Nuclear Technology Rights and Wrongs: The NPT, Article IV, and Nonproliferation

by

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Synopsis

In diplomatic circles associated with the Nuclear Nonproliferation Treaty, it is today widely believed that Article IV of the Treaty unquestionably protects non-nuclear weapons states' "inalienable right" to any sort of nuclear technology they wish, short of actual nuclear weapons, provided that it is subjected to IAEA safeguards and used only for "peaceful" purposes. This belief, however, is false. The text of Article IV, itself, does not preclude that interpretation, but such a rights-privileging reading is in no way required either by the text or the negotiating history of the NPT, and is in fact inconsistent with this history and with the structure of the Treaty.

The meaning of the Treaty's peaceful use provisions has been debated for many years between (a) those who advocate per se *technology-access rights and (b) those who read the NPT as reflecting a strong commitment to sharing nuclear* benefits *but as treating specific claims to technology access as policy questions to be determined on a case-by-case basis, informed by considerations such as the ability of safeguards to provide timely warning of misuse. Of these two camps, the latter, "safeguardability" school offers the stronger argument.*

The policy-*focused, benefits-sharing approach of "safeguardability" theorists is not only more consistent with the Treaty's text and negotiating history, but also quite consonant with longstanding themes in the international community's struggle with nuclear technology issues since the dawn of the nuclear age. By contrast, theories of* per se *access rights would require concluding, against the evidence, that these longstanding themes were suddenly and utterly repudiated during the NPT's drafting. Worse,* per se *access rights would turn Article IV into a*

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mechanism for undermining the rest of the Treaty by facilitating the spread of the (fissile material production) technologies that are critical to making nuclear weapons. This is not merely unwise and untenable as a matter of public policy; it is, in fact, an inferior answer as a matter of legal interpretation. The "safeguardability" approach, however, reconciles the text of Article IV with the rest of the Treaty, with its negotiating record, and with longstanding international approaches to nuclear technology. While both views of Article IV may be "legally available," the policy-privileging "safeguardability" interpretation is far superior, both substantively and legally.

Significant consequences follow from properly understanding "safeguardability" as the best framework for understanding nuclear technology "rights" under the peaceful use provisions of the NPT. First, IAEA nuclear safeguards must be the focus of great attention and detailed study, particularly with regard to their ability to provide warning of misuse sufficient to permit the international community to mount an effective response. This factor is critical, for upon considerations of effective safeguardability will hinge whether claimants in fact possess the "right" to nuclear "benefits" in any particular technological form. Second, the international community must develop a rational and defensible standard for assessing the real economic and developmental benefit offered by nuclear technologies – not merely in their own right but also vis-à-vis non-nuclear alternatives – in order to make possible the exercise of informed policy judgment in assessing the form in which "benefit"-sharing should take.

I. *Introduction*

Whatever agreement there may have been, at the time of the drafting of the Treaty on the Non-Proliferation of Nuclear Weapons (a.k.a. Nonproliferation Treaty, or NPT), upon some of the key principles of its structure and effective operation, such agreement seems to be fraying. Contemporary diplomatic debates in NPT fora have become conspicuous for the disagreements they reflect not merely over nonproliferation *policy*, which is somewhat to be expected, but also over the fundamental *meaning* of key portions of the Treaty itself.

One of the most interesting of these debates over the meaning of the NPT today concerns Article IV of the Treaty: its provisions concerning the peaceful uses of nuclear energy. On one side, representing the seeming preponderance of diplomatic opinion on the subject – as well as, it must be said, no small amount of acquisitive self-interest by nuclear technology "have-not" countries – are the advocates of an interpretation that sees Article IV through the lens of technology access rights. On the other side stand those more focused upon vindicating the Treaty's *nonproliferation* components (Articles I, II, and III), and who think that the NPT's commitment to nonproliferation may on occasion

require *refusing* requests for technology sharing, or concluding that *certain* capabilities are simply not able to be possessed safely by non-nuclear weapons states *at all* – even for "peaceful" purposes.

These debates have acquired both great salience and all too much venom as a result of Iran's decision to adopt the cause of Article IV "rights" while secretly pursuing a program of uranium enrichment and plutonium reprocessing in violation not just of its nuclear safeguards commitments under Article III but also – given the apparently now general agreement that Iran's nuclear program was designed to give it the ability to build nuclear weapons – of Article II. The diplomatic confrontation has been especially acute since the embarrassing public revelation of much of Iran's hitherto clandestine nuclear program in August 2002.

This paper outlines the charged Article IV debates underway today, walks through the "prehistory" of the international community's efforts to grapple with the challenge of nuclear technology control, discusses the problematic text and ambiguous negotiating history of Article IV itself, and then offers an alternative view to the access-privileging conventional wisdom of much of today's diplomatic community. In place of the rigid rights-fetishism of what has now become Article IV's conventional interpretation, I argue for a *policy*-privileging understanding of that provision – one that embodies a strong ethic of *benefits*-sharing but without any *per se* commitment to sharing or permitting the possession of any particular nuclear technology.

This approach, I argue, is the reading best able to reconcile the confusing text of Article IV and the complexity of its negotiating history, the and one most substantively consistent with the long history of how key players struggled with the challenge of technology control in the years leading up to the drafting of the Treaty. Most importantly, while competing interpretations may also be legally available, I contend that the policy-privileging, *benefits*-sharing approach is the reading best able to make Article IV consistent with the rest of the NPT – thus ending the dangerous and indeed regime-imperiling opposition that has been developing between the Treaty and its peaceful use provisions under the more "rights"-focused view.

II. *The Great Article IV Debate*

The NPT deals with the issue of peaceful nuclear uses in two places, both of which – we shall see – are highly relevant. In the Preamble, it affirms

> "the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all …."[2]

[2] Treaty on the Non-Proliferation of Nuclear Weapons (opened for signature July 1, 1968; entered into force March 5, 1970), 21 U.S.T. 483, 729 U.N.T.S. 161 [hereinafter NPT], from the Preamble.

Article IV adds detail to this idea, declaring in its two paragraphs that

> (1) Nothing in this Treaty shall be interpreted as affecting the inalienable right of all Parties to the Treaty to develop, research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty;
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> (2) All the Parties to the Treaty undertakes to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also cooperate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.[3]

While everyone seems to agree that the NPT embodies a strong commitment to sharing the benefits that nuclear technology can bring to mankind, making sense of exactly what the notably unspecific phrasing of Article IV actually *requires* as a matter of law is quite contentious. As it turns out, this issue is also of quite considerable importance – which is why Article IV issues have emerged as a contentious and significant arena of debate and discussion in contemporary diplomatic and policy circles.

A. *The Stakes*

To put it crudely, the issue is of importance because of the potentially enormous cost of getting the answer wrong. Nuclear energy technology has presented great challenges to the international community for many decades, and governments have always struggled to walk a tightrope between the benefits it might bring and the dangers it so clearly also might present. As I once summarized this tension when in official capacity,

> "[n]uclear energy … has always had a Janus-faced aspect, offering humankind both great peril and extraordinary promise. Nuclear weapons scientist Robert Oppenheimer's well-known quotation from the *Bhagavad-Gita* upon witnessing the first nuclear weapons test drew from a verse which, in its entirety, references not just the destructive power of Death, but also the creative power that forms the origin of things yet to be. Nuclear technology is like that: it embodies a nearly unbelievable power to destroy, but at the same time an extraordinary power to create – to enrich our lives, to provide the electric power by which we may read at night, to produce potable water from the ocean's brine, to help cure deadly diseases, and to enable science and industry to advance in innumerable ways that can

[3] *Id.* at Art. IV.

improve the quality of life for people in all societies."[4]

Nuclear technology has developed considerably since the magnitude of this challenge first became apparent, but it has long been quite clear – and remains at least as true as ever – that some balance must be struck between the two faces of the nuclear Janus-god. Our efforts to exploit nuclear technology for good must always be tempered by an awareness of and consideration for the dangers inherent in such knowledge. Clearly, getting the answer wrong could have terrible implications, either in impeding technological and economic developments that might otherwise bring enormous benefits to mankind or, worse, in leading to an increased likelihood of global instability and indeed nuclear warfare by facilitating the proliferation of nuclear weapons capabilities.

In recent years, in fact, the stakes have been rising. On the one hand, in the face of increasing global energy needs and increased worries about how to control the climate impact of fossil fuel combustion, there has been much talk of a "nuclear renaissance." Electricity generation by means of nuclear power reactors has been described by many as an important part of the "solution" to the world's 21st-Century energy security and climate change dilemmas. Many governments around the world have proclaimed an interest in developing nuclear reactor programs,[5] supplier states are currently taking advantage of a recently-agreed exception to the rules of the Nuclear Suppliers Group (NSG)[6] in order to seek lucrative contracts with the energy-hungry state of India, and even some environmentalists are reportedly rethinking their longstanding opposition to nuclear power in light of fossil fuel-related climate change.[7]

On the other hand, it has also become increasingly clear that the spread of nuclear technology – or at least of certain types of nuclear capability – can have grave proliferation and global security implications. Since the early 1990s, and culminating with that country's test of a nuclear weapon in October 2006, it has been apparent that North Korea used the pursuit of a "peaceful" nuclear reactor program as cover for its

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4 U.S. Special Representative for Nuclear Nonproliferation Christopher Ford, "The Promise and Responsibilities of Peaceful Uses of Nuclear Energy," remarks to 19th Annual Conference on Disarmament Issues, Sapporo, Japan (August 27, 2007), *available at* http://www.state.gov/t/isn/rls/rm/92721.htm.

5 Most notably, in recent years – and, perhaps not by coincidence, largely since Iran's secret uranium enrichment efforts first came to light in August 2002 – a number of Middle Eastern states have announced intention to develop nuclear power programs, in some cases including uranium enrichment. Rose Gottemoeller & Raymond Arnaudo, "Agreeing to disagree on nuclear rights," *Bulletin of the Atomic Scientists* (November/December 2008), at 15, 17 (listing in this regard Bahrain, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, UAE, and Yemen).

6 *See* International Atomic Energy Agency, "Communication dated 10 September 2008 received from the Permanent Mission of Germany to the Agency regarding a 'Statement on Civil Nuclear Cooperation with India,'" INFCIRC/734 (Corrected) (September 19, 2008) (attaching copy of NSG decision of September 6, 2008), *available at* http://www.iaea.org/Publications/Documents/Infcircs/2008/infcirc734c.pdf.

7 *See, e.g.*, Jason Mark, "Atomic Dreams," *UTNE Reader* (January-February 2008), *available at* http://www.utne.com/2008-01-01/Environment/Atomic-Dreams.aspx (noting "strains in the environmental movement as organizations and individuals grapple with the pros and cons of using nuclear power to check carbon emissions" and describing some prominent environmental figures as having recently voiced support for nuclear power for climate change reasons).

weapons development efforts. Since early 2004,[8] moreover, it has been publicly known that renegade Pakistani nuclear scientist and smuggler A.Q. Khan played an extraordinary role for many years in providing uranium enrichment and other technology to the nuclear weapons development programs of a number of problematic regimes around the world, including Libya, North Korea, and Iran. Most dramatically, from an Article IV perspective, controversies over the discovery of Iran's long-secret nuclear program have engaged diplomats, policymakers, and observers alike in fierce disputes over precisely what ostensibly "peaceful" nuclear capabilities Iran can safely be permitted.

