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The Nuclear Weapons Register - A Good Idea Whose Time Has Come

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Summary

Transparency in nuclear arms is an important measure for world security, strengthening the nuclear nonproliferation regime and preparing the ground for nuclear disarmament. In fact, significantly enhanced information about the nuclear weapon complexes and stockpiles in the nuclear weapon states - whether de jure or de facto - is an indispensable condition for far-reaching nuclear arms reductions and the final jump to a world without nuclear weapons.

There are several efforts underway that seek to enhance transparency in the nuclear sectors - civilian and military - of the nuclear weapon states. There is the bilateral START process between the US and Russia, and in its wake the trilateral initiative exploring the possibility of verifying material from dismantled warheads, in which the International Atomic Energy Agency is participating. There is the International Plutonium Regime recently agreed among eight Plutonium users. There is the new protocol to the NPT verification system; some of its measures are intended to be applied universally, including the nuclear weapon states. And there is the prospect, which is at present unfortunately rather distant, of a cut-off of the production of fissile material for explosive purposes, the verification of which will also cover part of the nuclear weapon complexes.

Nevertheless, there is no general agreed and comprehensive approach to transparency. This study proposes a register for nuclear weapons and fissile material not under international safeguards, in which the five de jure and the three de facto nuclear weapon states could participate. The register would be installed in three stages. In the first phase, fairly general and unspecified information would suffice. In the second stage, information would be broken down into details of weapons and material holdings. In the third stage, precise data as to location and parameters would be provided. During the first two stages, different obligations would apply to de jure (United States, Russia, United Kingdom, France, China) and de facto (Israel, India, Pakistan) nuclear weapon states, in order to keep the legal distinction embedded in the NPT valid.

Verification would probably not start until well into the second stage, again to facilitate acceptance by all relevant players. In its later stages, the register would probably be linked to verification measures connected with other arms control and arms reduction instruments (e.g. a cut-off or a START IV agreement). Verification might be the responsibility of bilateral, P-5 multilateral, and completely international bodies.

The register concept is compatible with three conceivable scenarios for future nuclear world order, and would help to bolster peace in each of them. In a great power concert, it would enhance mutual confidence and help prevent the reemergence of a nuclear arms race. In a trusteeship model where the nuclear weapon states would be mandated to take particular responsibility for world security, it would underline their accountability towards the community of states. In a model of international politics moving towards nuclear disarmament it would provide the basis on which the most decisive steps would rest: there might be more transparency without complete disarmament, but there will certainly not be disarmament without complete transparency.

Contents

Page

1.	Introduction	1
2.	Where Did the "Register Idea" Come From?	2
3.	Rationales for a Nuclear Arms Register	5
3.1	The Meaning of Transparency	5
3.2	Security of the Nuclear Weapon States	7
3.3	Reducing Discrimination	8
3.4	Accountability	9
3.5	Physical Security	10
3.6	Paving the Way for Nuclear Disarmament	10
4.	One-Shot Versus Step-by-Step Strategies Towards Nuclear Disarmament	12
5.	Reasons to Take a Fresh Look at the Register Idea	14
6.	Scope	17
6.1	The "De-Facto-Nuclear Weapon State Problem"	17
6.2	Staging the Register	18
6.2.1	<i>Stage I</i>	18
6.2.2	<i>Stage II</i>	19
6.2.3	<i>Stage III</i>	20
7.	Verification	21

8.	The Register in Relation to Other Nuclear Disarmament Measures	22
8.1	The START Process	22
8.2	Separation of Launchers and Warheads	23
8.3	Limiting Tactical Nuclear Weapons	23
8.4.	A Fissile Material Cut-Off and Other Measures to Control Fissile Materials	24
8.5	The Register as a Stepping Stone to a Zero Nuclear Weapon World	24
9.	The Forum for Negotiating a Nuclear Arms Register	24
9.1	Using the Conventional Arms Register Process	25
9.2	The Conference on Disarmament	25
9.3	Negotiations Among the P-5 or the P-5 plus 3	26
9.4	Using the Enhanced NPT Review Process	27
9.5	Applying Stop-Gap, Partial Measures	28
10.	Institutionalization	29
11.	Conclusion	30
	List of Abbreviations	33

1. Introduction

A nuclear weapons register has been proposed in different contexts and with different purposes in mind. In the view of the author, the register is a multiobjective transparency measure of great utility that would contribute considerably to international security, to more equitable relations among states with different nuclear statuses, and, would be a highly useful, and perhaps even indispensable, precondition of future progress in nuclear disarmament.

The time for a fresh approach to this idea may now have come. The United Kingdom is pursuing its Strategic Defence Review and is reported to be considering the register concept in that context. The nuclear weapon states are reflecting about ways to discuss with the non-nuclear weapon states disarmament issues, either in the CD or in the enhanced Review Process of the Nuclear Nonproliferation Treaty. Transparency measures may be a promising start to such a new dialogue.

This study¹ discusses the origins of the idea and the interests of the parties that have put it forward on various occasions. It then explains the five purposes a nuclear arms register would serve: reduced of discrimination; accountability; security; and disarmament. The third part discusses the possible scope of the register, and how its scope could be expanded in later stages. The tricky issue of how to include the de facto nuclear weapon states is also tackled. Next, the utility and modalities of verification of a register are scrutinized; in this connection, light is shed on the relation of the register to other disarmament measures such as a cut-off, nuclear arms reduction treaties between two or more of the nuclear weapon states, and an international plutonium regime. Before drawing some final conclusions, I investigate in which institutional context the nuclear arms register idea might best be pursued.

The author is not neutral as to the register idea. I am convinced that this concept holds considerable promise and is a useful addition to world security, even if it starts as a rather modest and limited system.

2. Where Did the „Register Idea“ Come From?

On December 16, 1993, German Foreign Minister Klaus Kinkel pronounced a major „nonproliferation initiative“.² This was a significant move since his predecessor, the

1 The considerations in this paper build on two previous studies: Harald Müller, Transparency in Nuclear Arms: Toward a Nuclear Weapons Register, in: Arms Control Today, Vol. 24, No. 8, October 1994, pp. 3-7; and Harald Müller/Katja Frank, A Nuclear Weapons Register: Concepts, Issues and Opportunities, in: Malcolm Chalmers, Mitsuro Donowaki, Owen Greene (eds.), Developing Arms Transparency. The Future of the UN Register, Bradford (University of Bradford Arms Register Studies No. 7), 1997, pp. 233-255.

2 Deutsche 10-Punkte-Erklärung zur Nichtverbreitungspolitik, Bonn (Auswärtiges Amt), 15. Dezember 1993, Point 8.

formidable Hans-Dietrich Genscher, whom Kinkel had succeeded not long before, had taken up this issue with his usual energy in the late eighties and had pursued it with great determination. Kinkel's action was therefore a serious attempt to prove his worth as Genscher's successor.

The initiative contained ten points, among them German support for the indefinite extension of the NPT and for a Comprehensive Test Ban Treaty. Point eight reads as follows:

“Establishment of a nuclear weapons register. In this way we will implement the demand for transparency in respect of stockpiles of nuclear weapons. This transparency is important with regard to international confidence-building in nuclear disarmament by the nuclear weapon states: only when stocks are known can the success of nuclear disarmament be measured. The idea of a nuclear weapons register is the logical continuation of our initiative to implement a register for conventional weapons in the UN context.” (Author's translation)

This proposal is a continuation of a long-standing and consistent German policy in the nuclear sector.³ While Germany has always supported nuclear arms control and voiced - at least rhetorically - its approval of complete nuclear disarmament, the country's activities and genuine initiatives have been most significant in two particular fields: tactical nuclear weapons in Europe and transparency and verification in the nuclear weapon states. Germany has been a vocal promoter during past NPT Review Conferences of the expansion of IAEA safeguards in the civilian nuclear sectors of Nuclear Weapon States (NWS); it has stubbornly requested a verification regime for the fissile material coming out of nuclear disarmament (the International plutonium Regime, another of Kinkel's 10 points) and has pursued the transparency issue energetically in the Vienna talks among nine countries which have recently resulted in guidelines for civilian plutonium users; it has fought, to the dismay of even some non-nuclear weapon states, for the „universality principle“ in the 93 plus 2 negotiations on improving IAEA safeguards for NPT parties, and succeeded in getting included in the preamble of the resulting protocol the stipulation that 93 plus 2 measures should be applied, as universally as possible - that is, in the nuclear weapon states as well. In its negotiations with Russia about the supply of MOX technology for the disposal of weapons plutonium, Germany has insisted that such material must come under IAEA safeguards. In this policy, the German government has been guided by two interests: the conviction that enhanced transparency in nuclear weapon states is an important contribution to international security and the desire of a large non-nuclear weapon state with a strong civilian nuclear industry to avoid suffering discrimination at the hands of the nuclear weapon states and to afford them as few privileges as possible. (For the same reasons, Germany also supported strongly the inclusion of an „erga omnes“ clause in the Nuclear Suppliers' Group guidelines, which force suppliers not to turn a blind eye to transfers to NWS but to scrutinize such transfers to ensure that they do not give rise to a proliferation risk.)

3 Harald Müller/Wolfgang Kötter, *Germany and the Bomb. Nuclear Policies in the Two German States and the United Germany's Nonproliferation Commitments*, Frankfurt (PRIF Reports No. 14), 1990; Alexander Kelle/Harald Müller, *Germany*, in: Harald Müller (ed.), *European Non-Proliferation Policy 1993-1995*, Brussels (European University Press), 1996, pp. 103-127.

Immediately after Kinkel's speech, German diplomats in the capitals of allied nuclear weapon states encountered some hostile responses. Part of the reason for this was a lack of consultation beforehand. No one likes surprises in an area that is seen as closely relating to the national interest. The opposition was also grounded in the deep-rooted NWS reluctance to enter into any multilateral undertakings that endanger their complete freedom of action, and their deep instinctive fear of compromising either their privileged position or their national security by granting anything resembling transparency. This transparency-shy attitude is no absolute, and it varies considerably among the nuclear powers - with the U.S. under the courageous leadership of former Secretary of Energy Hazel O'Leary making the greatest efforts to be accountable for the whereabouts of US fissile material both to the international community and to the American people themselves.

