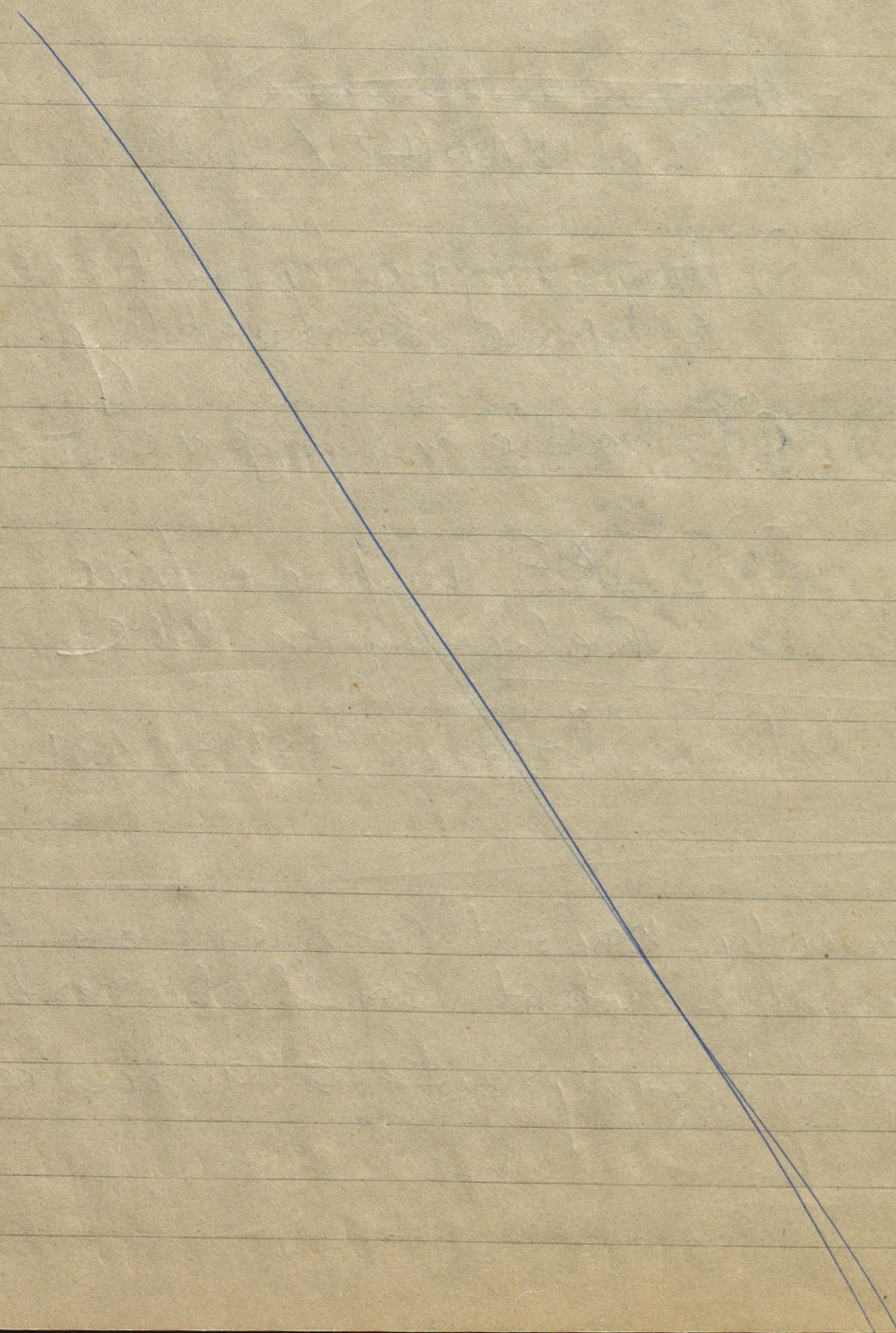
- ~~= How hard can you~~
- A) SURVIVABILITY (Design) [Toughest task]
 - B) How do you operationalise enhance survivability.
 - C) Battle management
 - D) T&E in peacetime to ensure Reliability in use

New Defence Program 1986 - ADI (Air Defence Initiative)

Apparently way-out comment ~~on~~ from floor
on non-violent conflict resolution
spontaneously gets an audience applause

Rejavit

Peoples expectations of Arms control
do-ability has been raised. Arms
Cuts are do-able. "Even better"
may not be attainable.



Friday 5 Dec 1986.

→ Dy Foreign Minister
of Sweden.

Five Continent Peace Initiative

[Schon]

Rep. Groot

1984 -

1985 - Delhi Declaration

1986 Feb - Verification offer.

Mexico Declaration - Observes four
six nations.

Sweden - No acceptable that fate of
world decided by five NWS states

Chernobyl has enormous impact
on Sweden. Raised matter with Soviets.

→ 200,000 Chernobyl is the Nuclear Arsenal.

→ Chief pre-pose of military establishment is
to avert war

"Nuclear war ^{cannot} ~~must~~ ~~not~~ be won &
therefore must not be fought"

No guarantee that a limited Nuclear War
will stay limited.

[Sweden] has no doubt that (S) will
engage counter-measures

We are witnessing a "march of ~~total~~ folly" of unprecedented.

~~Such~~ Countries such as Sweden will no longer be bystanders.

Sweden feels that it is of utmost import that Rejovite must not be impeded

Halt to Nuclear Testing

↓
Insist - Why?

We are yet to see in print an agreement to reduction of nucl. weapons

Comprehensive, adequately verifiable Test Ban.