These latter developments have sparked renewed interest in how to handle the potential proliferation challenges of the spread of uranium enrichment and plutonium reprocessing (a.k.a. ENR) technology as part of the full nuclear fuel cycle. As official U.S. statements have explained it,

> "the ubiquitous availability of uranium enrichment capability – or its analogue, plutonium production and reprocessing – also necessarily entails a capability to develop nuclear weapons. The basic physics and operating principles of nuclear weapons have been known publicly for many years now, and it has long been understood that the greatest technical barrier to massive and widespread proliferation has been the difficulty of acquiring sufficient quantities of weapons-usable fissile material. Anyone who can enrich (or reprocess) can overcome this hurdle to weapons development – helping open the door to the incalculable dangers of a proliferated world."[9]

Spreading availability of ENR thus threatens to confront the international community with a growing number of states becoming what the Director General of the International Atomic Energy Agency (IAEA) has called "virtual nuclear weapons states."[10] Most observers plausibly assume that a world in which many countries are in a position to develop nuclear weapons with little or no notice would be a profoundly unstable one, and that the spread of ENR could quite undermine – and here one might go so far as to say "destroy" – the nonproliferation regime.

To help forestall such potentially destabilizing effects, various supplier states, and the IAEA itself, have advocated approaches to providing would-be reactor-operating

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8 Office of the Press Secretary, The White House, "President Announces New Measures to Counter the Threat of WMD" (February 11, 2004) (publicly revealing existence of Khan network).

9 U.S. Special Representative for Nuclear Nonproliferation Christopher Ford, "The NPT Review Process and the Future of the Nuclear Nonproliferation Regime," remarks to the NPT Japan Seminar on "How should we respond to the challenges of maintaining and strengthening the treaty regime?" Vienna, Austria (February 6, 2007), *available at* http://www.state.gov/t/isn/rls/rm/80156.htm.

10 IAEA Director General Mohammed ElBaradei, "Addressing Verification Challenges," remarks to the Symposium on International Safeguards, Vienna, Austria (October 16, 2006), *quoted in* Robert Zarate, "The NPT, IAEA Safeguards and Peaceful Nuclear Energy: An 'Inalienable Right,' but Precisely to What?" *in Falling Behind: International Scrutiny of the Peaceful Atom* (Carlisle, Pennsylvania: Strategic Studies Institute, February 2008), at 221, 221.

states with reliable sources of nuclear fuel. The idea behind these proposals is to obviate any perceived need for such states independently to pursue nuclear fuel-making by means of acquiring enrichment or reprocessing capabilities. The United States, for instance, has proclaimed its desire to

> "work[] … with the producer states and the IAEA to develop broad cooperative programs for fuel-supply assurances … [through] a reliable system of fresh fuel supply and spent-fuel management services, [and] to build upon and reinforce the efforts currently underway [at the IAEA] in Vienna to create a reliable fuel supply system that might include an IAEA-overseen fuel bank as a supply of 'last resort.'"[11]

The aim of such efforts is "to provide such attractive and responsible cooperative alternatives that countries offered the chance to participate will choose to forego involvement with ENR."[12]

Presumably out of deference to the diplomatic sensitivities of such a persuasive exercise – that is, either because they think there *do* exist ENR rights under the NPT but that such things are most prudently not spoken of, or because it would irritate technology-seeking diplomatic partners to point out that their legal arguments are illusory – many Western countries have gone to considerable trouble to avoid taking a position on the actual legal meaning of the Treaty's peaceful use provisions. At the 2005 NPT Review Conference, for instance, a working paper offered by several Western governments carefully refrained from spelling out what Article IV actually entails, instead stressing that whatever rights it *may* enshrine are not ones that countries necessarily *have* to act upon. "States may choose individually not to exercise all their rights," the paper carefully noted, "or to exercise those rights collectively."[13]

In a similar vein, the European Union (EU) tap-danced around the question by declaring that "[t]he right to peaceful uses of nuclear energy remains undisputed," but without describing what it actually means to have such a right. Instead, the EU's working paper on the subject merely pleaded the policy merits of "multilateralizaton/ guarantees of access to the fruits of the most sensitive parts of the nuclear fuel cycle." The EU hoped, in other words, that a system of fuel-supply assurances – that is, for ensuring that states' needs for nuclear fuel were reliably met without any need for them to develop enrichment or reprocessing – would be seen as an acceptable "means of *implementing* the right [described in Article IV] … while at the same time avoiding the

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11 "The NPT Review Process and the Future of the Nuclear Nonproliferation Regime," *supra*.

12 U.S. Special Representative for Nuclear Nonproliferation Christopher Ford, "The 2010 NPT Review Cycle So Far: A View from the United States of America," remarks at Wilton Park, United Kingdom (December 20, 2007), *available at* http://www.state.gov/t/isn/rls/rm/98382.htm.

13 Australia, Austria, Canada, Denmark, Hungary, Ireland, the Netherlands, New Zealand, Norway, and Sweden, working paper entitled "Articles III(3) and IV, preambular paragraphs 6 and 7, especially in their relationships to article III (1), (2) and (4) and preambular paragraphs 4 and 5 (Cooperation in the peaceful uses of nuclear energy)," NPT/CONF.2005/WP.11 (April 26, 2005), at 1, ¶2.

risks of proliferation."[14]

To the extent that the fuel-supply based "enticement" approach works,[15] it may succeed in avoiding a real reckoning with the legal meaning of the peaceful use provisions of the NPT. If it does not, however – and it must here be admitted that the principal (and most urgent) target of such fuel-supply blandishments, Iran, has to date shown no interest whatsoever in giving up its emerging nuclear weapons "option" – it will not be possible to avoid struggling with Article IV. If countries cannot be bribed out of any desire to possess ENR technology in the first place, it will be necessary to take a position on what, specifically, any such "rights" actually are. And the fate of the nonproliferation regime may hang upon the outcome.

B. *The Contenders*

It would be an oversimplification to describe there being only two or three camps in the broad and conceptually messy international debates that have been developing over peaceful use benefits under the NPT. Nevertheless, it may be convenient to divide the protagonists into two broad categories.

(1) *The Technology-Seekers*

Countries that are, for various reasons, less concerned with preventing nuclear weapons proliferation than with using the NPT as a tool to spur technology transfers from nuclear suppliers – that is, from the privileged "have" states of the modern international system, none of whom are more resented than the five powers who are also recognized by the NPT itself as the only States Party permitted to possess nuclear weaponry[16] – see in Article IV a potentially powerful weapon. After all, if indeed it were the case that the NPT recognizes or conveys nuclear technology-access "rights," what could be more appropriate than insisting upon what one is owed *as of right*?

Some states thus defend a view of Article IV that gives non-possessors a right to develop – or perhaps even to be *given* – the full range of nuclear-related technology short of actual weaponization techniques, provided that they promise to use all of it exclusively for peaceful purposes and subject their activities to IAEA safeguards. The "inalienable

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14 European Union, working paper entitled "Multilateralization of the nuclear fuel cycle/guarantees of access to the peaceful uses of nuclear energy," NPT/CONF.2005/WP.61 (May 9, 2005), at 1, ¶3.

15 It should be noted, in this context, that even apart from the *political* adequacy of existing fuel-supply proposals in the face of radicalized Non-Aligned sentiment and the occasional country's nuclear weapons ambitions, some experts have questioned the technical and market feasibility of a multilateralized nuclear fuel cycle. Writing elsewhere in this volume, for instance, the World Nuclear Association's Steve Kidd offers such a critique. *See also* http://www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=20090306-Kidd-NuclearFuelMythsAndRealities&PDFFolder=Essays.

16 *See* NPT, *supra*, at Art.IX(3) ("For the purposes of this Treaty, a nuclear-weapon State is one which has manufactured and exploded an nuclear weapons or other nuclear explosive device prior to 1 January 1967.") & Art. II (requiring that each *non*-nuclear-weapon State Party not receive, manufacture, or otherwise acquire "nuclear weapons or other nuclear explosive devices").

right" of Article IV is often brandished as an absolute trump card that is expected to make nonproliferation risks (which are, after all, merely *policy* considerations) take a back seat. As the People's Republic of China revealingly phrased it in a paper delivered to the 2005 NPT Review Conference, "[n]on-proliferation efforts should not undermine the legitimate rights of countries, especially the developing countries, to the peaceful uses of nuclear energy."[17]

Some governments have even attempted to use Article IV to undermine nonproliferation export controls. Cuba, for instance, argued at the 2005 Review Conference that "the unilateral restrictions put in place by some States parties to the Treaty" have "impeded other States parties' peaceful uses of nuclear energy." In fact, the very existence of "export-control regimes … which, in practice, seriously hamper the inalienable right of all States to use for peaceful purposes the various nuclear-related resources and technologies available" was entirely "unacceptable." In short, Cuba said, nonproliferation export controls were "a violation of the Treaty, and should cease."[18]

Given Iran's efforts since 2002 to defend its previously secret but now well-known nuclear program, its longstanding noncompliance with IAEA safeguards, and its defiance of legal requirements imposed by the U.N. Security Council to suspend enrichment- and reprocessing-related activity, it is perhaps not surprising that the clerical regime in Tehran has taken an extreme view of Article IV. Nor did Iranian officials develop its strong view of Article IV only after Iran was embarrassingly revealed in August 2002 to be pursuing a secret nuclear program aimed at uranium enrichment and the construction of a heavy-water reactor ideally suited for plutonium production. In fact, Iran apparently staked out these Article IV claims years earlier – at a time when its secret nuclear efforts still remained unknown to the world, apart from accurate but unheralded warnings from arms control verification and compliance experts in the United States.[19]

As Etel Solingen has recounted, before the 1995 NPT Review and Extension Conference, "Iran threatened to withdraw from the NPT because of imputed U.S. violations of Article IV granting members full access to equipment, materials, and scientific and technological information for peaceful purposes."[20] Iran's emphasis in 1995 upon its purported "right" to whatever "peaceful" nuclear technology it wanted, however, was likely no coincidence. It was that year that Russia and Iran agreed to a

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17 People's Republic of China, "Peaceful Uses of Nuclear Energy," NPT/CONF.2005/WP.6 (April 26, 2005), at 1, ¶ 2.

18 Cuba, "Peaceful uses of nuclear energy," NPT/CONF.2005/WP.25 (May 4, 2005), at 1, ¶ 6 & 2, ¶7.

19 U.S. officials publicly raised NPT compliance concerns about Iran at least as early as 1993, at which point the Arms Control and Disarmament Agency declared that "Iran has demonstrated a continuing interest in nuclear weapons and related technology that causes the U.S. to assess that Iran is in the early stages of developing a nuclear weapons program." U.S. Arms Control and Disarmament Agency, *Adherence to and Compliance With Arms Control Agreements and the President's Report to Congress on Soviet Noncompliance with Arms Control Agreements* (January 14, 1993) [unclassified version], at 17.

20 Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007), at 171.

nuclear cooperation agreement that led to the construction of the current nuclear reactor at Bushehr and apparently included a side protocol – subsequently canceled (and then denied) by Russia in the face of international pressure – for the construction of a gas centrifuge plant for the enrichment of uranium.[21]

The Russia deal was not the clerical regime's first effort to acquire fissile material production capabilities. It had secretly begun experiments with uranium conversion as early as 1981, imported uranium "yellowcake" as early as 1982, started a gas centrifuge program at least as early as 1985, obtained centrifuge designs and other information beginning at least in 1987 (from the smuggling network run by Pakistan's A.Q. Khan), carried out plutonium separation experiments beginning in 1988, began experiments with creating neutron sources [usable in nuclear weapons triggers] from polonium in 1989, and imported its first supply of uranium hexafluoride centrifuge feedstock in 1991[22] – from China, no less: a fellow believer in the merely secondary importance of nonproliferation. None of this activity was reported to the IAEA as required by Iran's nuclear safeguards agreement; it only came to light during the investigations that followed the press leaks of August 2002.

At any rate, in the years after the public revelation of these secret efforts, Iran stepped up its Article IV campaigning. It is not simply that Iran has defended its development of ENR capabilities in Article IV terms. Iran also asserts that supplier states are legally required to *make available* whatever technology it desires for the peaceful purposes it claims. In April 2008, for instance, Iran's representative declared that "[r]estrictions imposed by nuclear suppliers" for nonproliferation reasons were "[c]lear violations of Article IV obligations … in depriving the States parties from [sic] the exercise of their inalienable right."[23] Article IV, in other words, is seen as a potent weapon for Iran's fight against "nuclear apartheid,"[24] by which Tehran means an international system in which not everyone is allowed to have whatever nuclear technologies they wish.