Anyway, highly unfriendly reactions were reported to Bonn from Washington, D.C., London and Paris. The French reaction was so strong that the then German ambassador in Paris threatened not to follow instructions in the future that would force him to take the issue up again. As a consequence, the German government decided to bury the issue for the time being.⁴ While the idea still enjoys support within the foreign ministry and other parts of the German government, the issue has since not been seen as being of sufficiently high priority to make it worthwhile risking the displeasure of Germany's three most important allies by making a renewed attempt.

At about the same time, Argentina proposed a discussion of the establishment of a nuclear arms register in the CD. As far as we understand the Argentinean approach, it would have been more appropriately depicted as a proposal for a nuclear disarmament register. The nuclear weapon states would register the nuclear weapons deactivated and dismantled as a consequence of nuclear disarmament agreements. Over time, the expectation went, such annual registrations would create enhanced transparency and thereby contribute to the international climate in favour of disarmament. It can also be assumed that Argentina wanted to see the CD becoming more involved in the nuclear disarmament process, thereby improving the climate among nuclear and non-nuclear weapon states during the debate about the extension of the NPT - a treaty that the country had acceded to only recently, and that Buenos Aires turned out to be a staunch supporter of. The Argentinean initiative, however, did not lead to any action on the issue.⁵

A third approach was made by Egypt during the deliberations of the group of experts tasked with reviewing the experiences of the UN Register of Conventional Arms Transfers and developing suggestions for improvements. This group considered, inter alia, changing the parameters of arms to be reported, adding new types of weapons, including small arms, and requesting additional data - beyond arms exports and imports - on holdings and domestic production. Egypt, for its part, proposed adding weapons of mass destruction to the register.

This would have changed the character of the register considerably. So far, it collects information about transfers of conventional weapons, not about production or holdings. In

4 See Befehl verweigert, in: Der Spiegel, No. 15, 1994, p. 16.

5 Argentina Working Paper, Conference on Disarmament, Ad hoc Committee on Transparency, in: Armaments (CD/TIA/WP.14), 3 August 1993.

the nuclear field, however, transfers of weapons are illegal for all parties to the nonproliferation treaty, including the five official nuclear weapon states.

The Egyptian motivation was and is most likely an attempt to exert additional pressure on Israel. Israel, generally credited with a nuclear weapons arsenal of at least 50-100 warheads, is the only country with this capability in the Middle East. While Egypt is at peace with Israel, it is not willing to accept this difference of capabilities and has taken several initiatives to force Israel to make concessions; Israel, however, while declaring in principle its intention to eventually become non-nuclear, has declared the consolidation of peace, including relations with the countries still hostile to its very existence, a precondition for nuclear disarmament. On this basis, both the global (NPT) and the regional (Nuclear Weapon Free Zone) strategies have met Israeli refusal. The negotiation track of the Arms Control and Regional Security Working Group has run into stalemate over the Arab reluctance to agree to confidence-building measures and conventional arms reductions as long as Israel objects to even discussing the framework of a nuclear-weapon free zone; Israel staunchly refuses to discuss any nuclear matters as long as the peace process has not reached a much more advanced stage. The nuclear weapons register, it thus appears, offers Egypt an additional approach.⁶

Within the CD's ad hoc group on Transparency in Arms (TIA), the non-aligned countries have persisted in linking their readiness to talk about enhanced conventional arms transparency with a fresh approach to creating transparency in weapons of mass destruction. This ball has bounced back and forth several times between the UN Conventional Weapons Transfer Register's Group of Experts, the UN General Assembly, and the CD's TIA group. Since there was no positive response from the nuclear weapon states, the TIA group could not register any progress in its work and, since 1994, has more or less ceased to function.⁷

Thus the idea of a nuclear arms register has come from different quarters, been fed by various motivations, and taken several distinct shapes. No progress has been made in terms of preparing a legal instrument that would establish accountability of the nuclear weapon states to the world community. However, in the meantime, some additional transparency has been achieved by other means. Four nuclear weapon states, and certain other countries possessing plutonium for civilian uses have adopted the practise of declaring annually their holdings. The United States has publicized a considerable amount of data on its past production and present holdings of plutonium and highly enriched uranium, for both civilian and military uses. The planning data given by the three Western nuclear weapon states about the future size of their nuclear arsenals make it possible to narrow down the range of estimates as to their weapon holdings. This progress should be noted, but it falls short of what we could expect from a nuclear arms register.

The range of interests that was behind the objections of the nuclear weapon states has not disappeared. The „haves“ are concerned that revealing information might compromise their

6 Malcolm Chalmers/Owen Greene, *The UN Register in its Fourth Year*, Bradford (University of Bradford Arms Register Studies, Working Paper 2), November 1996, pp. 31-32.

7 Sean Howard, *Post-NPT Extension Confidence-Building Measures: Proposals for a Nuclear Weapons Register*, in: John Poole/Richard Guthrie (Eds.), *Verification 1996: Arms Control, Peacekeeping and Environment*, Oxford (Westview Press), 1996, pp. 77-86.

national security. A part of the secrecy syndrome is obviously exaggerated and meant as symbol of the privileges that nuclear weapon are supposed to convey to their possessors. But other aspects deserve more serious consideration. Particularly the smaller nuclear weapon states may fear that revealing data about their nuclear weapon holdings may make them more vulnerable. It might even be that some of them wish to avoid embarrassment because their arsenals are smaller than the world presently believes, and they may fear that their deterrent might be devalued of its true size were to be exposed. However, there are now signs that the United Kingdom, under its new government, is about to change this attitude. Its Defence Review might recommend that data about weapons plutonium and uranium stockpiles be published and the Chapel Cross reactor complex, once used to produce such weapons material, be put under international safeguards.⁸

The desire to keep things secret might also be a consideration for the de-facto-nuclear weapon states. In addition, as will be elaborated further below, the world community, including even the neighbours of these states, might share an interest in not drawing too much attention to their nuclear weapon complexes. In any negotiation on a register, these interests must be recognized and taken adequately into consideration.

3. Rationales for a Nuclear Arms Register

In the discussion of the origins of the German initiative, some of the rationales for establishing such a register were touched upon. They will now be discussed in a more systematic way.

3.1 The Meaning of Transparency

A register is, above all, a measure of transparency. It thus conforms to a time-honored and frequently used type of arms control measure; there exist numerous examples of declaration, verification and generalized measures such as the Open Sky Treaty, all of which serve to enhance transparency in the military sectors of the participating states. Of course, the UN Register on Conventional Arms already exists as a model of a „register“ in the military field, though because of the vast difference in the nature of the weapons in question, a nuclear weapons register is likely to present different challenges and requirements. Before looking into the specific objectives involved in the attempt to establish a nuclear weapons register, it is useful to recall the meaning of transparency as a key principle of a cooperative international security policy.⁹

8 Severin Carrell , Trident Missile Fleet will be Slashed , Scotland on Sunday, 27 July 1997.

9 A useful discussion of the meaning of transparency is Ashton B. Carter et al., A New Concept of Cooperative Security, Washington, D.C. (Brookings Institution), 1992.

To achieve a maximum of transparency in the military posture of major powers is one of the most important preconditions of the peaceful coexistence of nation states in the international system. This postulate results from the central meaning of the security dilemma in a world environment where no ultimate authority exists for adjudicating conflicts between states. Modern history has driven governments to try to hedge against the possibility of an attack by resorting to self-help, that is, building armed forces that could withstand a hostile assault. As all states engage in this same practice, they create the very threat perception which motivates their neighbors to continue arming. Their security then deteriorates as a consequence of this multilateral arms race, with heightened risks of instability and, eventually, war. If, however, states decide to renounce a strong defense for themselves, they might find themselves in the dismal situation of Germany's neighbors in 1939. Each alternative, in other words, holds the prospect of opening a Pandora's box full of disasters.¹⁰ Pundits of „Realpolitik“ take this situation to be an unchangeable state of nature. In reality, however, states have been capable of transforming the security dilemma considerably. It has virtually disappeared, for example, in Scandinavia, Western Europe and North America. In these cases, states have successfully changed their practices of interaction and have built security institutions with a view to reducing mutual distrust and uncertainty. It is thus possible in principle to affect the security dilemma, if the political will exists.¹¹

Among major power contenders such as the nuclear weapon states, the security dilemma can only be solved if states communicate to each other successfully that they have no intention - and possibly not even the capability - to start a war of aggression. As surprise is the condition for successful attack in most cases, unless there are vast asymmetries in power, concealing one's own posture is easily taken as indication that sinister intentions could exist. In contrast, offering one's neighbors unlimited insight into the parameters of one's own military strength and defense policies demonstrates that one has renounced the prerequisite for a concealed build-up intended for aggressive purposes. The use of transparency to address this problem should therefore involve making three particular features more transparent: intentions, capabilities, and decision-making processes.¹²

This consideration is particularly significant in the nuclear sector. The fear of a crippling first-strike attack informed much of the strategic debate during the US-Soviet rivalry and was a factor which drove the strategic arms race and fuelled the mutual suspicions of the superpowers. Of particular concern was the intrinsic secrecy of the Soviet system, a secrecy that was at its strictest in the highly sensitive nuclear military sector. One remembers the famous request by the USSR's military participants in the SALT negotiations to their U.S. counterparts not to reveal data about the size and structure of Soviet strategic forces to Moscow's civilian negotiators. Also, a number of strategic thinkers maintained that „uncertainty“ about one's doctrine and posture added to deterrence; this philosophy had

10 Robert Jervis, *Cooperation Under the Security Dilemma*, in: *World Politics*, Vol. 30, No. 2, January 1978, pp. 167-214, here pp. 30-2; Charles L. Glaser, *The Security Dilemma Revisited*, in: *World Politics*, Vol. 50, No. 1, October 1997, pp. 171-201.

11 Alexander Wendt, *Anarchy is What States Make of It: The Social Construction of Power Politics*, in: *International Organization*, Vol. 46, Spring 1992, pp. 391-425.

12 William Walker, *Reflections on Nuclear Transparency and Irreversibility: The Re-regulation of Partially Disarmed States*, Background Paper for Session Five of the Conference on the Fissile Material Cutoff, Schlangenbad, June 1997, p. 4.

many adherents in France.¹³ Today, after the START agreements and bilateral US-Russian transparency measures have shed more light on these countries' nuclear complexes, the total opacity of the Chinese strategic posture and of Beijing's future plans could become a major cause of US and Russian „hedging“ policy and thus a serious obstacle to radical cuts in nuclear arms. As China is certain to become a more and more important player in Asia and on the world scene, this could well result in the resumption of the arms race if no countermeasures are taken. Transparency is very clearly an effective instrument in preventing the deterioration of what is at present a relatively benign constellation.

