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*Check against delivery*

**Hans Blix:**

**The present nuclear order, how it came about, why it may not last.**

*Few things last. Many are followed by improvements*

The title of this presentation could be read as **suggesting a demise** of the legal and political framework that currently surrounds the civilian and military exploitations of nuclear energy. It is more likely, in my view, that we shall see **change** rather than demise and I like to think that change will increase the role of nuclear power and decrease the role of nuclear weapons.

I believe the **accelerating interdependence** of states will gradually **multiply** and **increase non-military leverages** that are available to states and make it more problematic to use the leverage that can be had from armed force. The relevance of the global **military order will be reduced**. Nuclear weapons are already claimed to be useless and irrelevant between the P 5.

I also believe there will be an **increased reliance on nuclear power** and a development of many new types of reactors — high temperature gas cooled reactors, breeders, **thorium** fuelled reactors, as well as multi-nationally operated reactors and other nuclear installations for the production of fuel and the disposal of waste.

To be sure, **none of this change is overnight**. The world is mostly slow to wake up to the need for innovation and change. It often takes disaster to rouse us. **Even before Hiroshima** and Nagasaki scientists foresaw the threat to humanity that **nuclear weapons** would pose but it is only now that a serious discussion – as distinguished from rhetoric – has begun about an **eventual elimination** of nuclear weapons. Even before **Chernobyl** the safety features of the RBMK type of reactor had been severely criticized but it took that disaster to bring about insistence on a **global nuclear safety culture** permeating technology, management and legal infrastructure.

**I am impatient** – and some of you would say **naïve** – about **phasing out** nuclear weapons and the global military order and equally impatient about

**phasing in safe energy** – including safe nuclear power. **However**, I recognize that we must start from where we are and we need to know something about how we got to where we are.

*How the present nuclear order came about*

Ever since the bomb containing enriched uranium and the bomb containing plutonium obliterated the two Japanese cities Hiroshima and Nagasaki the world has been looking – with varying degrees of seriousness and sincerity – to **prevent any further use** by seeking ways to physically **eliminate** such weapons and prevent their further spread.

Today such approach appears natural to us but we should be aware that it **differs** from the approach that the world followed in the past as regards particularly abhorrent weapons. In the case of the **dum-dum bullet** and **poison** the world prohibited– not production and possession – but only **use**.

**Why** is the world **not focusing** on a ban on **the use** of nuclear weapons? Of course, opponents of nuclear weapons would **welcome** a prohibition of use. They have often argued that various existing rules of international law **implied** such prohibition and the International Court of Justice has concluded that such rules result in a very limited scope for a legal use. **However**, nuclear weapon states have mostly been reluctant to discuss what legal or other limitations they see to a use of their nuclear weapons.

By contrast, there has been much discussion of a rule on **non first use** of nuclear weapons. Such a rule would be **similar** to what the 1925 **Geneva ban** on use of chemical weapons amounted to. A large number of parties to the Protocol of 1925 reserved to themselves the right to use chemical weapons **in retaliation** if they were attacked with chemical weapons. Their guarded acceptance of the protocol allowed them to continue producing and stocking chemical weapons and also to use these weapons in retaliation. However, the pressure for **a ban on first use** of nuclear weapons, valuable as it would be, has not – at least not yet – led to any international agreement.

Instead regarding nuclear weapons a **more ambitious and** – at the same time -- **more difficult** approach has been followed. The aim has been set on **prohibiting the very production and possession** of the weapons. No weapons, no use! Why? For one thing the **horror grade** of the nuclear weapons is such that only their non-existence seems sufficiently assuring.

The refusal of most nuclear weapon states to commit to a rule of non-first use probably also has the aim of **scaring** potential adversaries that the nuclear weapons **could** be used in a variety of circumstance – notably against a massive attack with conventional armed force. How strong the **taboo against use** would be in a real situation we do not know.

Focusing the rule on non-production and non-possession rather than on non-use only has important **implications for implementation**. If chemical weapons are used in violation of a ban there is likely to be an alarm coming from the field and an ad hoc inquiry may follow. An illicit production and possession of nuclear weapons in peace time **inside a closed society** could be clandestine.

Creating confidence that a ban on possession and production is respected and that there will be no unpleasant surprises **calls for verification or other arrangements** that are continuous and **more far-reaching than the eyes of satellites**. Such arrangements may be of different kinds –from joint international ownership and management of nuclear installations to **on site inspections** of various intensity and scope.