At an NPT meeting in May 2009, the Iranians offered even more aggressive arguments, defending an absolutist vision of Article IV and describing it not merely as

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21 *See, e.g.*, Nuclear Threat Initiative, "Russia: Nuclear Exports to Iran: Reactors" (undated), at text accompanying notes 2 & 4, and following note 14 (*citing* David Albright et al., *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities, and Policies* (Oxford: Oxford University Press, 1997), at 355-61; Andrew Koch and Jenette Wolf, "Iran's Nuclear Procurement Program," *Nonproliferation Review*, no.5 (Fall 1997), at 127), *available at* http://www.nti.org/db/nisprofs/russia/exports/rusiran/react.htm.

22 *See, e.g.*, International Atomic Energy Agency, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," GOV/2004/83 (November 15, 2004), at ¶¶ 8, 13, 14, 23, 31, 71, 73, & 79.

23 Ambassador of the Islamic Republic of Iran Ali Reza Moaiyeri, remarks to the Second Session of the Preparatory Committee for the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Geneva, Switzerland (April 29, 2008), at 4, ¶ 4.

24 Iranian President Mahmoud Ahmadinejad, interview with CNN (September 17, 2005), *available at* http://www.cnn.com/2005/WORLD/meast/09/17/ahmadinejad/index.html.

one pillar of the NPT but as the "very foundation of the Treaty."[25] (So important is technology-promotion to the NPT, in fact, that this principle seems in Iranian minds to have overridden the nonproliferation conformity requirement in last ten words of the first paragraph of Article IV.[26] "[N]o State party," claimed the Iranian delegation, "should be limited in exercising its rights under the Treaty based on allegations of non-compliance.") Denouncing nuclear export controls as "a clear violation" of the Treaty, Iran even claimed the right to "compensation" for the effect of nonproliferation rules in "hampering" Iran's "peaceful nuclear activities."[27]

Perhaps more than any other single factor, the Iranian case – including Iran's use of assertions about Article IV in order to excuse its nuclear provocations – has helped drive, and exacerbate the tensions surrounding, today's debates over the peaceful use provisions of the NPT. Despite Iran's brazenly self-exonerating involvement in advancing such arguments, many countries apparently now really do think Article IV "means that states have a *per se* right to any and all nuclear technology and materials, including nuclear fuel-making technology and weapons-usable nuclear fuels."[28]

(2) *The Nonproliferators*

(a) *Government Positions*

It is somewhat strange that, given the enormous importance placed upon Article IV claims by Iran and its apologists, a more clearly-articulated and defended counter-argument has not developed in diplomatic circles. This is surely not because other governments accept Iranian and Cuban claims at face value: the 45 members of the Nuclear Suppliers Group presumably do *not* believe that maintaining nuclear export controls makes them violators of the NPT. Moreover, it has been explicit U.S. policy since President George W. Bush's speech at the National Defense University in February 2004 to oppose the spread of ENR technology to "any state that does not already possess

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25 Fars News Agency, "Iran Blasts Industrial States' Non-Compliance with NPT" (May 13, 2009). Iran's legalized discourse on Article IV has developed within a broader tradition of modern Iran's predilection to "scour the international arena for examples and models" and to rely, to a sometimes startling degree, upon emulation of Western models even when emphatically decrying Western influence. (Ali Ansari, for instance, has described the "imitative quality of Iranian society and politics" as having manifested itself particularly in the ideological framework of the Islamic Revolution, not least in the rise to political power of the radicalized "principalist" clique surrounding President Ahmadinejad. *See* Ali M. Ansari, *Iran Under Ahmadinejad: The Politics of Confrontation*, Adelphi Paper 393 (London: IISS, 2007), at 19-20; *cf. also, e.g.*, Laurent Muraviec, *The Mind of Jihad* (Cambridge: Cambridge University Press, 2008), at 256-94.) Iran's legalistic propaganda campaign in favor of its Article IV "rights" – offered in reaction to criticism of Tehran's own compliance with IAEA safeguards and Articles II and III of the NPT – may be located within this imitative tradition, right down to the Iranians' unimaginative mimicry and inversion of sometime American arguments about the centrality of nuclear nonproliferation to the Nuclear Nonproliferation Treaty.

26 NPT, *supra* at Art. IV(1) (describing "inalienable right" to activities "in conformity with Articles I and II of this Treaty").

27 "Iran Blasts Industrial States' Non-Compliance with NPT," *supra*.

28 Henry Sokolski, "Nuclear Policy and the Presidential Election" *The New Atlantis* (Summer 2008), at 3, 10.

full-scale, functioning enrichment and reprocessing plants."[29] The policy positions of all these governments preclude agreement with Iranian-style interpretations of Article IV. Why, then, has there never been an official articulation of a counter-argument?

No doubt part of the answer for this relative silence lies in some governments' worries that offering arguments to debunk extremist proliferation-facilitating interpretations of Article IV would irritate the delicate diplomatic sensibilities of governments whom we hope to persuade to accept multinational fuel-supply assurances in lieu of ENR development. Bush Administration Energy Secretary Samuel Bodman, for instance, once declared that he felt it was "unproductive often to talk in terms of rights."[30] The danger of such reticence, however, that – as I have elsewhere warned – it risks "ced[ing] the intellectual field to the proliferators" because even the most tendentious of arguments may be believed "in the absence of clear rebutting arguments."[31]

In fact, however, the situation seems to be worse than that. United States has sometimes just seemed confused on the subject of Article IV's specific meaning. To be sure, U.S. officials have articulated a clear rebuttal of Iranian-style arguments, based upon that provision's *second* paragraph, that the NPT requires specific technology transfers. The United States has clearly and publicly rejected any notion that export controls or any other sort of supplier discretion in making potentially proliferation-facilitating transfers is in any way problematic under the Treaty. As I explained it to the 2005 NPT Review Conference,

> "Paragraph 2 of Article IV calls on parties 'to facilitate ... the fullest possible exchange' of technology for the peaceful uses of nuclear energy. The use of the term 'fullest possible' is an acknowledgement that cooperation may be limited. Parties are not compelled by Article IV to engage in nuclear cooperation with any given state – or to provide any particular form of nuclear assistance to any other state. The NPT does not require any specific sharing of nuclear technology between particular States Party, nor does it oblige technology-possessors to share any specific materials or technology with non-possessors. Indeed, to conform both to the overall objective of the NPT – strengthening security by halting nuclear proliferation – and to any Article I and III obligations, supplier states must

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29 "President Announces New Measures to Counter the Threat of WMD," *supra*.

30 *See* Energy Secretary Samuel Bodman, press briefing (February 6, 2006), *available at* http://www.energy.gov/news/3171.htm. By contrast, some current and former U.S. officials appear simply to counsel capitulation. Former Clinton Administration official Rose Gottemoeller and (apparently current) State Department lawyer Raymond Arnaudo have publicly argued for "a companion agreement to the NPT that is specifically designed to reinforce states' rights to acquire peaceful nuclear energy technologies, including the full nuclear fuel cycle." This agreement would "restate these rights in international law," while attempting to limit the potential proliferation damage of such a step merely by "reassuring states that they do not have to exercise [these rights] immediately." Gottemoeller & Arnaudo, *supra*, at 18.

31 Christopher A. Ford, "A New Paradigm: Shattering Obsolete Thinking on Arms Control and Nonproliferation," *Arms Control Today* (November 2008), at 12, 16.

> consider whether certain types of assistance, or assistance to certain countries, are consistent with the nonproliferation purposes and obligations of the NPT, other international obligations, and their own national requirements. They should withhold assistance if they believe that a specific form of cooperation would encourage or facilitate proliferation, or if they believe that a state is pursuing a nuclear weapons program in violation of Article II, is not in full compliance with its safeguards obligations, or is in violation of Article I.
>
> "… While compliant State[s] Party should be able to avail themselves of the benefits that the peaceful use of nuclear energy has brought to mankind, the Treaty establishes no right to receive any particular nuclear technology from other States Party – and most especially, no right to receive technologies that pose a significant proliferation risk."[32]

With regard to the *first* paragraph of Article IV, however – the location of the portentous and much-cited phrasing about the "inalienable right" of States Party to develop nuclear energy – the United States has excelled at sending foolishly mixed messages. As noted above, President George W. Bush made it U.S. policy in February 2004 to oppose any further spread of ENR technology. Unless it were to be U.S. policy to deprive other states of what international law permits them – a position that American representatives denied[33] – President Bush's position would certainly seem at least to *imply* that adopting such a policy was not an NPT violation. Nor, so far at least, has the Obama Administration changed U.S. policy to one of supporting or acquiescing in ENR proliferation, which is presumably what one would expect from any country believing non-weapons states to have a real legal right to such capabilities. One might presume, therefore, that the United States still does not think that Article IV creates or describes any sort of a "right" to specific technologies irrespective of proliferation risk.

Moreover, U.S. officials have offered explications of Article IV that rebut Iranian-style arguments that the NPT provides or enshrines a legal "right" to uranium enrichment and/or plutonium reprocessing. In the official U.S. exegesis on Article IV that I presented to the 2005 NPT Review Conference, for example, the United States declared that although some have asserted that "any State Party … has a specific right to develop the full nuclear fuel cycle, and that efforts to restrict access to the relevant technologies is inconsistent with the NPT," it was in fact the case that "[t]he Treaty is silent on the issue of whether compliant states have the right to develop the full nuclear fuel cycle …."[34]

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32 Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," *supra*.

33 *See, e.g.*, U.S. Department of State, Bureau of International Security and Nonproliferation, *Promoting Expanded and responsible Peaceful Uses of Nuclear Energy* (April 16, 2007), *available at* http://www.state.gov/t/isn/rls/other/83210.htm (denouncing as "false" the allegation by some countries that "any steps by other states to deny them any technology somehow violates their 'inalienable' rights or their rights under the NPT"); *see also* Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," *supra* (declaring that "[n]othing could be further from the truth" than the claim by some countries that "steps by other states to deny them some technology somehow violates their NPT rights").

34 Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," *supra*.

A U.S. working paper also presented in 2005 underlined this point about Article IV's indeterminacy, declaring that "the NPT neither guarantees nor prohibits the acquisition of a particular nuclear fuel cycle facility."[35] These U.S. presentations also stressed the importance under the NPT of sharing the *benefits* that nuclear technology can bring – phrasing that pointedly stopped short of endorsing legal rights to all of the underlying technology used to produce such benefits.[36] In 2004, Under Secretary of State John Bolton made the fundamental Article IV point in a characteristically concise way: "The Treaty provides no right to such sensitive fuel cycle technologies."[37]

The U.S. bureaucracy, however, seems to have had trouble keeping its story straight. On the heels of the relatively clear pronouncements of 2004 and 2005, much confusion ensued when, in 2007, the U.S. Department of Energy included in one of its publications a comment taking precisely the *opposite* position. According to the Energy Department at that time, "[o]ne challenge we face is that all nations that have signed the NPT retain the right to pursue enrichment and reprocessing for peaceful purposes in conformity with article I and II of the Treaty."[38] This claim – which endorsed the conceptual core of the Iranian and Cuban position that development of proliferation-facilitating ENR technology is a matter of *legal right* – quick came under criticism from the U.S. Congress. In July 2007, for instance, the leadership of the Foreign Affairs Committee in the House of Representatives wrote to Secretary of State Condoleeza Rice

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35 United States of America, "Strengthening implementation of Article IV of the Treaty on the Non-Proliferation of Nuclear Weapons," NPT/CONF.2005/WP.57 (May 23, 2005), at 3, ¶ 14.