Transparency in nuclear arms and materials, therefore, not only provides others with clarity about one's own capabilities and so eliminates the basis for „worst case analysis“ by the strategic planners of the other side, it also permits a conclusion by others as to one's peaceful intentions: a state with a completely transparent military structure is utterly unlikely to have embarked on a policy of aggression and conquest.

3.2 Security of the Nuclear Weapon States

While some may think that a nuclear arms register might not be in the interests of the nuclear weapon states, the contrary is true. These countries face very few threats at present. One very distinct risk, however, is that they might become involved with each other in an inadvertent escalation. This risk was very much in the minds of leaders during the Cold War, although it has receded recently as a consequence of political change. There is no guarantee, however, that it might not reemerge again if and when the relationship between two or more of these states - de facto nuclear weapon states included - were to deteriorate. As long as the security dilemma, as discussed above, persists, this danger will continue to exist. To a considerable degree, it is fuelled by the uncertainties and opacities of the nuclear sectors. These force military planners and their political masters to maintain material and weapon reserves, plans and options for a wide variety of contingencies that could be reduced if more reliable information were available. In turn, the availability of such capabilities in the other countries enhances security concerns and helps to sustain unnecessary levels of distrust that only worsen the security dilemma. Opacity in nuclear holdings, therefore, remains an important basis of mutual suspicion that could, under changed circumstances, lead to a renewed emergence of crisis. The enhancement of transparency, in turn, would solidify the relatively smooth relations presently achieved and thus serve directly the security of all nuclear weapon states.

3.3 Reducing Discrimination

An obvious, albeit not the main objective of a register is to reduce the discrimination embedded in the distinction between nuclear and non-nuclear weapon states as defined by the NPT. Misgivings about this discrimination are shared by non-aligned and industrialized non-nuclear weapon states, though not necessarily with the same degree of intensity.

13 Lawrence Freedman, *The Evolution of Nuclear Strategy*, 2. ed., Basingstoke (Macmillan), 1989.

Industrialized non-nuclear weapon states with sizable nuclear industries such as Germany, Japan, Belgium, Switzerland and Spain have been most sensitive to this problem. Their insistence that recently negotiated improvements in the IAEA system of safeguards - the „93 plus 2“ program - be applied universally, a request pursued with particular fineness by Germany, was a clear indication how strongly they feel about this aspect of inequality.

This matter could be viewed as of marginal relevance. Do the misgivings of second-rate powers, or even less important countries, really count? It would be a serious mistake - not too uncommon in nuclear weapon states' capitals - to underestimate the erosive capacity of bad feelings caused by the discrimination problem. It is unlikely that countries would leave the NPT for this reason alone; but the coherence of the regime rests on the voluntary adherence of a large number of countries and on the degree of support they are willing to lend to the Treaty when it is under siege, for example during a controversy over compliance issues. The more the meaning of a Treaty is disputed, the harder it will be to rally full and unswerving support in order to defend it, with all means if necessary, if and when a breach of the rules has taken place. It is for the sake of enhancing coherence and consensus for compliance crises that the reduction of discrimination is both useful and important.

NNWS are totally transparent as to their holdings of military fissile material - namely zero - and civilian fissile material. The latter is scrupulously accounted for by these countries and their operators and registered and verified by the IAEA and these respective regional organizations. None of the nuclear weapon states is subject to such transparency with the exception of Britain and France, where civilian fissile material is under EURATOM (but not IAEA) safeguards. The voluntary safeguards agreements concluded by the NWS and the IAEA do not really yield much, as they have led only to sporadic inspections at single sites. While the U.S. and the U.K. have offered almost all their civilian nuclear factories for possible IAEA inspection, the Agency has selected only a few, mainly for cost reasons. Since the nuclear weapon states are among the most cost-conscious members of the Agency, their budgetary conservatism contributes to blocking even the transparency that could be achieved on the basis of existing legal instruments. No systematic register of fissile material can be constructed in this way. And, of course, the military sector remains completely opaque.¹⁴

Much of this is unnecessary and by no means justified by any security or nonproliferation gains. There is no good reason why the world should not know how much fissile material - civilian and non-civilian - is in the hands of the NWS, nor do there appear to be any threats that could arise from openness about the total number of nuclear warheads owned by the Five. The surprising gain in transparency represented by the voluntary accounts given by the U.S. Department of Energy under Hazel O'Leary's leadership is telling in this respect. In other words, the present level of opaqueness appears to be kept as an unjustified privilege rather than emerging, by necessity, from the distinction between nuclear and non-nuclear weapon states. It is a privilege rather like those formerly derived from noble birth, and since

14 The authoritative study on what we know about fissile material in nuclear weapons and threshold states is David Albright/Frans Berkhout/William Walker, *Plutonium and Highly Enriched Uranium, 1996 World Inventories, Capabilities and Policies*, Oxford (Oxford University Press), 1997, a true jewel of diligent scholarship.

it detracts from cohesion within the NPT community, should be abolished. A nuclear arms register would make a reasonable contribution to progress in this area.

3.4 Accountability

A nuclear arms register would establish an important principle: that of accountability of the nuclear weapon states to the international community. In a world where war as a means of achieving legitimate objectives of policy is prohibited, accounting for one's own defense efforts so as to prove that they are compatible with purely peaceful and defensive purposes should be a general principle of defense policy. In the OSCE area, this principle has been established in the far-reaching exchange of information about armed forces, budgets, procurement plans, military activities, and doctrine that takes place on a regular, annual basis. Given the global reach of nuclear weapons, their possessors should be made accountable in the same way.

The present situation is highly contradictory. On the one hand, the Five have requested - and obtained - a temporary recognition of their status by way of the NPT. Since these five countries are also the five permanent members of the UN Security Council, (However, it should not be forgotten that these states' UN status is due to the fact that they were the victorious powers of the Second World War, and not to their nuclear weapons; these did not exist at the time when the UN Charter was written.), they bear a particularly grave responsibility for world peace and security. And these states (or some of them) have themselves repeatedly stated that, in contrast to the purported „rogue states“, they handle these awful weapons with the appropriate responsibility.¹⁵ Yet when the world community puts forward requests for a higher degree of transparency as a proof of this responsibility, the nuclear weapon states tend to respond by saying „this is our national business“. This contradiction is a shortcoming of the international security order not least because what has become known about the treatment of ecological safety, human health, and the accountancy and physical security of the nuclear weapons complexes in several of the nuclear weapon states inspires very little confidence that the standard of „responsibility“ is as high as we might wish. It is thus time to accept the principle of accountability; what is more, this appears to be in the enlightened self-interest of the nuclear weapon states themselves. A nuclear arms register is an instrument which would enable the NWS to prove their accountability in a very important way. Other instruments are binding negative security assurances, more explicit positive security assurances, and regular explanation of nuclear doctrine and strategy; these instruments, however, are not dealt with in this paper.

3.5 Physical Security

As has already been mentioned, accountancy and physical security are not assured by any law of nature in the NWS. Both democracies and non-democracies have found over many

15 For this argument see Joseph S. Nye, Jr, Nuclear Proliferation: A Long Term Strategy, in: Foreign Affairs, Vol. 56, Spring 1978.

years that bureaucracies and organizations working outside the realm of public scrutiny - be they military or civilian, public sector or private - tend to lose quality, establish sloppy and at times dangerous practices, and perform suboptimally. There is thus no a priori reason to believe that granting complete secrecy to the nuclear weapon complexes will result in optimum physical security of nuclear weapons and related materials. The present state of affairs in the former Soviet Union, above all in Russia, illustrates this problem. A register is not only a transparency measure directed toward the outside world, though it is important in this capacity; it is also an instrument forcing the nuclear weapon states and their diverse, at times competing, bureaucracies to get their act together and to establish and/or maintain a working and regular system of accounting and control for warheads and materials. It might even be useful, in the context of a register, to establish a process of peer review among the five concerning accountancy in their nuclear complexes. This may even help central bodies to impose their authority on reticent bureaucracies at the functional, regional or local level.

3.6 Paving the Way for Nuclear Disarmament

A register is related to disarmament. Unfortunately, the connection between transparency and disarmament is none too well understood by the most ardent supporters of a nuclear weapon free world, as is demonstrated, *inter alia*, by the curious indifference of some non-aligned countries towards a cut-off. In their zeal to achieve complete nuclear disarmament in a single, or at most a few, steps, disarmers tend to overlook the fact that since nuclear weapons are so well established in the security policies of the nuclear weapon states and their allies, they will only be abolished if conditions can be created under which those countries feel secure even in the absence of such weapons. There is a concern that a present nuclear weapon state (*de jure* or *de facto*) could cheat on its undertakings and hide, or quickly reconstitute, a part of its arsenal, thereby creating a nuclear monopoly with grave consequences for the balance of world power and world security.¹⁶ This fear derives, to a very large degree, from the present lack of transparency that surrounds the nuclear weapon complexes. Only if opaqueness is overcome and full transparency established and demonstrated through a series of nuclear arms control/arms reduction/confidence building steps will a large enough majority in those countries support going to zero. Eventually, nuclear weapon states will have to establish a convincing inventory of both their warheads and their fissile materials, with historical records as complete as possible, as a prerequisite of nuclear disarmament. The South African case proves that this is both necessary and difficult to achieve.¹⁷ In this context, a register is a very useful step as it begins to establish baselines against which disarmament progress can be measured. A register provides signposts of transparency that can be expanded, through amendments of the register as well as through complementary measures, until all countries are sufficiently confident that they understand the (hopefully shrinking) size and composition of the other nuclear weapon

16 For an analysis of this scenario, see Alexander Kelle, *Security in a Nuclear Weapons Free World. How to Cope with the Weapons of Mass Destruction Threat*, Frankfurt (PRIF Reports No. 50), 1998.

17 William Walker, *Reflections on Nuclear Transparency and Irreversibility: The Re-Regulation of Partially Disarmed States*, Background Paper for Session Five of the Conference on the Fissile Material Cutoff, Schlagenbad, June 1997, pp. 13-14.

states' posture and the related fabrication and storage complexes. (A cut-off would add considerably to that transparency, and this in my view would be the most important contribution of a cut-off.)¹⁸ Also, a register might make cost estimates of nuclear disarmament easier and thus make it easier to prepare for the challenges the disarmament process will pose. Seen from this perspective, a nuclear arms register is certainly a necessary, though by no means a sufficient, condition of nuclear disarmament.