~~Aug 19~~ Aug 1961 - Sov. Union broke treaty. Sweden protested.
In 1963 - Agreement seemed close enough. Held-up on "on-site" inspection

For the purpose of deterrence, a halt to testing would not make any difference if testing is allowed to continue,
↓
Sweden has invested in verifying Test Ban.

Seismic monitoring - Sweden is advanced

Concl. Comprehensive Test Ban can
be verified.

1974 Threshold Test Ban Treaty.

I.C. Ini Temporary Regime of 5000
stations. / Ardent efforts by
scientists round the world
Computer-aided network of
seismic stations round the
world.

One link
in a
intl. coop
means

→ International Satellite Monitoring
Agency - First proposed by France -
being discussed in UN.

Non-nuclear states have a stake
in a Test Ban.

Verification function of IAEA is an
example of how to go about
intl. monitoring.

CSC has been able to move because
it is multi-polar.

1972 ABM treaty, Basic concept of the treaty is sound, Palme Commission meeting in Budapest

Jan '85, New Delhi - Olaf Palme emphasized that military use of space must be banned.

Feb.

- Test Ban

- ~~No~~ No military use of space.

- Verification - Non-nuclear states national means to be used

Q: Is ~~the~~ the UN trustworthy?

How do you verify under-ground testing in Siberia

A: Verifiable verification.

↳ Independent nations with national means of verification.

Technical means now available

Q: What about battle-field N.W.?

A: Yes, this is a problem. But we can overcome this

Q: What do you, at most, will come out of FCPT.

A: At most optimistic - Contribution to set in motion a process by which the big-two will come together to do these things

Q: Effectiveness of IAEA?

A: Sweden gave up its nuclear option in 1968. IAEA is to be backed. It has played a role in Chernobyl. So if we can have co-op. in military nuclear field.

Q:

A: Why should "nuclear tech" be one area where no failure can occur? It is not so.

Q: West Europeans are psychologically unprepared for com. deterrence in Europe. (US ^{theatre} nuclear weapons)

A: All West Europeans (incl. Sweden) want No diminishing role of US in Europe

Q: The Soviets have rejected "On-site" inspection

A: Existing sites will have a "Tri-partite" inspection team.

Q: If neo-nuclear states can be brought-in it ~~has~~ can have a tremendous effect.
A: Can the FEPL contribute to incl. these countries

A: Short-answer is no,

Q: FEPL is a third-party initiative.

- What kinds of difficulties do you envisage

Other third party roles?
A: Yes - one side accepting ^(maybe because) other side not ~~maybe~~

A: We have some

West Germany has shown interest. Ch. Mexico
Ch. Korea.

Q: Maintaining deterrence in Europe.
Resisting & Course - So if you want
these, then you must test?

A: We are against over-kill.
Nuclear deterrence, in the long-run,
is a dangerous basis for co-operation
security. MAD, MA Security.
Concept of common security.

Richard Lintner:

DISCOM - 1 - Problems Verification

etc.

Session: Weapons Testing & Nucl. Weapons
Prolif.

Scribner
Nye
Richardson

SWEDEN
"Comprehensive Test Ban
can be verified"

Seismology
Expert

[Ph.D. Caltech. 1982-85 - ACDA
(British Accord) Visiting Scholar]

Issue: If testing of Nucl. weapons is
banned there would be some
restraint on weapons devel

True

So what?

Magnificent? Appalling?

Sacred? Profane?

NORSS - Norwegian Regional
Seismic System.

July, 11 Potatinsk explosion.

"Most people" don't believe the list of
arguments against comprehensive
test ban.

A Staged Threshold Test Ban Treaty

Current ~~limit~~ threshold 150 kT
Go down to 1 kiloton.

CARTER Admin
Nye: Chairman of NSC group on
Non-Proliferation & Arms Control.

→ CTB

- * Verification
- * Development
- * Minimisation/Reliability
- * Political benefits

Certainly verify
10 kT. 1 kT is
much more
problematic

Not a way
to end the Arms Race

but keep ABOT

If there is some new systems one stabilising.

Reliability

Test Primaries

One per year
One every two years

Not the whole bomb.

Nye's position

Counter-city is both immoral

A failed CTB may be worse than no CTB

Non-proliferation Treaty, positive vote to renew it in 1995

Article 6

CTB will help renewal of NPT in 1995?

What would be the effect of CTB on proliferation? These pairs?

India-Pak

Arg-Braz

Israel-South Africa

Willingness to sign a CTB just because super-powers sign is not automatic

Yes - there will be a small plus benefit,
but only if it does
not fail,

Q: Q4 CTB - is it symmetrical?
on US & USSR

Link between Article 6 ~~PARA 2~~ & CTB
No legal basis. ~~¶~~

Answer Nye: Some problem of asymmetry
"Wooden Bomb"

What happens in a "free society" vis a vis / 10/20 yrs
societies - Young people cannot be forced
to design & no test - design-in
reliability.

We have to ensure a consensus
in the technical community.

~ "False Alarms" question. Must be zero

15kt Threshold - Quota.

Nye believes that Neo-states starting a nuclear war (in anger) far more likely than the Super-Powers starting one.

NTB Break-out of this for SDI?

Focus on military ~~testing~~ significance

Delivery systems more important than warheads.

To what extent has the current moratorium been violated?

People don't believe that there has been a violation.

~~Likely~~ Pak next.

Present admin. very concerned
about preventing that -
strengthening NPT major
policy goal.