36 *See id.* (describing Article IV as giving the "right to receive the *benefits* of peaceful nuclear development" if they are in compliance with NPT nonproliferation obligations") (emphasis added); Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," *supra* ("Paragraph 2 of Article IV speaks of … sharing in the development of *applications* of nuclear energy for peaceful purposes. Furthermore, the Preamble to the NPT affirms the general 'principle that the *benefits* of peaceful applications of nuclear technology ... should be available for peaceful purposes to all Parties.'") (emphasis in original).

37 John R. Bolton, "The NPT: A Crisis of Non-Compliance," statement to the Third Session of the Preparatory Committee of the 2005 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, New York (April 27, 2004), *quoted by* Zarate, *supra*, at 269 n.14. Nor was this point entirely lost on the U.S. Congress, for in 2006 two Senators opined that "[t]he dangers are so great that the world community must declare that there is no right under the Nuclear Non-Proliferation Treaty to separate plutonium from spent nuclear fuel." Senator Richard Lugar and Senator Evan Bayh, "a Nuclear Fuel Bank Advocated," *Chicago Tribute* (October 22, 2006). In the House of Representatives, Ileana Ros-Lehtinen made a similar point. *See* Representative Ileana Ros-Lehtinen, "The Right to Survive: Nuclear 'Rights' Don't Trump It," *National Review Online* (October 5, 2007). The issue was also raised on the 2008 U.S. presidential campaign trail by Senator John McCain, the Republican candidate, who publicly called for the convening of an international summit in order to assess what the NPT's peaceful nuclear use "rights" actually entail. *See* Sokolski, "Nuclear Policy and the Presidential Election," *supra*, at 9. (The Democratic candidate, and eventual winner, Senator Barack Obama, appears not to have raised the issue.)

38 United States Department of Energy, *Global Nuclear Energy Partnership Strategic Plan*, GNEP 167312 Rev. 0 (January 2007), at 3, *available at* http://www.fas.org/programs/ssp/_docs/GNEPStratPlanJan07.pdf. In the U.S. interagency process, this statement was cleared, on behalf of the State Department, by a mid-ranking official without checking with or informing the U.S. Special Representative for Nuclear Nonproliferation or apparently any higher authority at all.

declaring it "a mistake" to assert the existence of ENR rights and asking for clarification.[39]

When it came, however, the requested "clarification" was anything but clear. The State Department's reply – over the signature not of Secretary Rice but of Jeffrey Bergner, the Assistant Secretary for Legislative Affairs, and only provided after a delay of four months – merely restated existing U.S. *policy* against transferring ENR technology, and asserted merely that ENR capabilities were "not necessary in order for states to harness nuclear energy for peaceful purposes."[40] It entirely avoided answering the question posed: whether the Energy Department's interpretation of Article IV represented the considered view of the U.S. Government as a whole.[41] Arguably, the official U.S. positions articulated at the 2004 and 2005 NPT meetings still remained U.S. policy, for the Bergner letter certainly did not repudiate them. In the wake of the Energy Department's remarkable endorsement of an Iranian-style reading of Article IV, however, the Bergner response understandably left things seeming rather confused.

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39 House Foreign Affairs Committee Chairman Tom Lantos et al., letter to Condoleeza Rice (July 17, 2007), at 1.

40 Assistant Secretary of State for Legislative Affairs Jeffrey Bergner, letter to Tom Lantos (November 19, 2007), at 1.

41 The reason for the delay and the essential uselessness of the Bergner response was that the Bush administration was, at that point in its wilting second term, unable to reach internal agreement on the specific meaning of Article IV. One key State Department attorney assigned to cover nonproliferation issues in the Office of the Legal Advisor ("L") in effect agreed with Iran (and the U.S. Department of Energy!) to the extent that he felt that Article IV described a preexisting right to develop enrichment and reprocessing.

Such a position was unacceptable to this author, who thought it both legally permissible and substantively imperative to hew more closely to the U.S. policy positions already cleared through the U.S. interagency process and announced publicly in 2004 and 2005. Despite those earlier public declarations, however, the "L" attorney refused to clear anything similar in the 2007 reply to Congressman Lantos. This created an impasse: "L" would accept nothing suggesting that there was no "right" to ENR, while I would accept nothing that said there *was* such a right. The result was presumably disappointing to all: the Bergner letter's mere recapitulation of the vague text of Article IV. Thus did the State Department – despite having been publicly committed by the President to a policy of opposing the further spread of ENR, and having proclaimed at two official NPT meetings the non-existence of any Article IV ENR "right" – decline to conclude that U.S. policy did not violate the "rights" of countries such as Iran.

Interestingly, this was not the first time that "L" had blocked agreement upon a legal position made logically and legally inevitable by pre-existing, interagency-cleared, and publicly announced conclusions related to Iran. The reader will recall that at least as early as 1993, the United States had found Iran to be seeking to develop nuclear weapons. It was not until more than a decade later, however – and after much resistance – that the same "L" attorney was finally persuaded to clear what should long since have been a rather common-sense follow-on conclusion that Iran was in violation of its Article II obligation not to try to develop nuclear weapons. *Compare Adherence to and Compliance With Arms Control Agreements and the President's Report to Congress on Soviet Noncompliance with Arms Control Agreements* (January 14, 1993), *supra*, at 17 ("Iran is in the early stages of developing a nuclear weapons program"), *with* U.S. Department of State, *Adherence to and Compliance With Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* (August 2005) [hereinafter *2005 Noncompliance Report*], at 80, *available at* http://www.state.gov/documents/organization/52113.pdf (finding that "Iran is pursuing an effort to manufacture nuclear weapons, and has sought and received assistance in this effort *in violation of Article II of the NPT*") (emphasis added).

In his widely-reported (but not necessarily widely understood) April 2009 nuclear policy speech in Prague, President Barack Obama did not do too much to clarify the situation. On the one hand, Obama played to the perceived grievances of developing nations – and Iranian clerics – unhappy with his predecessor's approach to nuclear technology control by stressing that "no approach will succeed if it's based on the denial of rights to nations that play by the rules." On the other hand, the actual "right" to which the he referred was apparently *not* one that included unqualified access to technology irrespective of proliferation risk. Quite the contrary, in fact, Obama specified no more than that "the right of every nation that renounces nuclear weapons" was the right to "access peaceful power without increasing the risks of proliferation."[42]

The Prague speech seems to have been received around the world as a repudiation of Bush-era policies. Despite its conciliatory tone, however, it seems with regard to Article IV issues to have been closer to a reaffirmation of the approach propounded by John Bolton and others (including this author) during the Bush Administration. The "right" Obama described was merely to "access power" rather than specifically to access *technology*, and even this was further qualified by the requirement that its exercise not increase proliferation risk. It is far from clear what, if anything, the new president will wish, or be able, to do with regard to nuclear technology control – and whether it will turn out to be helpful or harmful to nonproliferation that there is apparently such a gap between what people *assume* he said in this regard and what he actually did.[43] Nevertheless, it is at least *potentially* significant that Obama seems to have offered the most recent official articulation of the "safeguardability" perspective.

And the Americans are not alone. A French working paper presented to the third Preparatory Committee meeting for the 2005 NPT Review Conference, for instance, clearly repudiated the notion of *per se* technology access rights. The French paper noted that "[d]eveloping peaceful uses of nuclear energy … does not require, in the large majority of cases, sensitive and potentially proliferating technologies," but it implied that should a conflict occur between the objective of peaceful development and the requirements of nonproliferation, the latter should prevail. Technology access, it stressed, "should only be envisaged in the light of the existence of a set of conditions relevant to the global non-proliferation regime and NPT objectives."[44] Paris pledged to offer the developing world "[i]ncreased access to *non*-sensitive technologies" – in fact, "guarantees of access" – but it carefully phrased this promise so as *not* to promise access to *sensitive* ones.[45] The paper made clear, moreover, that no cooperation should be

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42 President Barack Obama, remarks in Prague, Czech Republic (April 5, 2009), *available at* http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/.

43 If one's objective is merely to win acclaim for "change," such a gap is no doubt useful. It is less clear that encouraging such dramatic misunderstandings will provide a useful foundation for nonproliferation policy.

44 France, "Strengthening the nuclear non-proliferation regime," NPT/CONF.2005/PC.III/WP.22 (May 4, 2004), *available at* http://www.npec-web.org/Presentations/NonPaper040504%20UN-%20France%20-%20NPT-%20English%20Version.pdf, at 2.

45 *Id.*, at 3 (emphasis added).

pursued with any state "for which the IAEA cannot provide sufficient assurances that their nuclear program is devoted exclusively to peaceful purposes," with any state where there was "an 'unacceptable risk of diversion,'" or when it was "impossib[le] for the Agency[] to carry out its mission."[46]

Apart from such by-implication treatment of the underlying Article IV legal issues, however, governments concerned about the proliferation risks of spreading ENR technology either have remained studiously quiet about the legal import of Article IV, or have simply appeared confused. Despite the fact that governments have been so shy about offering a detailed and *official* account of the specifically *legal* case[47] against an Iranian-style "rights"-based view of Article IV, however, notable observers of NPT issues – experts spanning the conventional political spectrum – have been offering just such legal arguments for years.

(b) *Outside Experts*

In a 1976 paper prepared for the U.S. Arms Control and Disarmament Agency (ACDA), seminal Cold War nuclear theorist Albert Wohlstetter warned of the dangers of allowing dual-use civilian nuclear technology to spread. This, he said, was creating "[a] kind of growing legitimate – but Damocletian – 'overhang' of countries increasingly near the edge of making bombs" that would make nuclear safeguards "increasingly irrelevant."[48] Wohlstetter warned of the dangers of a situation in which, "in return for their (revocable) promise not to make or accept nuclear explosives," non-weapons states would continue to acquire "civilian technologies that would carry them a long distance on the road to nuclear explosives."[49]

Wohlstetter characterized the NPT as being fundamentally – and dangerously – ambiguous about peaceful uses, reflecting a broader confusion he felt to have been partly engendered by early rhetoric about the presumed – but, he stressed, notably

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46 *Id.*, at 3-4.

47 The *substantive* case is easier to make, of course. Even IAEA Director General Mohammed ElBaradei – who otherwise seems to regard himself as having as his most important mission not reigning in noncompliance with the safeguards with which the international community has entrusted his agency but rather protecting Iran from the United States, *see, e.g.*, Elaine Sciolino and William J. Broad, "To Iran and Its Foes, An Indispensable Irritant," *New York Times* (September 17, 2007) (quoting ElBaradei that those who contemplate war against Iran are "crazies" and describing himself as having a mission as the "secular pope" whose job is to "make sure, frankly, that we do not end up killing each other") – has warned about the dangers of a world of "virtual nuclear weapon states." *See* Zarate, *supra*, at 221 (quoting ElBaradei). The generally agreed worrisomeness of a world in which many countries could quickly produce nuclear weapons at will is presumably why opponents of efforts to stop the spread of ENR technology have preferred to emphasize ostensibly policy-trumping claims of an "inalienable" Article IV peaceful use "right."

48 Albert Wohlstetter, et al. [as Pan Heuristics], "Moving Toward Life in a Nuclear Armed Crowd?" paper prepared for the U.S. Arms Control and Disarmament Agency, ACDA/PAB-263 PH76-04-389-14 (December 4, 1975 [Revised April 22, 1976]), at 2.

49 *Id.*, at 58.