There are different views about the relative importance of these rationales. For the nuclear weapon states, security is by far the strongest argument for following the register idea, since other security aspects - secrecy - must be sacrificed in the process. For the non-aligned non-nuclear weapon states, nuclear disarmament is probably the most important consideration, while the industrialized ones may place greater emphasis on non-discrimination. Both would accept that accountability is an important principle. Nuclear and non-nuclear weapon states alike would probably accept the principle of transparency as important.

18 Harald Müller, *Doomed Prospects? On a Ban for the Production of Fissile Materials for Weapons Purposes*, Southampton (PPNN Issue Brief), 1998.

4. One-Shot Versus Step-by-Step Strategies Towards Nuclear Disarmament

Promoting the concept of a nuclear weapons register as a step towards nuclear disarmament means taking sides in a philosophical debate that rages between two different schools of „nuclear disarmers“. On the one side, some suggest that one should prohibit nuclear weapons just as the world community has prohibited biological weapons and is about to ban chemical arms.¹⁹ On the other side, there are those who are convinced that nuclear disarmament has a real chance only as an incremental step-by-step process. In this paper the second position is supported, for the following reasons. Nuclear weapons have become so integrated into the military structures, security policies, and, most important of all, processes of thinking about security in the world's most powerful states, and even in many of their non-nuclear allies, that it is politically and socially virtually impossible to remove the nuclear factor from this security policy overnight. The reasons why people want to keep nuclear weapons must be taken seriously and worked upon. Some of the functions ascribed to nuclear weapons must be substituted by other means, members of the pro-nuclear coalition must be won over by arguments and by changes in the security environment. This process will take time. There are several factors which contribute to the current impasse:

1. A genuine sense that nuclear weapons have prevented war in the past and are essential for providing national and/or international security in the future. This feeling is not confined to the narrow circles of security experts, strategists, military personnel, and policy makers; polls taken in nuclear weapon states (and threshold countries) usually show majorities for the maintenance of national arsenals, though there is sometimes a readiness to get rid of them if all nuclear states do the same. This important aspect is dealt with further below.
2. A belief that national status depends on the possession of nuclear weapons. In the light of the experiences of the nuclear age, this notion is very questionable. The arsenals of the nuclear weapon states have not given them more power in world politics. Bipolarity during the Cold War rested largely on conventional resources of power - geography, population, technological prowess, economic strength, organization, conventional armed forces and power projection and, of course, the ideological antagonism. Nuclear weapons neutralized each other; beyond this they had no effect. The Soviet Union was not able to survive a change in the respective correlations of technology, economic strength, and conventional armed forces, even though the superpowers' nuclear arsenals did not vary. And nuclear arms have not helped Britain or France to enhance their status, prestige, or real influence; their special positions have depended very much on their respective pasts as world powers and on their roles in an integrating Europe.

The same applies to the proliferators. Israel's position is mainly dependent on its impressive and repeatedly proven conventional superiority over its Arab neighbors. India's weight in world politics has diminished rather than grown since 1974, when it tested a nuclear device. Its recent resurgence has rested on domestic economic reforms and its regional power projection capacity, not on its nuclear capabilities. Pakistan has gained nothing at all by its

19 Jürgen Scheffran, Nuclear Weapons Convention Drafting Makes Progress, in: INESAP Information Bulletin 9, May 1996, pp. 37-38.

nuclear activities, and has been marginalized since the end of the Soviet presence in Afghanistan. The fate of the South African apartheid regime demonstrated most clearly the irrelevance of nuclear weapons to international influence and the protection of a state's core values.

Conversely, the two countries that have gained most in terms of international status and influence over the last few decades, Japan and Germany, are not able for having renounced weapons of mass destruction and concentrated on developing economic and environmental skills. Also, the international position of South Africa, Argentina and Brazil improved markedly after they adopted unequivocally non-nuclear policies.

Even though the erroneous belief that nuclear weapons may enhance a country's status is still held in both nuclear and non-nuclear states, it can be expected that the belief itself will decline. Adding non-nuclear weapon states as permanent members of the UN Security Council will accelerate this process, as will the economic success of major developing countries.

3. The vested interests of the nuclear weapon complexes, where thousands of jobs and careers depend on the production, or at least the maintenance, of those horrifying arms. In democratic systems, local constituencies and their representatives add to the intrabureaucratic lobbying power of these complexes. One should bear in mind that this vested interest is normal for every industrial, scientific and bureaucratic formation. We should not be surprised or offended to find it in this sector as well. The solution is to devise alternative perspectives for the people and organizations concerned; this fact has been recognized by the nuclear weapon complex in the former Soviet Union, where the international science and technology centres in Moscow and Kiev are devoted to providing decent occupations for highly qualified personnel. While the specific objective is here to prevent nuclear weapons experts from taking their skills to dangerous places, one should realize that in the case of nuclear disarmament, an incremental program of this kind is needed for all nuclear weapon and threshold countries if the social resistance to the project is ever to be overcome.

The point here is not to state that, for these reasons, complete nuclear disarmament is impossible. Rather, it should be emphasized that it faces serious and formidable obstacles that must be overcome. Given that nuclear arms are embedded in structures of established politico-strategic thinking and in social complexes with vested interests, it is clear that a purely legal approach to the problem is unlikely to succeed. The suggestion that national delegations should just sit down and negotiate a nuclear weapons convention that will do away with the arsenals is utterly naive in the light of the obvious resistance existing in precisely those political units that will be required to make the biggest changes. Sometimes one even gets the feeling that grandiose demands for immediate or short-term complete nuclear disarmament serve to conceal as genuine a dislike for the whole idea as the outright refusal of the most dedicated pro-nuclear arms pundits. At least the consequences are not too dissimilar.

What can one conclude from the discussion so far? Nuclear disarmament will not occur in a single step, and not in a short and predictable time-frame, but as a result of an extended learning process; the conditions of a non-nuclear world must be built one by one during this process, so that fewer and fewer people will see the possession, or existence, of nuclear

weapons as an existential necessity. Increasing transparency as the disarmament process advances will enhance the probability that an increasing number of officials within the nuclear weapon complex will be prepared to take the next step. It is this consideration that has informed the arguments below for staging the register rather than installing it in one single stroke.

5. Reasons to Take a Fresh Look at the Register Idea

As described above, the reaction to the original German proposal for a nuclear weapons register was emphatically negative and Germany has decided not to pursue the matter any further, though many German diplomats remain convinced that it was a useful concept. However, several developments since this episode justify taking a fresh look at it. The political climate in some of the nuclear weapon states has changed in a direction that may make them more receptive today to the register approach than they were in 1993.

The US has taken admirable steps towards greater transparency in recent years. Most remarkable was the publication of data about past production and actual holdings of plutonium and highly enriched uranium, broken down into civilian use, exports, scrap, stocks determined to be excessive for military requirements, and military stocks. This information goes a very long way towards what would be needed for the first stage of the register. In addition, much is known about deployed and reserve warhead numbers in the US, though not with complete precision. In sum, the US is by far the most transparent nuclear weapon state and has made conscious efforts in recent years to give its own public and the wider world some idea about its material stockpile.

The U.S. is also the driving force in relations with Russia to achieve some bilateral breakthrough, possibly aided by the IAEA, to greater transparency. The key process is a series of talks between Russia and the U.S. on Safeguards, Transparency and Irreversibility (STI) of the nuclear disarmament process, pursuant to a framework agreement between Vice President Gore and Prime Minister Chernomyrdin in spring 1994. The scope of this effort includes mutual inspections of either side's stocks of fissile material from dismantled warheads, the exchange of information on warhead and fissile material stockpiles, and cooperative measures to monitor warheads scheduled for future dismantlement. Meanwhile, a „Trilateral Initiative“ has included IAEA representatives to discuss the modalities for verifying declared excess material, possibly including material to be stored in the US-financed storage facility that is being built at the Mayak nuclear site which will contain fissile material - most likely in „pit“ form - from dismantled nuclear warheads.²⁰ In May 1995, both sides were close to a transparency agreement that would include an extremely

20 Department of Energy, Press Statement: Trilateral Initiative on Verifying Excess Weapon Origin Fissile Materials, November 8, 1996; Bruno Pellaud, International Verification of US and Russian Materials Released for Storage and Disposition. Paper presented at the International Policy Forum: Management and Disposition of Nuclear Weapon Materials, Landsdowne, Virginia, February 12, 1997, mimeo.

detailed information exchange on warheads and fissile materials, including the „history“ of production and semi-annual updates. The scheme under consideration would satisfy the requirements of at least the stage 1, if not the stage 2 scope of the proposed nuclear arms register as discussed below. The talks on these arrangements proceeded but then stagnated in fall 1995, because of unexplained Russian concerns.²¹ But the fact that both sides were willing even to consider the idea, and that the US was very eager to proceed - if only on a bilateral basis - indicates a considerable change in attitude.

In their agreement on a framework for START III negotiations, agreed during the 1997 presidential summit in Helsinki, the United States and Russia noted that warheads should be the unit of measurement for further nuclear arms reduction, that tactical nuclear weapons should be on the agenda, and that further transparency should be achieved. Conspicuously, the other three nuclear states were not called upon to participate in START III. The wording of the agreement leads to the conclusion that the presidents envisaged going beyond deployed warheads, and that future negotiations would look at the total ensemble of nuclear warheads in US and Russian possession, reserves included. This would extend bilateral transparency considerably beyond present limits. If START IV were then to involve the other three, the START process could incorporate a considerable part of what a register would be designed to achieve.

The defense review conducted by the new British government also promises to result in a readiness to grant much more openness and transparency than the old government was prepared to countenance. While the Major administration must be applauded for a quite impressive reduction in the size of the British nuclear arsenal, it was one of the most conservative forces in international nuclear disarmament. This appears to be about to change. Reportedly, the new government not only envisages even deeper cuts, but is now also prepared to publicize precise data about the holdings of weapons plutonium and uranium, and is even considering opening up the Chapel Cross reactor complex, formerly used for the production of fissile material for military purposes, to IAEA verification.²²

There has also been an evolution in the French approach to disarmament which has been going on for some time now, with the announcement of the „zero yield“ position during the Test Ban negotiations in Geneva as the high point so far. France was the first of the five nuclear weapon states to adopt this position. The new socialist government has not yet shown any initiative in this field. Transparency measures, as one possible way of showing goodwill in the nuclear disarmament field, are possibly the area where Jospin is least vulnerable to conservative criticism and can still show that he is willing to go beyond the limits set by his predecessor.