*Different approaches to control of the peaceful nature of nuclear activities*

What should be controlled and how?

- **EURATOM** offers one approach of multinational control and inspection for a number of European states.
- The nuclear power plant in **Krsko** is **jointly owned** and operated by Croatia and Slovenia offering mutual assurance against any activities with military aims.
- ABBAC is part of the extensive **Argentinian-Brazilian bilateral cooperation** in the nuclear sphere, providing joint inspection.
- During the Security Council mandated **regime in Iraq** following the war in 1991 inspection covered not only declared industrial installations but also university laboratories and records in government offices: any place, any person, any time.

*Fissionable material, enrichment and reprocessing in focus for control*

States are traditionally reluctant to allow intrusions in their exclusive control of activities within their territories. For that reason efforts have been made to

design control measures that seek to **combine effectiveness** with limited intrusiveness. From the early days this has led to a focus on **strategic items and phases** – verification and control of fissionable material and of the processes yielding such material: the **enrichment of uranium** and the reprocessing of spent nuclear fuel to **plutonium**.

*Early US efforts to seek controls of nuclear material*

Having itself learnt how to use nuclear energy both for weapons and for power generation **the US government** understood that keeping its nuclear technologies **secret** would not prevent other countries from developing the same technologies. It concluded that **joint international control** of the central nuclear technologies and processes could prevent a chaotic development and the risk of weapons production. **The ‘Baruch’ plan**, named after its American sponsor, envisaged an International Atomic Development Authority to **control and own** facilities built for such processes as well as for the mining of uranium.

The Baruch plan aimed at a total ban of nuclear weapons. However, it foresaw the **elimination** of the existing US stockpile only when the International Authority could ensure that no other country could construct the bomb. The **Soviet Union** blocked the plan in 1947 by insisting that the US should disarm before there would be any submission to the control of an international authority. Two years later the Soviet Union tested its first nuclear weapon. Proliferation was a fact.

At the end of the 1940s the states of the world were hardly ripe for the acceptance of joint (international) control and management of sensitive industrial installations.

The **next US project** was less ambitious. In December 1953 President Eisenhower presented his ‘**Atoms for Peace Program**’ to the General Assembly of the United Nations. There was no attempt to establish an internationally managed monopoly on sensitive nuclear activities. However, the US declared itself ready to **share** its peaceful nuclear technology with other states – and save them the effort and cost of indigenous development – on condition that the recipients **committed themselves** to an exclusively peaceful use of what was shared. An **International Atomic Energy Agency** was proposed and set up to help transfer and control technologies, equipment and material for peaceful uses of nuclear energy.

### *The role of the IAEA*

The **Statute of the IAEA** that was adopted in 1957 endowed the new organization both with the task of **promoting** the peaceful uses of nuclear energy and the authority to perform **safeguards** to **verify** that nuclear activities undertaken were, in fact, pursued only for peaceful purposes.

A number of provisions in the Statute kept open the possibility inherited from the earlier more daring thinking that the Agency could function as **an operator of nuclear facilities** and custodian or guardian of enriched uranium and plutonium. These provisions – notably Articles IX to XI – have remained **dormant**. They could be used in the future if Member states were to agree to more centralized control and management of particular nuclear activities, for instance the operation of an enrichment plant or of a fuel bank. So far the members of the IAEA have **remained reluctant** to embark on projects authorizing multinational or supranational **management** of nuclear activities. On the other hand, they have very substantially **developed** the regulatory, promotional, **safeguards and verification activities** of the IAEA.

For example, under agreements by which states transferred technology, equipment or nuclear material to other states the Agency was often entrusted with the role of performing safeguards to verify that there was no military use of what was transferred. As a result, even the nuclear weapon states **India, Pakistan and Israel** have accepted IAEA safeguards on various items that they have imported from states requiring assurance that their particular nuclear exports did not contribute to weapons development.

From 1963 the **United States** transferred to the Agency the task of inspections that it had until then performed **bilaterally** to verify that US exported nuclear equipment and technology were used only for peaceful purposes. **Safeguards** on individual items obviously gave no guarantee that the states would stay away from nuclear weapons. Nevertheless, they constituted a remarkable **break through** for international on site inspection.