"exaggerated" – benefits of nuclear power for the developing world.[50] The Treaty was, he said,

> "a highly ambiguous and uncertain set of compromises, reflecting but not resolving … dilemmas about national sovereignty and the problem of encouraging civilian nuclear energy while discouraging military nuclear energy."[51]

This confusion lay at the root of the regime's problems with technology, for "the present rules of the game" permitted countries to "take … long strides towards nuclear weapons capability in the next ten years or so without violating the rules – at least no rigorously formulated, agreed on rules."[52]

The other side of this ambiguity, however, was that interpreting the NPT in a sensible and sustainable way was not prohibited. Wohlstetter argued that "[t]he line drawn between safe activities that are permitted under agreement and dangerous prohibited activities needs to be redrawn and clearly defined to make safeguards relevant."[53] In his view, there was no sharp distinction between "safe" and "dangerous" activities, with the result that the advisability of spreading technology should be assessed according to its impact upon "the shrinking critical time" needed to make a nuclear weapon.[54] He warned that the nonproliferation regime faced stresses because of early assumptions about the "simple dichotomies" between safety and danger, and that "sensible decision making and international bargaining in this field" required more.[55] In particular, Wohlstetter observed that it would be necessary to "persuad[e] less developed countries to forego national capabilities" in certain risky technological areas.[56]

Wohlstetter's analysis focused in particular upon chemical reprocessing of plutonium, which he argued in some detail was not merely "uneconomic" but in fact simply *could not* be safeguarded in such a way as to provide timely warning of misuse and therefore "creates unjustifiable risks."[57] His point was a broader one of principle, however, not a merely technology-specific risk assessment. His basic idea was that if the nonproliferation regime were to make any sense, and indeed to survive, consideration of proliferation risk had to be a part of *all* technology-access decisions[58] – and that there thus could be no *per se* right to technology.

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50 *See, e.g.*, *id.*, at 58 & 62.

51 *Id.*, at 62.

52 Wohlstetter, et al. *supra*, at 17; *see also id.* at 18 (declaring that "These paths of approach towards a weapons capability … do not break any precise, generally agreed on rules.").

53 *Id.*, at 19.

54 *See, e.g.*, *id.*, at 48-54.

55 Among other problems, Wohlstetter noted that "[a]mbiguities as to what is safe and what is dangerous" make for tremendous compliance enforcement problems in the real world of international politics. *See id.* at 5-58.

56 *Id.*, at 47-48.

57 *See, e.g.*, *id.*, at 66-72 & 95.

58 *See id*. at 89 ("If our primary objective is to impede nuclear weapon development, all civilian nuclear activities are not equally desirable.").

Wohlstetter's argument in 1976 was framed more in policy and economic terms than in legal ones. In 1979, however – in another report prepared for ACDA – he sharpened his already implicit legal conclusion. Wohlstetter noted there that if the "fullest possible exchange" provisions of Article IV(2) were taken to include "the provision of stocks of highly concentrated fissile material within days or hours of being ready for incorporated into an explosive," this would "certainly 'assist' an aspiring nonnuclear weapons state in making such an explosive" – thus violating the "assistance" prohibition of Article I.

> "No reasonable interpretation of the Nonproliferation Treaty would say that the treaty intends, in exchange for an explicitly revocable promise by countries without nuclear explosives not to make or acquire them, to transfer to them material that is within days or hours of being ready for incorporation into a bomb. Some help and certainly the avoidance of *arbitrary* interference in peaceful uses of nuclear energy are involved. However, the main return for promising not to manufacture or receive nuclear weapons is clearly a corresponding promise by some potential adversaries, backed by a system to provide early warning if the promises should be broken. The NPT is, after all, a treaty against proliferation, not for nuclear development."[59]

Further articulation of these ideas was offered by Arthur Steiner, Eldon Greenberg, Paul Leventhal, Leonard Weiss, and others. Steiner, for instance, rejected the "dubious" idea that "non-weapons states have the absolute right to receive any and all nuclear assistance" short of actually obtaining nuclear explosive devices. He interpreted Article IV as being necessarily "subordinate to, and to be interpreted in conformity with Articles I and II."[60] Examining the legislative history of the Treaty, Steiner declared that

> "[i]t seems quite clear … that it was not the intent of the framers of the NPT to create an obligation to supply any and all forms of nuclear energy with a single exception of actual explosive devices. The logic of the NPT does not support the idea that either weapons or non-weapons states wish to have their security reduced by unrestricted commerce in especially dangerous forms of nuclear energy. … The evidence is overwhelming that the 'straightforward bargain' [of weapons-relinquishment in return for unrestricted access to technology for peaceful purposes] is a dangerous myth."[61]

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59 *See* Eldon V.C. Greenberg, "The NPT and Plutonium: Application of NPT Prohibitions to 'Civilian' Nuclear Equipment, Technology and Materials Associated with Reprocessing and Plutonium Use" (Washington, D.C.: Nuclear Control Institute, 1993), at 13-14 (*quoting* Albert Wohlstetter et al., "Towards a New Consensus on Nuclear Technology," PH-78-04-832-13, prepared for the U.S. Arms Control and Disarmament Agency (July 6 ,1979), at 34-35).

60 *See* Greenberg, *supra*, at 14 (*quoting* Arthur Steiner, "Article IV and the 'Straightforward Bargain'" (PAN Paper 78-832-08)). Steiner's paper appeared in the supporting materials for Wohlstetter's 1979 report.

61 Steiner, *supra* (*quoted by* Greenberg, *supra*, at 16).

This conclusion was not surprising to Steiner:

> "It is, after all, a nonproliferation treaty. The provision of certain types of nuclear technology that defeat the objective of nonproliferation by bringing a non-weapons state recipient within days or hours of a weapon cannot be an objective … [of] a nonproliferation treaty."[62]

Eldon Greenberg's subsequent paper on the subject for the Nuclear Control Institute[63] – which approvingly quoted both Wohlsteter and Steiner – also analyzed the NPT's treatment of "nuclear equipment, technologies and materials … ostensibly for peaceful purposes in denominated civilian nuclear power programs."[64] (As it had been with Wohlstetter's argument, Greenberg's specific focus was plutonium reprocessing, but his legal point was not limited to this particular technology.) He described there being "a dynamic tension in the Treaty between its prohibitions and its injunctions to cooperate in peaceful uses of nuclear energy." Greenberg concluded, however, that the NPT's language and history – and in particular, the "in conformity with" language that qualifies the "inalienable right" described in Article IV(1) –

> "tend[] to support the conclusion that Articles I, II, and IV must be read together in such a way that assistance or activities which are ostensibly peaceful and civilian in nature do not as a practical matter lead to proliferation of nuclear weapons. The NPT, in other words, can and should be read as permitting the evaluation of such factors as proliferation risk, economic or technical justification and safeguards effectiveness in assessing the consistency of specific or generic types of assistance and activities with the Treaty's restrictions, to ensure that action is not taken in the guise of peaceful applications of nuclear energy under Article IV which in fact is violative of the prohibitions of Articles I and II."[65]

Greenberg apparently did not think that this conclusion was legally *compelled* by the NPT. Arguing against the view that any technology short of actual weapons could be permitted to non-weapons states as long as it this technology was subjected to IAEA safeguards, he stressed that "there is another way to interpret the NPT."[66] Specifically, it was "reasonable to interpret the Treaty" as prohibiting even notionally "civilian" uses where "safeguards under Article III of the Treaty are not effective."[67]

And Greenberg did *not* think safeguards could be effective, especially with regard to plutonium reprocessing. He contended, following Wohlstetter, that there were "serious

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62 *Id.* (*quoted by* Greenberg, *supra*, at 14).

63 Greenberg first prepared this paper for the Nuclear Control Institute (NCI) in the mid-1980s, and revised it for NCI in 1993. *See* Eldon Greenberg, testimony before the House Subcommittee on International Terrorism and Nonproliferation, Washington, D.C. (March 2, 2006), at 1 *available at* http://www.internationalrelations.house.gov/archives/109/gre030206.pdf.

64 Greenberg, *supra*, at 1.

65 *Id.*, at 10.

66 *Id.*, at 19.

67 *Id.*, at 1.

questions" about "the ability to safeguard effectively now or in the foreseeable future certain forms of assistance and activities, such as those related to reprocessing and plutonium recycle." As a result, "it is reasonable to conclude that the contemplated verification function of Article III cannot be fulfilled today."[68] Accordingly, Greenberg felt that "the presumption that the particular assistance or activity runs afoul of the prohibitions of Articles I and II should again arise."[69]

As this example indicates, Greenberg's was necessarily a strong position against "bright line" rules with regard to technology access. He was quite explicit about this, writing that "the NPT creates no *per se* rules with respect to acceptable uses and, indeed, allows a pragmatic interpretation of its provisions."[70]

> "Since questions with respect to the economics and safeguardability of … [specific nuclear technologies] are essentially factual in nature, judgments with respect to the applicability of the NPT's prohibitions can and should be made on a case-by-case basis, in light of al the facts and circumstances surrounding particular nuclear assistance or activities."[71]

As he later summed up his view, it was

> "perfectly legitimate to evaluate such factors as proliferation risk, economic or technical justification and safeguards effectiveness in determining whether specific or generic types of assistance or activities should be regarded as permissible under the NPT."[72]

Significantly, proliferation risk was first and foremost among the factors that needed to be considered, for – as Greenberg pungently put it – "the NPT 'does not require us to do something foolish.'"[73]

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68 *Id.*, at 21-22.

69 *Id.*, at 22. Greenberg held that these conclusions were particularly compelling because reprocessing did not seem to offer any meaningful economic benefit anyway, and he hinted that a finding of "non-benefit," as it were, might give rise to "a presumption … that the purpose is not legitimate under the NPT." *Id.* at 22-23. He did not, however, mean to suggest that a finding of non-benefit *in itself* would necessarily trigger the nonproliferation provision. Greenberg did not think it would be *per se* unlawful to possess a non-beneficial technology provided that it could be safeguarded adequately. His point was straightforward: if a technology could not be effectively safeguarded against misuse, there was no "right" to its possession by non-weapons states. *See* Eldon Greenberg, interview with the author (April 2, 2009); *cf.* Greenberg, "The NPT and Plutonium," *supra*, at 24 (noting that ACDA Director William Foster, in his explanation of the NPT to the U.S. Senate, left open the possibility that even activities placed under safeguards "could be considered violations of the NPT's prohibitions … if there were evidence that safeguards could not be effectively applied").

70 Greenberg, "The NPT and Plutonium," *supra*, at 22.

71 *Id.*, at 1.

72 Greenberg testimony, *supra*, at 1.

73 *Id.*, at 24 (*quoting* U.S. NPT negotiator Adrian Fisher, *in Hearings on S.1439 before the Senate Committee on Government Operations*, 94th Congress, 2d Session 141 (1976)).

> "At some point, particular assistance or activities may become so risky, even though they do not involve the transfer and acquisition of weapons or explosives as such, that they can no longer be deemed in conformity with the requirements of Articles I and II, even though by their stated terms they are for peaceful power applications only."[74]

Similar arguments, citing Greenberg, were subsequently advanced by Paul Leventhal at the Nuclear Control Institute, who argued that the "conformity" qualifications upon the "right" described in Article IV(1) meant that weapons-usable fissile materials "can be banned [for non-weapons states] under the existing terms of the Treaty" because "IAEA safeguards are clearly inadequate" to provide effective assurances against their misuse.[75] Writing upon the 50th anniversary of President Dwight Eisenhower's "Atoms for Peace" speech, Leonard Weiss also criticized "the notion that the NPT requires nuclear the weapon states to share technology for producing separated fissile material with non-weapon states," and decried "the early euphoric embrace of Atoms for Peace, when the spread of nuclear technology was unaccompanied by adequate consideration of proliferation risks."[76] Additionally, in a 1996 discussion of Article IV, Weiss argued that while international disputes over the meaning of its provisions have yet to reach "formal resolution," IAEA safeguards "cannot be *effectively* carried out at this time for enrichment and reprocessing facilities" and that therefore those who transfer such technology might "find themselves in violation of Article 1."[77]

This line of reasoning is also reflected in the writing of Henry Sokolski, of the Nonproliferation Policy Education Center (NPEC) – who edited the volume in which appeared Weiss' 1996 analysis. In 1996, for instance, Sokolski argued that

> "the NPT's framers understood that some forms of civil nuclear energy (*e.g.*, weapons-usable nuclear fuels and their related production facilities) were so close to bomb making that sharing them might not be in 'conformity' with Articles 1 and 2."[78]

Also casting doubt upon the ability of IAEA safeguards to provide timely warning of diversion, Sokolski cautioned that if the NPT were to have "worth … in the decade ahead," it would be necessary to focus upon the Treaty's "original concerns" as a *nonproliferation* instrument and "correct for its current deficiencies"[79] in that it was all

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74 Greenberg, *supra*, at 12.