For the last three years a group of military and civilian plutonium users, including the five nuclear weapon states, has been negotiating in Vienna on a plutonium management regime. The talks have resulted in draft guidelines. They would oblige all participants to accept safeguards on civilian plutonium (Pu) and Pu from former military use declared or

21 James Goodby, Casting a Wider Net: Nuclear Arms Negotiations beyond START II, in: Deep Cuts Study Group (ed.), The Nuclear Turning Point. A Blueprint for Deep Cuts and Dealerting of Nuclear Weapons, Washington D.C. (Brookings), forthcoming.

22 Scotland on Sunday, 27 July 1997.

designated as no longer required for military purposes. They would also commit themselves to transparency measures, material accountancy, strict physical security and safety, and rules on international transfers. The guidelines would thus cover a part of the presently „unknown“ quantities in nuclear weapon states. Unfortunately, they contain a qualifying „as soon as practical“ clause that may postpone the application of these measures ad infinitum in some participating countries. It is also unclear whether China will really subscribe. But again, the procedure shows a trend towards greater transparency. The participants have been exploring the possibility of extending this or a similar regime to highly enriched uranium.

The same conclusion can be derived from the 93 plus 2 negotiations, which ended in the conclusion of a protocol to the present NPT verification system. Throughout the talks, a number of states led by Germany argued for the universal application of these measures. While a general commitment could not be imposed upon the nuclear weapon states, they are obliged to apply the measures to the fullest possible extent. It remains to be seen what this will mean in practice. The U.S., for one, has already declared that it will adopt all measures with the exception of those that would compromise national security and nonproliferation.

Finally, the readiness of the nuclear weapon states to enter into negotiations on a fissile material cut-off convention indicates an increased willingness to allow greater transparency.²³ A fissile material cut-off convention envisages a complete prohibition of any new production of plutonium and highly enriched uranium for explosive purposes. As a consequence, all such material circulating in civilian fuel cycles in the countries participating - and one would hope that the P-5 and the threshold countries would sign and ratify such a convention - would come under IAEA safeguards. While it is obvious that the nuclear weapon states, in contrast to some of the „have-nots“, aim at a minimalist verification system rather than the full-fledged adoption of INFCIRC/153 (the comprehensive NPT safeguards system for non-nuclear weapon states), verifying a cut-off would still bring much greater transparency to the nuclear weapons complexes. Also, the rules for uranium submarine fuel, some of which is highly enriched, will be disputed. Another bone of contention is the fate of existing stocks: a group of non-aligned non-nuclear weapon states, plus Pakistan, have requested the inclusion of existing stocks in a cut-off regime, while the nuclear weapon states, India and Israel are opposed. Some moderate transparency on existing stocks, such as proposed in the stage 1 register model, could be a way out of the present stalemate on this issue. This would, of course, enhance the transparency value of the cut-off.

It therefore appears that a major reconsideration of traditional opaqueness is under way, with the US in the lead and China the most reluctant party. Given the present stalemate in the CD, for which the western NWS and Russia bear some responsibility, they may feel compelled to show some goodwill in nuclear disarmament. The register concept might be exactly the instrument for this purpose. It might thus be the right moment to give it a new chance.

23 On the cut-off, see Annette Schaper, *A Treaty on the Cut-Off of Fissile Material for Nuclear Weapons - What to Cover? How to verify?*, Frankfurt (PRIF Reports No. 48), 1997.

6. Scope

The concept of a nuclear arms register sounds straightforward, but it is a very complex issue. The discussion so far has made it clear that a register should cover both actual warheads and weapons-usable fissile materials not presently under international safeguards; there is also the issue of launchers. Starting from this comprehensive approach, a register could be drawn up with increasing degrees of comprehensiveness in detail. It is possible to conceive of a register that starts at a fairly general level, but becomes more detailed through amendment over time, thus enhancing the degree of transparency as the disarmament train moves forward.

6.1. The „De-Facto-Nuclear Weapon State Problem“

The most awkward issue is the way in which the de-facto nuclear weapon states are to be included. This might prove, conceptually, the most difficult issue connected with the register. The country presently pushing hardest for the whole concept, Egypt, is clearly interested in exercising some sort of control over its nuclear armed neighbor. But not only is it unlikely that Israel, India and Pakistan can be forced into the open on the numbers of nuclear weapons they own; it may even be counterproductive to do so. For legally, they are still counted as non-nuclear weapon states. There may be some merit in preserving this status. First, as the South African and Ukrainian examples have proven, it might be easier to adopt non-nuclear status if this does not imply a shift in legal status under international law (neither was recognized as a nuclear weapon state). Also, domestic opposition might be less stubborn in cases where the nuclear weapon status had never become official. Secondly, making available data about the size of nuclear arsenals in these three countries might create public pressures for proliferation in the respective regions. This would run contrary to the process of nuclear disarmament and could finish this process for good.

On the other hand, it would be inconsistent to ignore these countries altogether; the arguments for transparency in the nuclear weapon states, at least those relating to security and disarmament, apply here as well. In addition, as the number of nuclear weapons is reduced, the nuclear weapon states will be reluctant to disarm further while continuing to provide data about their residual forces if other countries remain in a state of complete opaqueness. Not including the de-facto nuclear weapon states would prove, again, a stumbling block for nuclear disarmament. We should not forget that the nuclear weapon states - supported by many non-nuclear weapon states - stated during the run-up to the NPT Review and Extension Conference that there could be no disarmament without nonproliferation. This relationship applies in our context as well.

Is there a way out of this dilemma? First, one should not be reluctant to establish negotiation fora which can fully address the problems that the Three have in common with the five nuclear weapon states; such negotiations might be kept informal, in order to prevent any symbolic political damage to the NPT regime. During the CTBT negotiations, many deals were done among the P-5, even though, officially and legally, the Ad-hoc Committee and its working groups under the “friends of the chair” were the only fora for negotiation.

Second, one should be careful to ensure that any results which become part of international law do not accord a special status to the three. It will be very difficult to reconcile these two imperatives, but the attempt has to be made. Third, we propose to have the Three participating only in the part dealing with fissile materials, not in the warhead registry. The register should thus be called „Register of nuclear arms and fissile materials not covered by international safeguards“. This is neutral enough to avoid the pitfalls envisaged above, but, if accepted, would still yield highly useful information. The register might then have a joint preamble and statement of purpose (e.g., a contribution to nuclear disarmament etc.), but two separate Annexes A and B relating to nuclear weapons and fissile materials, respectively, with the Three only reporting to Annex B. Or one might prefer two completely separate registers in order to avoid any linkage and merge them at the appropriate time. As long as the desired degree of transparency is achieved, the precise way of organizing it is of secondary importance and will be decided by weighing the political pros and cons.

6.2. Staging the Register

The nuclear weapon register should be capable of supporting an incremental process of nuclear disarmament. Since it is meant to include as many of the eight de-jure and de-facto nuclear weapons holders as possible, it would be unwise to devise a maximum transparency register scheme from the beginning. Some of the eight are less accustomed to transparency than others, and a very far reaching request for information might deter them from joining. In accordance with the philosophy of incremental disarmament, therefore, it is proposed to set up the register in three distinct stages.²⁴

6.2.1 Stage I

One could imagine the register starting with the most general information in the two main categories: number of warheads and total amount of Pu and highly enriched uranium (including, where applicable, U 233) not under international safeguards. Thus for each participant, the register would at this stage consist of three numbers, one in the warhead and two in the fissile material category. While the second figure would include all such materials, whether in warheads, in fabrication, refabrication or dismantlement processes, in reserve or disposal storage, in scrap, in submarine fuel or even in the civilian fuel cycle but not safeguarded by the IAEA, there would be no breakdown as to these subcategories. No further information would be given at the outset. In fact, this information is less than that available about U.S. warheads and fissile materials stockpiles at present and it is even less than the U.S. envisioned when it proposed „stockpile transparency“ measures to Russia some years ago.²⁵ It should also be noted that the draft convention on the safety of spent fuel and radioactive waste, presently under negotiation in Vienna, is likely to cover all civilian spent fuel in all states parties, NWS and NNWS. It is also likely to include an

24 A Similar Proposal for Introducing Transparency in Steps, Rather Than in One Single Comprehensive Sweep, has been made by Norway; see *Disarmament Diplomacy*, No. 23, February 1998, p. 20.

25 Interview, U.S. Department of Energy, 1996.

explicit preambular option to submit, on a voluntary basis, spent fuel from military production to the rules of the convention, and the convention will contain an inventory of the material covered based on parties' annual reports. This means that another part of the „register material“ might be submitted to transparency by another instrument.²⁶

However, it might be useful even at this stage for the reporting states to assess the likely range of uncertainty for the figures they are providing. One would hope that for the first item, warheads, this figure would be zero. For the fissile material reporting, this is unlikely to be the case as all production facilities are bound to show some material unaccounted for due to measurement uncertainty, production losses, and material retained in the plant (e.g., in curved pipes). De-facto nuclear weapon states would just fill in the „fissile material“ form and leave the warhead account vacant. Since the fissile material total would include material in warheads or other military use, it would reasonably enhance transparency without the political risks that admitting the actual possession of nuclear weapons might entail.

6.2.2 *Stage II*

At the second stage, warheads might be broken down by type. Type would include the military name of the warhead and the launcher for which this warhead was destined. At this stage it would be useful to distinguish between deployed and reserve warheads. It would also be useful to account for the platforms and launchers not contained in the UN Arms Register (if not only transfers, but also holdings were ever included in the register, nuclear bomber aircraft, nuclear-capable artillery, rockets and their launchers and nuclear weapons carrying ships, surface and submerged, would show up in the annual declarations). However, as long as the UN register does not necessarily contain information on weapon types, this might be seen as too unspecific. In this case, it would be useful to enumerate types and numbers of platforms/launchers as well. Again, a distinction between deployed and non-deployed weapon systems would be advisable.