The **quantum leap** for IAEA safeguards and on site inspection came with the adoption of the **Non Proliferation Treaty in 1969**. Under article III of

the Treaty each non-nuclear weapon state party committed itself to conclude an **agreement** under which the Agency would provide safeguards on **all** “source and special fissionable material” under its control, whether present or future. A standard model agreement was worked out (INFCIRC 153.) As more and more states adhered to the NPT the safeguards function of the IAEA grew. Even the five nuclear weapons states parties accepted safeguards on a voluntary good will basis to demonstrate that they, too, were ready to admit international inspection in some of their facilities.

The so-called **full scope safeguards agreements** obliging states to submit a great deal of data to the IAEA and to accept verification of these data and on site inspection constituted an important historical development in the international community. Yet, we must note, they were geared primarily to give confidence that the **industrialized states** that were embarking on nuclear power in the 1970s would not divert nuclear material for weapons purposes. In most cases this meant advanced open societies, where nuclear activities could not easily be hidden. The states submitted declarations and the IAEA verified the correctness of what was declared – inter alia through on site inspection.

Agency inspectors were **not** – and still are not – agents charged by the international community **to stop illegal possession, production or diversion of fissionable material**. Rather, they are **watch dogs** that can alert those who have real executive power – governments.

The power of **enforcement** in the international community does not lie with secretariats. In the last resort it currently resides in the **Security Council** of the UN.

Some other aspects of the NPT type of safeguard were problematic. Agency inspection was in principle **confined to declared nuclear material** in declared installations. The correctness and consistency of declarations could and should be verified by the Agency – but **not their completeness**. The Agency had no access to **satellite imagery** and inspectors could not roam the territory of states at random in search of possible clandestine installations. Member states provided **no intelligence** to the Agency about the possible existence of undeclared installations.

Through the Security Council mandated **inspections in Iraq in 1991** these deficiencies were glaringly demonstrated. With full freedom of movement

for inspection and access to satellite imagery the **Agency established in 1991** that Iraq had been pursuing a program of uranium enrichment in installations that had **not been declared** and that the Agency had not been aware of.

The **discovery prompted the Agency** to embark on a **program to update** and strengthen the safeguards system. It took some time. In 1997 the General Conference of the IAEA adopted a model **Additional Protocol** to the existing – insufficient – model safeguards agreement. The growing – but slow – acceptance of the Additional Protocol is now considerably **sharpening the ears and eyes of the watchdog**. The Agency is also buying satellite imagery on the market.

Could IAEA **safeguards be further improved**? Certainly! Iraq has been a productive experimental field that has given gave much experience in the use of environmental sampling, remote continuous transmission of measurements and other techniques. **Safeguards control and national intelligence** are not competing but complementary methods. International inspectors are on ground and can legally visit and explore facilities, examine documents and interrogate staff. Intelligence relies on reports by defectors, electronic eavesdropping, satellite imagery and spying. Governments obtain the findings of both.

IAEA **safeguards** inspection remain a most **visible measure** designed to “deter from diversion by the risk of detection”. They are also continuously becoming more effective. Even where they do not present clear evidence of breaches but offer only flickering yellow light they serve as useful alarm. Yet, it must be remembered that proving the negative is almost always impossible. There will practically always be some **residue of uncertainty** and it will be for governments in the last resort to decide in the light of all the information they have how to act in the face of such residue.

Despite their visibility safeguards are **not the only – barrier** to proliferation.

**Restrictions on the export** of material, equipment and know-how are important means of making it more difficult for would-be proliferators to advance in their ambition. The nuclear supplier group (NSG) has long been active and the usefulness of the approach is generally recognized even though the restrictions are sometimes criticized as denial of technology. In

**Resolution 1540** the Security Council endorsed – even required – export restrictions and signaled assistance for their introduction.

The **Proliferation Security Initiative** is a non-treaty based understanding among a large number of states foreseeing **interception of illicit transports** of nuclear items. It may be seen as an enforcement of export restrictions whether they are introduced nationally or by way of Security Council decisions. The scheme might have some deterrent effect but one should not forget that graphs and blue prints of nuclear installations need no transport by ship or air and the plutonium needed for a bomb has a volume that is no larger than a fist.

The **most important factor** to make states **stay away from** – and indeed to **do away with -- nuclear weapons** is probably creating and maintaining a **political climate of detente**– regionally and globally. This is the **political barrier**. I shall come back to it in a moment.