75 Paul Leventhal, "Safeguards Shortcomings – A Critique" (Washington, D.C.: Nuclear Control Institute, September 12 ,1994), at n.16, *available at* http://www.nci.org/p/plsgrds.htm.

76 Leonard Weiss, "Atoms for Peace," *Bulletin of the Atomic Scientists*, vol.59, no.6 (November 1, 2003).

77 Leonard Weiss, "The Nuclear Nonproliferation Treaty: Strengths and Gaps" [hereinafter Weiss I], *in Fighting Proliferation: New Concerns for the Nineties* (Henry Sokolski, ed.) (Maxwell AFB, Alabama: Air University Press, 1996), *available at* http://www.fas.org/irp/threat/fp/index.html.

78 Henry Sokolski, "What Does the History of the Nuclear Nonproliferation Treaty Tell Us about Its Future?" *in Fighting Proliferation: New Concerns for the Nineties*, *supra*, at part I, ch.1, text accompanying note 61.

79 *Id.* at text accompanying notes 62-65.

too often being interpreted as a technology-privileging agreement. Fidelity to the original intention of the Treaty, said Sokolski, meant rejecting the idea that a non-weapons state has "a 'peaceful' right to acquire all it needs to come within days of having a bomb." Instead, he said, it must be accepted that "although nations should be free to develop peaceful nuclear energy … whether or not a particular activity met this criterion depended upon a number of factors" – including whether this application could be safeguarded in a way that provided timely warning of misuse.[80]

In contemporary debates – that is, in the wake of the revelations about Iran that bubbled forth after 2002 – NPEC has continued to propound this counterpoint to Iran's rights-privileging reading of Article IV. Specifically, Sokolski has continued to argue the need to

> "reinterpret existing rules to eliminate the mistaken belief that all forms of civilian nuclear activity, including those that bring states within days of acquiring nuclear weapons, are guaranteed."[81]

As Sokolski suggested before a congressional subcommittee in 2006, if the international community wishes to ensure the continued validity of the NPT regime, it should not "make our past mistakes [in interpreting Article IV] hereditary by grandfathering dangerous nuclear activities in … nonweapons states."[82]

In 2008, NPEC researcher Robert Zarate published a specifically legal analysis of Article IV which picked up the various themes – including the emphasis upon *safeguardablity* – stressed by Wohlstetter, Steiner, Greenberg, and Sokolski, and which built upon research into the NPT's negotiating history undertaken by Paul Lettow in May 2005.[83] Zarate contended that the NPT, "at a minimum," can be interpreted as "not recognizing the 'inalienable right' of signatories to nuclear materials, technologies, and activities that the IAEA cannot effectively safeguard."[84] He argued further that

> "the [International Atomic Energy] Agency cannot provide – even in principle – timely warning of a non-nuclear-weapon state's diversion of

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80 Henry A. Sokolski, "After Iran: Back to the Basics on 'Peaceful' Nuclear Energy," *Arms Control Today* (April 2006), at text accompanying note 3, *available at* http://www.armscontrol.org/act/2005_04/Sokolski.

81 Henry Sokolski, "Too Speculative?" *The New Atlantis* (Fall 2006), at 119, 123; *see also id.* (urging "reinterpret[ation of] existing rules to eliminate the mistaken belief that all forms of civilian nuclear activity, including those that bring states within days of acquiring nuclear weapons, are guaranteed"); Sokolski, "Nuclear Policy and the Presidential Election," *supra*, at 9 (decrying the idea that "states have an inalienable right not just to *have* but to *make* nuclear fuel – a step, it bears repeating, that would bring them within a whisker of making a bomb").

82 Henry Sokolski, "The Nuclear Nonproliferation Treaty and Peaceful Nuclear Energy," testimony before the House Subcommittee on International Terrorism and Nonproliferation (March 2, 2006), *available at* http://www.internationalrelations.house.gov/archives/109/sok030206.pdf.

83 *Cf., e.g.*, Sokolski testimony, *supra*, at 4 n.7 (citing Lettow paper); *see also id.* at 1 n.1 (noting that NPEC's safeguardability arguments "rely heavily upon the substantive historical and legal analyses of Albert Wohlstetter, Arthur Steiner, Eldon V.C. Greenberg, and Paul Lettow").

84 Zarate, *supra*, at 226.

> weapons-ready nuclear materials from civilian applications to nuclear weapons or unknown purposes; it must tolerate, under its current accounting methods, large amounts of unaccounted nuclear material at facilities that handle such material in bulk form before even beginning to suspect a diversion; and it appears to lack adequate financial resources to carry out many of its safeguarding activities effectively."[85]

Because Article III requires safeguards on nuclear activities in non-weapons states – and because to read the Treaty any other way would make Article III incoherent – "the NPT may be understood as prohibiting non-nuclear-weapon signatories from unsafeguardable nuclear materials, technologies, and activities."[86]

Surveying its negotiating history, Zarate argued that Article IV is perfectly consistent with a reading that interprets the "inalienable right" as being qualified in three ways. First, peaceful use applications must be "economically beneficial in accordance with the treaty's preamble. Second, they must possess a low risk of proliferation in accordance with Articles I and II. Third, they must be "effectively safeguardable and undertaken in full compliance with NPT and IAEA safeguard obligations in accordance with Article III."[87]

The view that adopting a *per se* rule of technology access rights under Article IV is to *misinterpret* that provision of the Treaty – or at least that the NPT *need not*, and for quite sound nonproliferation reasons *should not*, be interpreted in that fashion – has increasingly been picked up elsewhere in the nonproliferation community. It was, for instance, adopted in a 2007 Council on Foreign Relations study of nuclear energy issues written by Charles Ferguson. Subtitled "Balancing Benefits and Risks," Ferguson's report discussed the proliferation risks attendant to nuclear fuel-making, and described certain critical problems of applying nuclear safeguards to such technologies.[88] Among other things, Ferguson warned that "greater efforts are needed … to limit the spread of fuel-making technologies"[89] and declared that "the NPT's right to peaceful nuclear technologies" should be "properly interpret[ed]" to make clear that "[t]his right … comes with the responsibility to maintain adequate safeguards" and that the NPT does not "specifically" guarantee "nuclear fuel-making facilities as part of that right."[90]

The Commission on the Prevention on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism also seems, by implication, to have taken such a view of Article IV in its final report published in 2008. One of its key recommendations on nuclear nonproliferation was "to prevent the spread of uranium enrichment and plutonium reprocessing technologies and facilities to additional countries," and it urged the United States to "work to orchestrate an international consensus to block additional

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85 *Id.*, at 225.
86 *Id.*, at 226.
87 *Id.*, at 256.
88 Charles Ferguson, *Nuclear Energy: Balancing Benefits and Risks*, CFR Special Report No.28 (April 2007), at 16-18.
89 Ferguson, *supra*, at 25.
90 *Id.*, at 20.

countries from obtaining these capabilities."[91] This recommendation seems to have been based upon the Commission's concerns about "the inherent difficulty of reliably detecting dangerous illicit nuclear activities in a timely fashion." Some of these difficulties, the Commission warned, "are not likely to be remedied no matter how much the IAEA's resources are increased." In particular, this was the case with "detecting military diversions from nuclear fuel cycle activities."[92] Since such capabilities could not be safeguarded, their acquisition had to be prevented – and the Commission apparently saw no legal problem with doing so.

The Congressional Commission on the Strategic Posture of the United States seems to have reached a similar conclusion in late 2008. Its Interim Report warned that nuclear proliferation stood at a "tipping point," beyond which a "cascade" of proliferation might occur, and it noted that the IAEA had not been given the support it needed to provide adequate protection to fissile materials.[93] The terse report did not offer a legal analysis of the NPT, but it made clear that the Commission had reached a grim conclusion about how well the Treaty has hitherto generally been interpreted as a barrier to proliferation. To wit, it declared that the NPT's "effectiveness has been undermined by errors in how it has been interpreted and by failures of enforcement by the UN Security Council."[94] (It urged the United States to work to fix such interpretive errors at the 2010 NPT Review Conference.) The Commission's final report, released in 2009, emphasized that the "further globalization of nuclear expertise" will "inevitably increase the risks of possible diversion to illicit purposes."[95] It did not discuss the "right" discussed in Article IV beyond reiterating the NPT's requirement that it be limited to peaceful uses (*i.e.*, "in conformity with Articles I and II of this Treaty"), but the Commission urged governments agree to "limit access to enrichment and reprocessing technologies, and the facilities that employ them, to the maximum extent possible."[96]

Arguments consistent with or explicitly supportive of a "safeguardability" reading of Article IV have thus been offered for many years. (This is a history of critical analysis to which I would myself already have added a voice, had I not in 2007 been refused clearance by the State Department's Office of the Legal Advisor to make similar points even in an essay drafted as my "personal views."[97]) To sum up the "safeguardability" perspective, the vague text of Article IV is read as embodying no more than an elaboration upon the idea expressed in the NPT Preamble about sharing the *benefits* of nuclear technology.[98] Safeguardability recasts Article IV legal analysis, turning claims of

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91 Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, *World At Risk* (New York: Vintage Books, 2008) [hereinafter *WMD Commission Report*], at 53.

92 *WMD Commission Report*, *supra*, at 46.

93 Congressional Commission on the Strategic Posture of the United States, *Interim Report* (December 15, 2008) [hereinafter Congressional Commission *Interim Report*], at 4-5.

94 Congressional Commission *Interim Report*, *supra*, at 10

95 Congressional Commission on the Strategic Posture of the United States, *America's Strategic Posture* (Washington, D.C.: U.S. Institute of Peace Press, 2009), at 77; *see also id.* at 80.

96 *America's Strategic Posture*, *supra*, at 78.

97 An attorney in the Office of the Legal Advisor insisted upon deleting passages to this effect from the author's draft presentation to a conference in Paris in the summer of 2007 sponsored by the U.S. Naval Postgraduate School. Those deleted sections formed the starting point for this article.

98 NPT, *supra*, from the preamble (affirming that "the *benefits* of peaceful applications of nuclear

a "rights"-based discourse on their head by rejecting the idea that the NPT discusses peaceful use "rights" in any sense *other* than affirming a right to the *benefits* of nuclear technology. Through this lens, sharing of the technology itself, or of nuclear materials, is not a question of *right* at all but rather of *policy*: whether or not such access can be given in a way consistent with the overarching purpose of the Treaty in preventing the proliferation of nuclear weapons. To be sure, possessors have the obligation to work to help *all* of mankind, and not just *some* of it, benefit from nuclear know-how. Nevertheless, proliferation risk trumps peaceful use "rights" where sharing specific technologies is concerned.