For fissile material, the following breakdown of the total might be possible: material in civilian uses; material in military non-weapons uses, such as navy fuel; material in reserve; material destined for disposal (that is scrap, material from dismantled weapons, other excess material) and material in „other uses“ which would most likely cover fissile material in warheads, in fabrication and refabrication. The label would once again avoid the awkward question of de-facto-nuclear weapon states' real status, but would nevertheless enhance transparency considerably. It would however, still prevent the precise assignment of a given quantity of material to a given number of warheads, which could enable people to calculate the precise composition of HEU and Pu per type of warhead, information that is generally regarded as a military secret. It might be debatable whether such information would have any military significance, as countries would hardly be in a position to refabricate an identical warhead on the basis of such information, particularly in the absence of nuclear tests; however, as long as not all these countries are parties to the CTBT, it might be argued that this information could give away militarily significant data. On top of this, some might object that releasing this information would not be compatible with Art. I of the NPT.

26 Ann MacLachlan/Gamini Seneviratne, Draft of Radwaste Management Treaty Ready for IAEA Board, in: Nucleonics Week, Vol. 22, No. 9, May 5, 1997, pp. 10-12.

A further refinement would be to differentiate both plutonium and highly enriched uranium according to their specific isotopic composition (one proposal was to divide Pu into above and below 10% Pu²⁴⁰ content, and uranium into higher than 85%, 65-85% 40-65%, 20-40% and below 20% U²³⁵, and below and above 80% U²³³ content, respectively).²⁷

Threshold countries could still participate in the registration of their fissile material. The framing of the categories would be designed to permit this. A possible objection might be that in revealing the total amount of „material in other uses“ rather than hiding it in the larger total, threshold states might endanger their security because it might show how little they (or one or two of them) have really got, and this might create vulnerabilities since the deterrent value of their opacity would be drastically reduced. One would have to wait and see which positions these countries take once that moment approaches.

It might be useful, at this stage, to include some information about the methodology used to calculate the amounts of material, to assess the prospects of arriving at greater accuracy, and to spell out steps taken in this direction. In addition, as reporting would be periodical - that is, annual - it would be necessary to explain changes in the numbers of platforms and launchers by specifying whether they had been exported or scrapped.

6.2.3 *Stage III*

Stage three contains some very daring suggestions that may never get off the ground; nuclear weapon states may consider the information involved, or part of it, too sensitive to be revealed short of total disarmament. Yet it is not inconceivable, the international context permitting, that classification rules will be much more relaxed and readiness to admit much larger transparency will be considerably enhanced, due to the experience of stages I and II and to the repercussions of other disarmament steps taken in parallel.

Stage three information would contain all details from stage II, plus rough parameters for the warheads (yield, size) that would make it possible to distinguish them visually. It might even be possible to announce the precise amount of fissile material per warhead, though this information might be given in a separate part of the register available only to the five nuclear weapon states. In addition, the location where the warheads are stored and deployed would be revealed.

Location would also be identified for all fissile material. This would require the dissolution of the „other uses“ category for material in fabrication, refabrication and actual warheads. The last veil of opacity protecting the de-facto nuclear weapon states' status would thus disappear. It goes without saying that this is only advisable and possible when a stage has been reached at which nuclear disarmament is far advanced, and only if the three de-facto nuclear weapon states are fully integrated into the process. In other words, stage three is conceivable only as the jumping-off point for the very last phase before a zero-nuclear weapon world will be achieved. Only at this point will the revelation about the de-facto nuclear weapon states come at very low political cost, as the end of their status will be in sight. Only then, too, will the nuclear weapon states consider giving away information that

27 Comprehensive Disclosure of Fissionable Material. A Suggested Initiative, Discussion Paper, Carnegie Commission on Preventing Deadly Conflict, New York (Carnegie Corp), June 1995, p. 7.

would, under other circumstances, certainly be seen as strictly classified for national security reasons.

7. Verification

Whether this register needs verification, and from what stage on, is certainly a matter for discussion. If we conceive of it as a voluntary transparency measure meant to facilitate confidence building among the eight countries that have, or are supposed to have, nuclear weapons, in other words drawn up on the model of the UN Weapons Register, then verification is not warranted - at least not at the beginning. Politically, there is much to be said for not insisting on a verification system initially. The matter concerns an area of the highest sensitivity for all countries concerned. A verification system meant to make sure that all warheads have been effectively declared and all weapons-usable fissile materials honestly accounted for would almost certainly meet considerable resistance in all these countries. The character of the register would change, because the most difficult and secretive type of information would be required from the beginning: the precise location of all items to be verified. It is inconceivable that Russia, the smaller nuclear weapon states - China in particular - or the three de-facto nuclear weapon states would be willing to join a register under these circumstances. To insist on a verification system would thus prevent the register from ever coming into being.

In addition, negotiating a verification system would lead to enormous delays in an otherwise quite straightforward process of establishing the register. Stage 1 follows a very simple concept that presents few obstacles to agreeing quickly, and implementing expeditiously, the scheme of declarations implied by it. Success or failure hinges completely on the political will (or lack thereof) of the parties involved. It has little or nothing to do with the intrinsic complexity of the subject. This picture would change completely if verification requirements were added. Even if the highly improbable political will to seriously consider verification were assured, these requirements would lead to long-drawn-out bargaining with uncertain to unlikely chances of success and an even more uncertain start of the implementation.

There are therefore very good reasons not to insist on register verification at the beginning of the process. If - as is hoped - confidence is built through the process itself, and supplemented through other nuclear arms control and disarmament measures (see below), then a register even without verification is quite worthwhile considering. After all, it will be difficult enough to muster the political will required even for this, very modest, purpose. We should avoid all steps that would it more difficult for sympathetic decision makers in the eight countries to persuade their peers to go along with the register idea.

At stage III, however, we can expect verification to have become intensive, largely because of developments in other arms control and disarmament fields and because that stage, as analyzed above, is hardly conceivable short of the firm determination of all participants to lay down their nuclear arms. For this reason it can be expected that, if that stage is reachable and realizable at all, it will be as well verified as a precondition to go from there

to zero. Parties would certainly agree on far-reaching verification measures as a precondition for abolishing the last remaining nuclear weapons.

8. The Register in Relation to Other Nuclear Disarmament Measures

Postponing the introduction of verification measures may be less problematic in view of the precedent of the UN Conventional Arms Register, which was introduced without verification of the data submitted by the participating countries and is still functioning without such a system five years later. Another consideration which might help to persuade the world community to establish a verification-free nuclear weapons and related materials register without too many misgivings is the prospect that, as arms control and disarmament measures multiply, much of what is included in the register may in any case be incrementally subjected to verification..

8.1 The START Process

Let us assume that the START process continues. The most recent proposal submitted by the United States foresees, for the first time, a binding commitment to dismantle the nuclear warheads deployed on those launchers that are to be destroyed under START II. It is this focus on first dismantling the warheads that permits the postponement of the initial target date for launcher destruction (covering, in the first instance, all heavy, MIRVed intercontinental ballistic missiles) without any increase in insecurity. Dismantling those warheads removes the option of breaking out of the START II limits by reloading them onto other missiles. In order to implement this commitment in an orderly manner, one would assume that the parties to START II will agree upon verification measures to ensure that the warheads to be dismantled are indeed warheads from and for the heavy missiles. This paves the way for the verification measures we would recommend for a register.

In the understanding reached at the 1997 Helsinki summit between presidents Yeltsin and Clinton, a framework outline was drafted for START III negotiations. The content of this understanding made it obvious that START III might be a very crucial step for enhanced transparency, at least between the two nuclear superpowers. Warheads are the basic unit for further reductions, with all warheads, not only deployed ones, under review. Warhead dismantlement will be included in the agreement to be negotiated.

If reductions cross the crucial 1000-warheads boundary, the „breakout problem“ of reloading missiles that could carry more warheads than they actually do becomes more and more strategically significant; likewise, the possibility of flying strategic bombers back from their first strike missions, reloading them, and using them anew in a follow-on strike will concern strategic planners. While this sounds like a scenario from Dr. Strangelove, we must realize that this is and will remain a care problem of nuclear strategy until complete nuclear disarmament is achieved. Strategists are used to thinking in these terms, and this thinking style must be taken into account whether one likes it or not. In order to limit the

uncertainties and insecurities emerging from these possibilities, nuclear weapon states participating in global nuclear disarmament agreements will seek to limit not only deployed warheads but also reserve warhead holdings. By the same token, the fissile material in reserve that could be used to produce warheads for reserve and active forces would be included. Again, verification measures would become necessary that would cover most of what a register - even a stage II or III register - would require.

8.2 Separation of Launchers and Warheads

Among the proposals made in recent studies on nuclear disarmament that have attracted considerable public attention, none is closer related to strategic stability than the one recommending a separation of launchers and warheads in order to eliminate all fears of an impending nuclear attack.²⁸ While it might be possible to verify a related commitment just *ex negativo*, that is by focusing on the launchers and to ensuring that no warheads are mounted on them, verification might well go further. Particularly if certain distances were prescribed for the separation system, the location of warheads would have to be known, and some regular activity would be needed to ascertain that the warheads were actually in these storage places and not closer to the launching sites than permitted. This, in turn, would create information that is only foreseen for the daring third stage of the nuclear arms register, as described above.

8.3 Limiting Tactical Nuclear Weapons

Additional impulses could emerge from ancillary arms limitation and disarmament measures. For example, it has been repeatedly proposed to limit the holdings of tactical nuclear warheads, and Presidents Clinton and Yeltsin envisaged such measures during their Helsinki summit in 1997. This is a wise suggestion, as those weapons lend themselves to easier use and often contain less advanced electronic locks to prevent unauthorized use and less sophisticated safety technology to prevent accidental explosions. In addition, the range of estimates for tactical nuclear weapon holdings in Russia and China vary enormously. Again, any limitation agreement would imply measures to make sure that actual holdings are not larger than permitted, and that dismantling would ensue as foreseen - a task very closely related to the reporting required under a register in all three phases.

8.4 A Fissile Material Cut-Off and Other Measures to Control Fissile Materials

With regard to fissile materials, it should be noted that a cut-off treaty would definitely bring some material presently out of safeguards under the purview of the International

28 See the related proposal in: Canberra Commission on the Elimination of Nuclear Weapons. Report of the Canberra Commission on the Elimination of Nuclear Weapons, August 1996.