The **Non Proliferation Treaty** and a number of treaties establishing **nuclear weapon free zones** are central parts of the global ‘nuclear order’ and constitute **legal barriers** to the acquisition of nuclear weapons.

The **NPT** has been seen as aiming for a **nuclear weapon free world** through

- commitment by non-nuclear weapon states **to stay away** from these weapons and to accept IAEA **safeguards** to verify their respect for the commitment made;
- commitment by five nuclear weapon states (and other parties) to negotiate toward **nuclear disarmament**; and through
- commitment to facilitate the **transfer of peaceful nuclear technology** to the treaty parties.

The NPT must be credited with a **great deal of success**. With the exception of India, Pakistan and Israel that have not adhered and North Korea that has withdrawn from the treaty **all states in the world are parties**. The adherence of **Belarus, Kazakhstan and Ukraine** as non-nuclear weapon states after the break up of the Soviet Union was a welcome success as was **South Africa’s** adherence after the voluntary elimination of its nuclear weapons.

On the **negative side** we must note **violation of the treaty** by Iraq, Libya and North Korea and suspected violation **by Iran**. We must also note the **failure of nuclear weapon states** to achieve the nuclear disarmament to which they were committed in Art. VI of the Treaty. While non-nuclear weapon states parties showed some understanding for this failure during the Cold War it has led increasingly to their feeling cheated – especially after their accepting the extension of the treaty and their own non-proliferation pledges without any further time limit.

The 2005 NPT Review Conference ended in disagreement and acrimony. Voices have since been heard that the treaty might be **losing its authority** and even unravel. If so, a central part of the “**nuclear order**” **would collapse**.

Several points are made in support of this warning:

- the **failure** of the five nuclear weapon states parties to **live up to** their obligation to **disarm** is a breach of the ‘**dual bargain**’ that should have led to a nuclear weapon free world. It risks lowering the barrier against breaches by non-nuclear weapon states parties;
- the **violations** of non-proliferation **pledges** by a few states parties, similarly, erodes faith in the sanctity of the treaty;
- the **failure of Israel** to adhere is a threat and a permanent humiliation to many Arab states;
- the risk that **non-state actors** – not bound by the treaty – may seek nuclear weapons **reduces the relevance** of the treaty;
- the risk that many states – fully in line with Art. IV of the treaty – will develop **facilities for the enrichment** of uranium or for the production of **plutonium** creating options to develop nuclear weapons.

*How will the nuclear order change? The vision of the Bush team*

**The Bush administration** did not care much for the NPT or any **other** disarmament or arms control treaty. The former UN ambassador of the administration, Mr. Bolton, recently referred to such treaties as an ‘**alphabetical soup**’. The administration had the aim to uphold a ‘**pax americana**’ and faith in its ability to do so through the **ever stronger military – and nuclear -- power** of the United States and Israel and some marginal help from alliances of willing states.

The **ABM treaty** was abrogated and any discussion of bans on the weaponization of **space** was refused. The gigantic missile **shield** was to give the US **immunity** against missiles (with a possible exception of Russian and Chinese ones) and US **military personnel** sent to various theatres of conflict were to have **immunity** against any non-American jurisdiction.

**Iraq** was attacked on the allegation that it was renewing its program for nuclear and other weapons of mass destruction. Although this allegation proved groundless the display of armed force in Iraq was claimed to be the reason why **Libya** abandoned its enrichment program and a visible warning to **Iran and North Korea**. A **Syrian** installation claimed to be nuclear and built with North Korean assistance was **destroyed** in 2007 by **Israel** -- probably with US assistance.

An enormous US program was formed to **combat ‘terrorist movements’** and possible efforts by such movements to acquire nuclear weapons or material. Much thinking was devoted to ways of **preventing** more states from embarking upon **enrichment** of uranium and somehow limiting this activity to states that already had it.

*The search for a non-military and non-nuclear weapon order*

With the tragic invasion of Iraq, the failure of the Israeli attack against Hezbollah in Lebanon and against Hamas in Gaza and with US internal ambivalence about actually using armed force in Iran and North Korea the **military method of upholding order** may have run out of steam and been discredited. Hubris is out. Diplomacy and treaties are in. Can the nuclear order be changed by these means, If so – how?

In my view it should be possible to use non-military means to **achieve important improvements** in the various elements that together may be said to constitute the current ‘nuclear order.’