The most forgiving form of the safeguardability argument might simply deny the existence of ENR "rights." This would effect a *de-legalization* of the NPT's peaceful use discourse,[99] leaving specific technology-sharing questions to be resolved on a case-by-case basis as a matter for technically-informed policy choice. As we have seen, many authors have criticized the adequacy of IAEA safeguards, questioning the Agency's ability – at least with its current resources, or by some accounts *at all* – to provide genuinely timely warning of the diversion of particular types of nuclear technology. This line of argument runs back through the critiques of plutonium reprocessing offered by Wohlstetter, Steiner, and Greenberg, which have been echoed by some experts today, and indeed expanded to cover uranium enrichment and even the operation of light water nuclear reactors.[100] The simple "de-legalization" form of the safeguardability critique would hold simply that there is no *right* to such technology, and that as a matter of *policy*, right-thinking members of the international community should work to stop the spread of any capabilities that cannot adequately be safeguarded, because of the proliferation risks that they entail. (As noted above, this is about as far as we got within the U.S. State Department in 2004 and 2005, with our interagency-cleared remarks about Article IV and ENR.[101])

But one might perhaps go further. A stronger form of the safeguardability critique – already suggested by at least some of the authors surveyed above – would build upon

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technology … should be available for peaceful purposes to all Parties")(emphasis added).

99 This author has elsewhere called for disarmament debates under the NPT's Article VI to be similarly de-"legalized." *See, e.g.*, Christopher A. Ford, "Nuclear Disarmament and the 'Legalization' of Policy Discourse in the NPT Regime," remarks to the James Martin Center for Nonproliferation Studies, Washington, D.C. (November 29, 2007); *see also* Christopher A. Ford, "Christopher A. Ford responds," *Nonproliferation Review*, vol.15, no.3 (November 2008), at 418, 420 (arguing need for "a kind of mercy killing of conventional jurisprudential wishful thinking about Article VI – not in order to 'paper over' anything, but rather precisely in order to make possible the kind of rich and constructive policy debates the world needs").

100 *See, e.g.*, Victor Gilinsky, Marvin Miller, & Harmon Hubbard, "A Fresh Examination of the Proliferation Dangers of Light Water Reactors" (October 22, 2004), *available at* http://www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=Report041022%20LWR&PDFFolder=Reports; Edwin S. Lyman, "Can Nuclear Fuel Production in Iran and Elsewhere Be Safeguarded against Diversion?" *in Falling Behind: International Scrutiny of the Peaceful Atom*, *supra*, at 101; Thomas B. Cochran, "Adequacy of IAEA's Safeguards for Achieving Timely Detection," *in id.,* at 121; Henry D. Sokolski, "Assessing the IAEA's Ability to Verify the NPT," *in id.*, at 3.

101 *See* Bolton, *supra*; Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," *supra*; NPT/CONF.2005/WP.57, *supra*.

factual assessments of unsafeguardability toward a legal conclusion of such technologies' *impermissibility*. Such arguments tend to note that the possession of *in*adequately safeguarded materials or facilities raises Article III compliance problems, while Article I requires nuclear weapons states, at least, to avoid assisting nuclear weapons efforts in non-weapons states. If it is indeed the case that the IAEA *cannot* adequately safeguard certain nuclear activities, some authors have thus suggested that these should be understood as being *prohibited* by the NPT for states not already lawfully having nuclear weapons. This is a potentially dramatic conclusion, for it would raise questions not only about the impermissibility of *spreading* capabilities such as uranium enrichment and reprocessing, but also about the *existing* fact of their possession by non-weapons states (*e.g.*, plutonium bulk-handling facilities in Japan).

Such a "strong form" of the safeguardability argument, however, has its weaknesses as a question of legal interpretation. It is it is easier and usually more plausible, for instance, to read a vague committee-drafted text as ducking a contentious issue than to interpret its ambiguity as a sharp prohibitory stand. It is also problematic to build a general technology-prohibition argument – however substantively sensible such a position might be – so heavily upon inferences from the weapons-assistance ban of Article I, which by its terms applies only to nuclear weapons states, and at least arguably does *not* prohibit *non*-weapons states from assisting others' nuclear weapons programs.[102]

Either way, however, the distinctiveness of the safeguardability reading of the NPT's peaceful use provisions is in its transformation of the debate from a policy-*trumping* discourse of "rights" into a policy-*privileging* arena for technically-informed substantive judgments involving the consideration of such things as specific safeguards capabilities and the time needed for an effective response to the detection of a violation. Safeguardability approaches to technology access, in other words, tie themselves to a calculus of proliferation risk – a focus that their defenders suggest is entirely appropriate, and indeed quite necessary, under a *nonproliferation* treaty.

III. *A Prehistory of Nuclear Technology Control*

Despite the recently increased salience of Article IV debates in the struggles over Iranian proliferation challenges, therefore, the conceptual lines have long been fairly clearly drawn. What, however, are we to make of all this? One useful way to help approach the NPT's treatment of peaceful use issues is to understand the context of the broader problem of technology control that has been keenly understood – and was approached in characteristic ways – from the very earliest years of the international community's struggle to come to grips with the implications of the nuclear age.

A. *Struggling With Janus: The Acheson-Lilienthal Era*

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[102] This is a drafting problem of the NPT that has been noted by others. *See, e.g.*, Weiss I, *supra* ("Nothing in the treaty prohibits a nonweapon state that is party to the treaty from assisting another nonweapon state in manufacturing or otherwise acquiring the bomb.")

The idea of ensuring broad international participation in the *benefits* that nuclear technology can bring to mankind, while yet trying to avoid spreading knowledge and capabilities related to its destructive aspects, goes back to the dawn of the nuclear age. It has always been understood that nuclear technology is in no way a *per se* good, and that its spread requires qualification commensurate to the risks. For this reason, it was recognized at the beginning of mankind's struggle with these nuclear tensions that a commendable focus upon spreading the *benefits* of nuclear power did not necessarily imply any commitment to spreading *all* nuclear know-how – and indeed that a genuine commitment to nuclear benefits *did* necessarily imply careful attention to what specific capabilities should *not* spread.

In a Joint Declaration in November 1945, for instance, U.S. President Harry Truman, British Prime Minister Clement Attlee, and Canada's Prime Minister Mackenzie King stressed their belief in sharing what they called "the fruits" of nuclear scientific research. They noted, however, that "[t]he military exploitation of atomic energy depends, in large part, upon the same methods and processes as would be required for industrial uses," and suggested pointedly that it would be counterproductive to share technology in the absence of effective "and enforceable" safeguards.[103]

Crucially, moreover, it was also understood from the start that the types of nuclear know-how that should *not* be shared were *not* limited solely to those involved in end-stage manufacture of nuclear weaponry. Actual bomb-making skills clearly *should* not be shared, of course, but as the Joint Declaration suggested, a sane approach to managing the tension between the destructive and creative powers of nuclear technology required attention to the degree to which safeguards could control the proliferation risks of shared technology.

The idea that certain nuclear capabilities and activities were inherently dangerous, and that they thus should *not* be shared or spread more widely, dates from the very earliest years of the international community's struggle with nuclear energy. Even as scientists and policymakers scrambled to figure out how to share nuclear *benefits* more widely in the name of socio-economic progress, those aspects of nuclear technology that were common *both* to weapons work and to peaceful uses were naturally the focus of special concern and attention. They were widely, and quite explicitly, regarded as being something that needed to be controlled: something to which access should be restricted unless and until approaches could be developed that could preclude their exploitation for weapons-related work.

The idea that some technologies and activities were inherently "dangerous," for example, was fundamental the U.S. Government's famous "Baruch Plan" – which called in 1946 for the creation of an International Atomic Development Authority in order to exercise "[m]anagerial control and ownership of all atomic-energy activities potentially dangerous to world security." Specifically, the proposed Authority was to exercise

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103 "Joint Declaration by the Heads of government of the United States, the United Kingdom, and Canada" (November 15,1945), *in* U.S. Department of State, *Documents on Disarmament: 1945-1959, Volume I* (Washington, D.C.: Department of State Historical Office, 1960), at 1, 2.

exclusive control over "intrinsically dangerous activities" such as "the production of fissionable materials," including "all plants producing fissionable materials."[104] In addition to "all facilities for the production of U-235, plutonium and other such fissionable materials," the Authority was therefore to have control over all fissile materials themselves, "wherever present in potentially dangerous quantities." Sharp restrictions upon access to such capabilities – which the Baruch Plan proposed in the form of exclusive international control – were necessary because "all the initial processes in the production of these fissionable materials … are identical whether their intended use or purpose is beneficent or dangerous."[105]

Nor was it expected that the category of "intrinsically dangerous activities" was one that would remain fixed for all time. To the contrary, there was no fixed line between "safe" and "dangerous" nuclear technologies. It was expected that as technology developed – or our understanding of nuclear risks matured – this category might change. Because of the need flexibly to define "intrinsic danger" according to the best understanding of the time, it was thus considered necessary to give the proposed International Atomic Development Authority the authority to define, and re-define, the categories of technology requiring international control.[106] The Authority needed "the power to determine, and adjust from time to time, in accordance with increased knowledge, the dividing line between 'safe' and 'dangerous' activities as new conditions demand."[107]

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104 "Statement by the United States Representative (Baruch) to the United Nations Atomic Energy Commission" (June 14, 1946), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 7, 10 & 14-15.

105 "United States Memoranda on the Proposed Atomic Development Authority, Submitted to Subcommittee I of the U.N. Atomic Energy Commission," *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 25, 25 & 27 (July 2, 1946 memorandum); *see also id.* at 30 & 32 (July 5, 1946 memorandum). One reason for the U.S. emphasis upon a flat prohibition upon national governments having any fuel making *capability* lay in the difficulty of verifying and enforcing compliance with any system that permitted national fissile material production for "peaceful" purposes. As one U.S. diplomat explained it, once the international Authority had been provided with exclusive authority to undertake such activity,

> "then the agency in the detection of clandestine activities need not be concerned with the motives of those carrying on unauthorized activities in this field, for it is the very existence of such activities that is illegal."

"Statement by the Deputy United States Representative (Cohen) to Committee I of the Disarmament Commission" (May 14, 1952), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, 358, 362. This is a problem, of course, that bedevils the nuclear safeguards system today – and which has also been identified as a stumbling block for verifying a future Fissile Material Cutoff Treaty (FMCT). *See, e.g.*, U.S. Special Representative for Nuclear Nonproliferation Christopher Ford, "The United States and the Fissile Material Cutoff Treaty," paper delivered at conference on "Preparing for 2010: Getting the Process Right," Annecy, France (March 17, 2007), *available at* http://www.state.gov/t/isn/rls/other/81950.htm.

106 "United States Memoranda on the Proposed Atomic Development Authority, Submitted to Subcommittee I of the U.N. Atomic Energy Commission," *supra*, at 27 (July 2, 1946 memorandum).

107 *Id.*, at 32 (July 5, 1946 memorandum).

The issue of nuclear technology access, in other words, was to be a matter not of legal "rights" but rather a scientifically-informed question of nonproliferation *policy*. It was very important that "the benefits" derived from atomic energy research and development be available to all mankind,[108] but the specific issue of *technology*-access had always to be subordinated to nonproliferation considerations. As the United States put it at the time, it was "important" to share nuclear benefits, but it was a "prime purpose" of the proposed authority to "prevent national development or use of atomic armament."[109] What could not *safely* be shared must *not* be.

It was therefore central to the scheme that technology access policy hinge upon whether, and the degree to which, the wider spread of specific nuclear know-how was consistent with preventing proliferation in light of the best available understanding of what could be made proof against weapons-related exploitation. To officials at the time, fuel-cycle technology was clearly "intrinsically dangerous" and consequently un-shareable, but this was not a conclusion written in stone. The key insight was that *nothing* should be permitted outside the exclusive control of the proposed Authority that could be exploited for weapons development. A rigorously-defined notion of *safeguardability*, in effect, was the litmus test of technology access for *any* national government.

The Baruch Plan was the outgrowth of an extensive U.S. review of nuclear policy that culminated in the so-called Acheson-Lilienthal Report of March 1946, which had provided the intellectual underpinnings for the approach proposed by Bernard Baruch to the United Nations Atomic Energy Commission later that year. While U.S. officials were well aware that "the only *complete* protection for the civilized world from the destructive use of scientific knowledge lies in the prevention of war,"[110] the authors of the Report clearly felt that there were better and worse ways to reduce the tremendous dangers presented by nuclear technology short of achieving complete world peace.