Atomic Energy Agency. This relates to all fissile material used for peaceful purposes and declared excess by the nuclear weapon states. The same applies to the guidelines for the handling of plutonium that have been negotiated between the users of plutonium, including the five nuclear weapon states, over the last few years in Vienna.

8.5 The Register as a Stepping Stone to a Zero Nuclear Weapons World

In the last stage of nuclear disarmament, the register as conceived in stage III and the disarmament process are likely to converge. The risk of cheating and breakout would loom large at this stage, and participants as well as the world community would wish this risk to be excluded with as much certainty as possible. This would require reliable inventories of both nuclear warheads and fissile material and an intrusive and dense verification system to make sure that these inventories were complete and correct. The difficulties of achieving this should not be underestimated, particularly in the light of the present range of estimates for the holdings of the nuclear weapon states.

9. The Forum for Negotiating a Nuclear Arms Register

Where could or should a register be negotiated? Several possibilities offer themselves: the expert group tasked with improving the UN Conventional Arms Register could suggest amendments to the initial resolution to include nuclear weapons and fissile materials; the UNGA could agree on a new resolution, creating a separate register; the CD could install a nuclear disarmament ad-hoc committee with the explicit mandate to discuss such a register; the enhanced NPT review process could be used for this purpose; it could be left to the P-5 plus the three de-facto-nuclear weapon states; or the P-5 could start the negotiation and invite others to join as appropriate.

9.1 Using the Conventional Arms Trade Register Process

The suggestion has been made to amend the Conventional Arms Trade Register in such a way as to make it applicable to weapons of mass destruction as well. There would be advantages to using an already available instrument with an established administration procedure. In the long run, such a register would develop into a world inventory of arms. In addition, concessions by the nuclear weapon states might induce other countries to be more forthcoming with respect to the inclusion of data they regard as intimately related to their own national security (e.g., weapons production and holdings).

However, the UN Conventional Arms Register may not be the best place to start. First, the qualitative distinction between conventional arms and weapons of mass destruction, particularly nuclear weapons, should not be blurred. This speaks for a separate rather than

an integrated solution. Secondly, it might be preferable to keep register undertakings equal for all participants. Since only a few countries are supposed to report under the nuclear weapons register, such equality could not be maintained. Thirdly and more importantly, the Conventional Arms Trade Register is concerned with exports and imports and may remain so for an extended period. In contrast, the export of nuclear weapons is categorically prohibited under the NPT, to which all nuclear weapon states belong. The export of fissile materials that could be used for weapons purposes to non-nuclear weapon states (as defined by the NPT, that is, including the three de-facto nuclear weapon states) is already registered through the IAEA, as this falls under the safeguards obligation of Art. III of the NPT and the related Safeguards Agreement INFCIRC/153. Fourth, while the UN Conventional Arms Register is based on voluntary participation, it is likely that participants would wish to have some guarantee for the participation of at least the other nuclear weapon states, if not the de-facto nuclear weapon states as well, in the form of a legally binding undertaking. Finally, it is not clear whether the group of experts - experts mainly on conventional weapons - is an ideal body to prepare the details of a nuclear arms register.

For much the same reasons, while the UNGA should certainly endorse a register agreement if and when it comes along in form of a draft resolution, it appears not to be the ideal body to negotiate the details; nor is its first committee in a good position to do so. Either body should consider and discuss whatever concept emerges from other negotiation fora, but if these do not come up with a useful and well-worked out proposal, the UNGA would not be capable of stepping into the breach..

9.2 The Conference on Disarmament

Using the CD for the purpose looks a better option. CD parties are quarrelling about the installation of an ad-hoc committee on nuclear disarmament. While the non-aligned countries, supported by some northern non-nuclear weapon states, wish to see tangible steps towards nuclear disarmament, nuclear weapon states are concerned about a „slippery slope“ do not want to see a multilateral body that might be insensitive to their security interests intervening in an issue they regard as vital to these interest.

The solution might be to install a nuclear disarmament committee with a specific mandate not to negotiate nuclear disarmament per se, but to develop the proposal for a nuclear arms register. The rationale is the intimate relationship and instrumentality of such a register to the disarmament process, as elaborated at length above. The CD certainly contains the expertise in matters nuclear to discuss the matter in a meaningful way. Such an approach would also prevent the CD, the only multilateral disarmament body, being innobilized if there is continued stalemate on both the fissile material cut-off and the ban on anti-personnel landmines.

If it proves unworkable to include the item under the heading of nuclear disarmament because of objections from any quarter it could be usefully dealt with under the heading of „transparency in armaments“, which is also on the CD agenda. This item has been largely idle for most of the lifetime of the CD, partly because of the reluctance of the non-aligned countries to grant more insight into matters they view as pertaining closely to their own

security unless there is movement on the nuclear disarmament side. Taking up the nuclear arms register in this context might thus be viewed as an adequate quid pro quo.

A third option would be not to negotiate the register in the CD at all, but to establish an ad-hoc committee on nuclear disarmament without a negotiation mandate to which the countries participating in the register would report on their negotiation process, present the results, and submit the register data annually once it is established. These data could present a solid information base on which the deliberations by the committee on nuclear disarmament could build.

9.3 Negotiations Among the P-5 or the P-5 plus 3

It could be claimed that the expertise necessary to work out the details of a register lies exclusively in the hands of those countries that possess nuclear weapons, because only they know about both the possibilities and risks of revealing specific information about the arsenals and the materials of which they are made. Likewise, the argument could be made that they would feel fewer inhibitions about discussing this matter frankly amongst themselves, not least because Art. I of the NPT would not apply (this, however, would not be valid for a forum in which the three de-facto nuclear weapon states participated as they are non-nuclear weapon states under the definition of the NPT). Because of these advantages, a small forum consisting only of the „haves“ might be able to solve the issues connected to establishing a register more quickly than a multilateral forum with wider membership.

While it should not be denied that this is a possibility, there are nevertheless reasons why a multilateral forum with strong participation by non-nuclear weapon states is preferable. First, a register is meant, inter alia, to work as an instrument ensuring accountability of the nuclear weapon states to the world community. Consequently, it would be appropriate to have this community present when the details of the register are decided. Secondly, a certain pressure on the nuclear weapon states might help to give the register a more open and informative shape than if the nuclear weapon states, which have a shared interest in keeping accountability limited, were to decide everything among themselves. Third, the value of the register as an instrument of security and its role in the disarmament process might be better understood by a broader range of actors if these actors had a say in bringing it about. Fourth, a multilateral forum - notably the CD - would automatically ensure the presence of the three de-facto nuclear weapon states. And, finally, for four three reasons the cohesion of the nonproliferation regime might also be improved.

Within a multilateral negotiating body, the P-5 or the P5 plus three have ample opportunity to clear issues, as appropriate, among themselves in a limited caucus. The P-5 did this extensively - some would say too extensively - during the test ban negotiations. However, in contrast to this precedence, great care should be taken to include the three de-facto nuclear weapon states in this caucus to prevent them feeling alienated from the substance of the talks and refusing to accept the final result. The experience with the test ban is a serious warning in this regard.

However, the CD operates under the unanimity rule. For this reason, the attempt to extract a negotiation mandate from this body might fail. Certain non-nuclear weapon states might be dissatisfied with a more limited definition of the subject of negotiations and could object. One or a few of the nuclear weapon states or the de-facto nuclear weapon states may not be willing to let negotiations start. In either case, it might be better to restrict the talks to a smaller circle. If the political will existed, this could be done through a parallel to the Ottawa process, that is, within a group of like-minded countries. It goes without saying that this would have little meaning unless a majority of the eight most important countries participated. If, outside of a formal multilateral body, they preferred to discuss matters among themselves, such a process would be preferable to no register at all if it yielded meaningful results. Similarly, a system initiated by the P-5 without a role for the three de-facto nuclear weapon states would be preferable to the lack of transparency presently obtaining, particularly if it were set up in such a way as to admit and facilitate later accession by the three. Again, something would be better than nothing, but we recognize that countries in regions adjacent to the de-facto nuclear weapon states may have different priorities.

9.4 Using the Enhanced NPT Review Process

It has been suggested that the enhanced Review Process that was agreed to in the context of the indefinite extension of the NPT, and which has started in April 1997 with the first session of its preparatory commission, should be more extensively used as an negotiating body for nuclear disarmament issues. This suggestion has gained some strength through the present stalemate in Geneva. However, there are principled reasons why this suggestion should be treated with considerable caution and why, in our particular context, its implementation might quickly prove counterproductive.

First, the review process is no negotiation process. It would be artificial to transform it from its primary task of scrutinizing the implementation of a specific treaty and proposing steps to enhance this implementation into a forum where other international instruments would be worked out. Secondly, such a practice would devalue the CD as the authoritative multilateral negotiation body - without a tangible advantage, as the rules of the Review Conferences would presumably also contain the consensus clause. While past rules of procedure permitted voting in extreme circumstances and as the consequence of an elaborate sequence of procedural steps, this rule has never been used. Since negotiating would be an innovative mission for the Review, it is likely that new, specific rules would be set up for this purpose, and there is no prospect that the nuclear weapon states would accept any negotiation on a nuclear weapons issue that would not allow them a veto. Finally, and perhaps most importantly, the three de-facto nuclear weapon states are not parties to the NPT and its review process. They would be excluded from the beginning, and the prospects of their ever acceding to an instrument in the negotiations of which they would not have had a say are extremely slim.

9.5 Applying Stop-Gap, Partial Measures

If none of the above options looks promising for political reasons, existing processes could be used to achieve the purposes of the register at least partially. Naturally, other nuclear-related arms control talks, as discussed above, would be natural venues for pursuing this objective. The following roads could be taken:

- The talks on international plutonium management among eight countries, including the nuclear weapon states, could be extended to highly enriched uranium. Language requiring the submission of material from disarmed warheads could be strengthened. In this way a considerable and increasing proportion of weapons-grade material in the nuclear weapon states would be covered by international verification and transparency measures.
- Bilateral US-Russian negotiations in the context of the Gore-Chernomyrdin rounds resulted, in fall 1995, in a mutual transparency regime that came as close to stage II measures - as discussed above - as could be desired. If multilateral efforts fail, this forum could provide a fall-back position to install at least some bilateral transparency.
- Bilateral transparency could also be pursued in the context of START III negotiations, as envisaged in the Clinton-Yeltsin agreement at Helsinki. Since the other three nuclear weapon states can be expected to be included, in some way, in START IV at the latest, such transparency measures could and would be extended to them through the START process.
- The fissile material cut-off, if the process ever gets started, would offer another opportunity to achieve enhanced transparency, at least as far as fissile material that will be produced in the future is concerned. However, a cut-off may also contain some summary reporting on past stocks, or at least establish a parallel track where such information could be discussed.
- Those nuclear weapon states willing to do so could offer some voluntary reporting in the CD, First Committee, or Enhanced Review Process context, pending the negotiation of a more formally based register.