- **Safeguards verification** may be expected to become more effective and more reliable to provide timely warning of possible violations of the NPT – but they do not provide enforcement;
- **Export restrictions** on nuclear items may be introduced and implemented in more countries – but effectiveness is never 100 %;
- The impression that nuclear weapons getting into the hands of non-state actors is the **greatest threat** against the international community needs some correction. Although nuclear techniques –

also those relating to the making of weapons – are becoming increasingly known, they remain difficult and are **not easily within the reach of non-state actors.**

- **Violations of the NPT** are not reasons for scrapping the treaty but for measures – including collective UN mandated sanctions – to ensure implementation. In the case of **Libya** economic sanctions very likely played a big role in Khaddaffi's change of mind.
- The cases of **DPRK and Iran** raise difficult challenges but should be possible to settle in the now rather likely case of cooperation among the big powers and support of the international community.
- In the case of **Iran** one might ask oneself whether time has not come to dust off and discuss the scheme for **a zone free of WMD** and add to it a long term **suspension of any fuel cycle activities** in the region. **For Israel**, a monopoly on nuclear weapons in the region might have appeared an attractive life insurance, but perhaps doing away with its military nuclear capacity might be preferable to seeing such capacities growing up around it.
- Much has been made of the **risk that more states may –like Iran – build enrichment plants** and become able to produce nuclear material for weapons. **Global warming** may, indeed, trigger the construction of many more nuclear power plants leading to an increased future world demand for fuel cycle services and adding to the risk for diversion of fissionable material.
- A strong increase in the number of enrichment and reprocessing plants is unnecessary and undesirable. It should be avoidable in the future as it has been in the past – mainly as a result of a reliable supply of nuclear fuel at competitive market prices. Suspicious arise and international action is called for where such plants exist or are built without clear economic reasons. The problem is currently faced only in the cases of the Korean peninsula and the Middle East. **Ad hoc solutions** for these sensitive areas – difficult as they are – might prove less difficult than global schemes.
- A nuclear **fuel bank** attached to the IAEA may well provide a useful guarantee of supply of fuel and a general disincentive against building such plants where they are not economically justified. However, trying to have all the world's fuel cycle installations submitted to international management may prove as difficult today as it did in the 1950s.

Let me conclude on the point I think is the most important for **a safer future nuclear order**: the strongest incentives for states to **stay away from or do away with** nuclear weapons are an **absence from or removal of military threats – global and regional détente**.

The Cold War ended nearly 20 years ago and there are no disputes between P 5 states about **borders and territory**. The Communist crusade is a thing of the past and there will be **no wars of civilizations**. It is **paradoxical** that in this situation the military expenses in the world still amount to some **1.400 billion dollars**.

Fear of **terrorism** explains some of this but cannot justify the enormous sums for air craft carriers, nuclear submarines or preparations for war in space. Arms build ups used to be fuelled by **political controversy**. What we have witnessed in recent years is a drift to an international frost to a large extent engendered by **a military build up in the US** that now stands for 43 % of the world's military expenditures.

The foreign policies that are being unfolded by **the Obama administration** in the US raise hopes for a greater understanding for the security interests of other states, greater efforts to solve differences through political means and to achieve cooperation and disarmament. These policies have not yet changed the world but they have changed the atmosphere.

The Preparatory Committee for next year's **NPT** review conference was able to agree on rules of procedure and an agenda. For the first time in over ten years the **Geneva conference** on disarmament could adopt a work program and the subjects of a verified **cut-off** of the production of fissionable material for weapons and of a weaponization of **space** will be sent to working groups.

The US has not allowed itself to be provoked to saber rattling by **North Korea's** provocative second nuclear weapon test but works closely with other states in the six power talks to increase economic pressure. With respect of **Iran** we can see that the US is abandoning the totally unrealistic line that Iran should suspend its program for enrichment before formal talks can begin and the US is abandoning its haughty refusal to talk directly to the Iranian government.

Lastly, the Obama administration is signaling that it wants to take the lead in reducing the relevance of nuclear weapons and in moving the world toward their eventual **elimination**. Kofi Annan once said that just as an airplane needs two wings to fly the NPT needs both non-proliferation and nuclear disarmament to work. Let us help to tighten the screws on the non-proliferation wing and help Mr. Obama attach the second wing.