None of these stop-gap measures can be expected to yield the full amount of information that was proposed here for the register. They would all represent bits and pieces of the overall picture.

As a result of these considerations, using the CD for straightforward negotiations to establish a nuclear weapons register would certainly be the preferable option. An Ottawa-type process or the Conventional Arms Register review process could be used as substitutes, though it is hard to see how the latter could succeed where the CD had failed. An agreement between the P-5 plus three or at least the P-5 that was submitted to the UNGA would be better than nothing. Stop-gap measures would produce a puzzle from which informed observers could draw conclusions close to what a register would reveal, but it would lack the symbolic force and practical manageability of a consolidated register. However, if nothing else were available, this would be better than nothing.

10. Institutionalization

A register must be drawn up, maintained, collected, kept, and circulated, and someone has to take responsibility for performing these tasks. There are various options that mirror those just discussed for the negotiation stage.

- The IAEA could be tasked with administering the register. This appears to make sense as fissile material falls into its purview anyway, and the Agency will probably be called upon to look into initial inventories and production history in the context of complete nuclear disarmament. To be involved in this process early on would increase the chances that the IAEA is well prepared for the day when this daunting task is laid upon its shoulders.
- However, there may be objections that its statute confines the Agency to the peaceful uses of atomic energy and that weapons fall outside of its purview. Nevertheless, the mission given to the IAEA in the context of UNSC resolution 687, the dismantling of Iraq's nuclear weapons programme and ensuring that it is not restarted, the Agency became involved in the military nuclear sector. It mastered this new field by calling upon the nuclear weapon states to second expert staff; in this way, sufficient expertise was assembled and the risk that nonproliferation goals could be compromised - by inspectors from non-nuclear weapon states looking into weapons factories - could be avoided. There is no reason why this procedure could not be applied in a register context. Initially, a register would pose even fewer dangers as long as no verification measures were attached to it.
- One could also consider giving the task to the new Comprehensive Test Ban Treaty Organization, as this body is already closely connected to nuclear disarmament issues. Given the fact that the CTBTO is connected to a specific disarmament treaty, however, it is unlikely that such an enlargement of its mission could be effected without the assent of all parties, and it is unclear whether this could be done as long as the CTBT has not entered into force. It is also likely to be a long time before this happens. For practical reasons, therefore, this option does not appear realistic.
- If the NWR is attached to the UN Conventional Arms Register it would fall on the UN Secretariat to administer it in the context of its UNCAR activities, of which it would be just a part. However, as attaching the nuclear to the conventional register is not a very good idea, it is not likely that this will be the option chosen.
- The alternative would be to use just the same type of mechanism as for the Conventional Arms Register, but to deal with the NWR separately. In this way the UN Secretariat would be charged with this task under a different heading.
- If the register were an exclusive P-5 initiative a standing commission would probably be established. This body would meet annually and would be staffed by experts and high-ranking officials from the foreign and defense ministries and atomic energy agencies or ministries of the five nuclear weapon states. The register would be maintained by this commission. The five could use the CD - its nuclear disarmament or transparency groups, the First Committee of the UN General Assembly, or the Information Circulars of the IAEA - to communicate register data.

- Finally, the register could be attached to a cut-off treaty by the five - or the eight - on a voluntary or contractual basis. Since it is possible or likely that the IAEA will be involved in, or exclusively tasked with, verifying a fissile material cut-off, the Agency would again have to take responsibility for administering the register.

11. Conclusion

A nuclear weapons register is an idea whose time has come. It would enhance international security, corroborate the principles of transparency and of accountability of the nuclear weapon states vis-à-vis the world community, and would be a stepping stone towards, and eventually an indispensable precondition for nuclear disarmament, as it would serve as a precursor for verification in a nuclear weapon free world. By the same token, if conceptualized appropriately and with due respect for the present concerns and sensitivities of those countries possessing nuclear weapons or unsafeguarded fissile material, such a register could be introduced without any loss of security for these countries, and it could evolve as confidence is built, relaxing these concerns and sensitivities beyond the limits presently obtaining.

For reasons of acceptability for the countries concerned and the integrity of the legal construction of the nuclear nonproliferation regime, it would be wise to limit the undertakings of the three de-facto nuclear weapon states to reporting their fissile material holdings out of safeguards. Some differentiation in these reports would be possible if the reporting form were shaped appropriately - i.e., the „other uses“ category - so that these states would not be required to specify precisely their (supposed) nuclear weapon holdings.

The register should start without a verification obligation in order to respect the sensitivities of the eight countries concerned. Verification measures could be added, by agreement, as the register evolves. It can also be expected that aspects covered by the register would come under bilateral, multilateral or international verification as a consequence of other nuclear arms control and disarmament measures. Verification will become indispensable in the last stages of nuclear disarmament.

For reasons of practicability, the register should be established as a separate body. The CD route appears most appropriate. Other forums have disadvantages. Limiting the forum to the eight or five countries immediately concerned may facilitate its creation in some respects, but would not be optimal in terms of confidence and accountability and would thus endanger some of the improvements that could otherwise be expected in relations between nuclear and non-nuclear weapon states.

As in all policy areas related to nuclear disarmament, here again the best is certainly the enemy of the good. An ideal register would be a stage III one, bolstered by verification and complete information about all eight countries. This is much too much to ask for in the present situation. There is therefore much to be said for considering the much more moderate, but still very useful, system developed under the stage I label. As mentioned at

the outset, in nuclear disarmament incrementalism is the name of the game; this principle applies to the nuclear arms register as well.

Enhanced transparency in nuclear armaments has become a real possibility after the end of the cold war. It is part and parcel of a once „utopian“ order of international security in which states, the major powers in particular, seek their security by means of cooperation rather than by power competition, and where arms control, transparency and disarmament are becoming guiding principles of both international security and national security policies in preference unfettered unilateral arms build-up, secrecy and deception.

A nuclear weapons register is compatible with, and could be called a foundation of, three distinct types of nuclear world order, all of which would be preferable to an unfettered anarchic competition among the major powers. The first is a P-5 (or P-6, if we include India) concert: relations between the nuclear weapon states are carefully managed so as to avoid major conflict and crisis that could lead to a danger of nuclear war. Conflicts between (and, possibly, within) minor powers are approached through intense consultation and solved by joint diplomatic efforts and commonly conducted, or at least commonly mandated, intervention, depending on the situation on the ground. The register, in this model, would serve as a basis of mutual confidence that no state was striving towards a nuclear superiority that would make it possible to shift the order from concert to monopoly. To provide this useful capacity, the register could be confined to the five (six) themselves, with no or little enhanced transparency towards the rest of the world.

The second model would be one of „trusteeship“. The five (six) would largely perform the same tasks, but other major non-nuclear powers, such as Japan, Germany, Brazil, Indonesia, South Africa, Egypt etc. would be involved in order-keeping as well. „Concerting“ would be explicitly performed as (or as if) mandated by the international community. As a corollary, states involved in these activities would bear responsibility and accountability towards the rest of the world; for the nuclear weapon states, this would clearly mean giving some regular information about the size and state of their atomic arsenals. Whether a stage 1 type register would suffice for this purpose or whether the more exacting standards of stage 2 would be required would emerge as a result of the negotiations establishing the „trusteeship regime“. One should note that such an order, coming about not by imposition and grudging acceptance but by negotiation and consensus, would require a considerable shift of opinion by the majority of the non-nuclear weapon states, as it would accord nuclear weapon possession much more and longer-term legitimacy than even the NPT implies.

The third model is, of course, nuclear disarmament. As pointed out above, the last steps towards „zero“ will never be taken without considerable confidence at the part of the disarming states that weapons and materials were carefully registered and reliably accounted for. Since nuclear disarmament is a world order change, not just a change in relative capabilities within a limited group of states, the transparency measures preparing and accompanying nuclear disarmament would necessarily become more globally accountable as the final stage drew closer: there might be more transparency without complete disarmament, but there will certainly not be disarmament without complete transparency.

Thus transparency measures in the nuclear field have the potential to affect relations among the nuclear weapon states and between them and the non-nuclear armed majority. The intra-NWS effects of enhanced transparency merit particular attention. The present lull in great

power conflict and the unchallenged superiority of the United States lead too many people to the conclusion that the big nuclear risks are over. This is not necessarily the case. If things go wrong, deadly quarrels could emerge between some nuclear armed pairs (India-China, Russia-China) or between one or more of these three and „the West“, led by the United States. In an era in which some analysts argue that the „Revolution in Military Affairs“ tends to give the advantage to the offensive, and that there would be a premium on preemption if a number of countries mastered this "Revolution" simultaneously,²⁹ the reemergence of nuclear arms racing would be a dangerous development. Pacifying the nuclear field is thus part of an overall strategy to prevent such conflicts from emerging. Presently great power relations are relatively benign, and there is the lucky coincidence that the leading world power is also the state most inclined to enhance transparency. This opportunity should not be wasted.

29 John Orme, The Utility of Force in a World of Scarcity, in: *International Security*, Vol. 22, No. 3, Winter 1997/98, pp. 138-167.

List of Abbreviations:

CD	Conference on Disarmament
CTBT	Comprehensive Test Ban Treaty
CTBTO	Comprehensive Test Ban Treaty Organization
EURATOM	European Atomic Energy Community
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
INFCIRC	Information Circular (of the IAEA)
NNWS	Non-Nuclear Weapon State
NPT	Nuclear Nonproliferation Treaty
NWS	Nuclear Weapon State
MOX	Mixed Oxide Fuel
OSCE	Organization for Security and Cooperation in Europe
Pu	Plutonium
START	Strategic Arms Reduction Talks
STI	Safeguards, Transparency and Irreversibility
UNGA	United Nations General Assembly
UNSC	United Nations Security Council
TIA	Transparency in Arms