The Baruch Plan's distinction between "safe" and "dangerous" nuclear activities – with only the former being appropriately left in national hands – derived from the Acheson-Lilienthal Report.[111] That study argued that, for the sake of global security, an international control authority must be given "exclusive jurisdiction to conduct all intrinsically dangerous operations in the [nuclear] field." The line between safe and dangerous, as we have seen, was "not sharp and may shift from time to time in either

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108 *Id.*, at 27 (July 2, 1946 memorandum).

109 *Id.*, at 33 (July 5, 1946 memorandum).

110 Report on the International Control of Atomic Energy (March 16, 1946) [hereinafter Acheson-Lilienthal Report] (Washington, D.C.: U.S. Government Printing Office, 1946 [U.S. Department of State, Publication 2498]), at 3 (quoting Agreed Declaration of November 15, 1945, by the President of the United States and the Prime Ministers of the United Kingdom and Canada).

111 *See, e.g.*, Acheson-Lilienthal Report, *supra*, at 26 (emphasizing that "this distinction between the 'safe' and the 'dangerous' can be useful without being completely sharp or fixed for all time"); *id.*, at 26 & 29 (discussing what it considers to be inherently "dangerous" activities, including U-235 enrichment "by any methods now known to us" and plutonium production, and "[t]he operation of the various types of reactors for making plutonium, and of separation plants for extracting the plutonium"); *id.*, at 27-28 (discussing what it considers to be "safe activities").

direction." (It would be, said the Report, up to the Atomic Development Authority "continually to reexamine the boundary between dangerous and non-dangerous activities.")[112]

> "In our view, any activity is dangerous which offers a solution either in the actual fact of its physical installation, or by subtle alterations thereof, to one of the three major problems of making atomic weapons: (i) The provision of raw materials, (ii) The production in suitable quality and quantity of the fissionable materials plutonium and U 235, and (iii) The use of these materials for the making of atomic weapons."[113]

Interestingly, the Report considered even nuclear power generation – which was not in fact then possible, because "existing plants are not designed to operate at a sufficiently high temperature for the energy to be used for the generation of electrical power" – to be an intrinsically dangerous nuclear activity.[114] (It reached this conclusion, moreover, despite the initial belief of its drafters that techniques of "denaturing" uranium and plutonium in reactor fuel could "render[] materials safer" so that they "do not readily lend themselves to the making of atomic explosives."[115] The fact that this assumption about denaturing was already under question at the time the document was released – leading the U.S. Government to re-release the Report with an explanatory press release noting that it "does not contend nor is it in fact true, that a system of control based solely on denaturing could provide adequate safety"[116] – simply highlighted the conclusion.) Another technology emphatically noted as "dangerous" was the production of fissile material itself: uranium isotopic separation and reactor operation for plutonium production. Such activities were clearly "intrinsically dangerous operations, " and the Report argued pointedly that fissile material production "may be regarded as the *most* dangerous [type of activity], for it is through such operations that materials can be produced which are suitable for atomic explosives."[117]

The analysis underpinning the Report reflected great skepticism about the utility of a control system in which nations remained free to undertake nuclear activities that would be useful both for peaceful applications and for weapons development, even if some international inspectorate could be created in an effort to monitor activity for possible impermissible weapons-related work. An "agency with merely police-like powers attempting to cope with national agencies otherwise restrained only by a commitment to 'outlaw' the use of atomic energy for war"[118] would be, the Report argued, inherently inadequate. For an inspection system to be feasible, the Report noted, safeguards mechanisms must

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112 *Id.* at 32-33.
113 *Id.* at 26.
114 *Id.* at 35.
115 *Id.* at 26.
116 U.S. State Department, press release no. 235 (April 9, 1946), at 1, *appended to* Acheson-Lilienthal Report, *supra*.
117 Acheson-Lilienthal Report, *supra*, at 35 (emphasis added).
118 *Id.*, at viii.

> "provide[] unambiguous and reliable danger signals if a nation takes steps that do or may indicate the beginning of atomic warfare. Those danger signals must flash early enough to leave time adequate to permit other nations – alone or in concert – to take appropriate action."[119]

Yet the activities involved in developing atomic energy for peaceful purposes and those used in developing it "for bombs" were too "interchangeable and interdependent," and the potential consequences of military diversion too great, for any stable regime to rely simply upon national government good faith backed by some sort of inspections. It was simply not possible, the Report's authors believed, for safeguards to ensure the requisite timely warning: "[i]f nations or their citizens carry on intrinsically dangerous activities it seems to us that the chances for safeguarding the future are hopeless." [120]

The Report's explanation is worth quoting at length, for if correct it would have fateful implications for today's Article IV debates.

> "From this it follows that although nations may agree not to use in bombs the atomic energy developed within their borders the only assurance that a conversion to destructive purposes would not be made would be the pledged word and the good faith of the nation itself. This fact puts an enormous pressure upon national good faith. Indeed it creates suspicion on the part of other nations that their neighbors' pledged word will not be kept. This danger is accentuated by the unusual characteristics of atomic bombs, namely their devastating effect as a surprise weapon, that is, a weapon secretly developed and used without warning. Fear of such surprise violation of pledged word will surely break down any confidence in the pledged word of rival countries developing atomic energy if the treaty obligations and good faith of the nations are the only assurances upon which to rely.
>
> … We have concluded unanimously that there is no prospect of security against atomic warfare in a system of international agreements to outlaw such weapons controlled only by a system which relies on inspection and similar police-like methods. The reasons supporting this conclusion are not merely technical, but primarily the inseparable political, social, and organizational problems involved in enforcing agreements between nations each free to develop atomic energy but only pledged not to use it for bombs. National rivalries in the development of atomic energy readily convertible to destructive purposes are the heart of the difficulty. So long as intrinsically dangerous activities may be carried on by nations, rivalries are inevitable and fears are engendered that place so great a pressure upon a system of international enforcement by police methods that no degree of ingenuity or technical competence could possibly hope to cope with them.

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119 *Id.* at 9.

120 *Id.* at 30.

> "… We are convinced that if the production of fissionable materials by national governments (or by private organizations under their control) is permitted, systems of inspection cannot by themselves be made 'effective safeguards … to protect complying states against the hazards of violations and evasions.'
>
> "… The efforts that individual states are bound to make to increase their industrial capacity and build a reserve for military potentialities will inevitably undermine any system of safeguards which permits these fundamental causes of rivalry to [continue to] exist. In short, any system based on outlawing the purely military development of atomic energy and relying solely on inspection for enforcement would at the outset be surrounded by conditions which would destroy the system.
>
> "… [T]he facts preclude any reasonable reliance upon inspection as the primary safeguard against violations of conventions prohibiting atomic weapons, yet leaving the exploitation of atomic energy in national hands."[121]

The Report thus emphasized that "*an otherwise uncontrolled exploitation of atomic energy by national governments* will not be an adequate safeguard" and that the "necessary preconditions for a successful scheme of inspection … *cannot be fulfilled in any organizational arrangements in which the only instrument of control is inspection*."[122] It did not mince words:

> "It is not possible to devise an atomic energy program in which safeguards independent of the motivation of the operators preclude the manufacture of material for atomic weapons."[123]

This conclusion about the unavoidable inadequacy of any inspection-based system of safeguards which allowed fissile material production capacity to remain in national hands formed the basis for the U.S. conclusion that an international agency be created with exclusive prerogatives to engage in those "activities which it is essential to control because they are dangerous to international security."[124]

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121 *Id.*, at 4, 8-9; *see also id.* at 21 ("Take the case of a controlled reactor, a power pile, producing plutonium. Assume an international agreement barring use of the plutonium in a bomb, but permitting use of the pile for heat or power. No system of inspection, we have concluded, could afford any reasonable security against the diversion of such materials to the purposes of war. If nations may engage in this dangerous field, and only national good faith and international policing stand in the way, *the very existence of the prohibition* against the use of such piles to produce fissionable material suitable for bombs would tend to stimulate and encourage surreptitious evasions. This danger in the situation is attributable to the fact that this potentially hazardous activity is carried on by nations or their citizens.").

122 *Id.*, at 5-6 (emphasis in original).

123 *Id.* at 29.

124 *Id.*, at viii. The Acheson-Lilienthal Report also worried about the problem of *seizure*. Because even internationally-owned and -operated nuclear facilities had to be located *somewhere*, there

For these very reasons, the Acheson-Lilienthal Report also made clear that national government's access to nuclear technology could not be made a question of *legal right*. Such "rights" would undermine the control system by preventing the kinds of restrictions that would be required in order to preserve international peace and security. The Report deemed it "essential" for any "workable system of safeguards" to "remove from individual nations or their citizens the legal right to engage in certain well-defined activities in respect to atomic energy … [that are] intrinsically dangerous because they are or could be made steps in the production of atomic bombs."[125] Only if technology access were a *policy* question – indexed, in effect, to proliferation risk – could a workable regime survive. A *rights*-based discourse about fissile material production and stockpiling was understood to be fundamentally incompatible with global security in the nuclear age.

(1) *United Nations Endorsement*

Though these conclusions were resolutely opposed by the Soviet Union and its communist allies – Moscow of course being then hard at work developing its own nuclear weapons on the basis of information pilfered from the Manhattan Project, and thus none too keen on a system that would remove weapons-making technology from national governments' hands – the basic outlines of the Baruch Plan were endorsed by considerable majorities in the young United Nations. The first report of the U.N. Atomic Energy Commission (UNAEC) in 1946 emphasized

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existed a danger that a bomb-acquisitive host government might simply take over a reactor or fuel-making plant by force of arms. This, the Report recognized, could not really be prevented: "It is not thought that the Atomic Development Authority could protect its plants by military force from the overwhelming power of the nation in which they are situated." *Id.*, at 47. In an interesting presaging of the idea of "countervailing reconstitution" floated by U.S. officials many years later as a potential way to deter "breakout" from a hypothetical future regime of nuclear weapons prohibition, however, the Acheson-Lilienthal Report suggested that seizure by any particular host country might be deterred by the prospect that if this occurred *other* countries would quickly follow suit in order to create a nuclear weapons balance:

> "The real protection will lie in the fact that if any nation seizes the plants or the stockpiles that are situated in its territory, other nations will have similar facilities and materials situated within their own borders so that the act of seizure need not place them at a disadvantage."

Id., at 47; *compare with* U.S. Special Representative for Nuclear Nonproliferation Christopher A. Ford, "Disarmament and Non-Nuclear Stability in Tomorrow's World," remarks to the Conference on Disarmament and Nonproliferation Issues, Nagasaki, Japan (August 31, 2007), *available at* http://www.state.gov/t/isn/rls/rm/92733.htm (noting "the possibility that the potential availability of countervailing reconstitution would need to be a part of deterring "breakout" from a zero-weapons regime"). As a result,

> "[t]he decisive consideration in determining the location of such plants will have to be strategic; otherwise the physical balance between nations will be impaired. In other words, the distribution of these plants throughout the world will have to be based primarily on security considerations."

Acheson-Lilienthal Report, *supra*, at 48.

125 Acheson-Lilienthal Report, *supra*, at 22.

> "the intimate relation between the activities required for peaceful purposes and those leading to the production of atomic weapons; most of the stages which are needed for the former are also needed for the latter. … [T]he productive processes are identical and inseparable up to a very advanced state of manufacture."[126]

This made international control of such capabilities imperative. This identity and inseparability of the productive processes for nuclear fuel and nuclear weapons material made fuel-cycle technology effectively unsafeguardable: these were *not* capabilities that could safely be left in national hands.[127]

Interestingly, the UNAEC did not follow the United States in endorsing the idea of giving the proposed international Authority *carte blanche* in making the sort of risk-based policy determinations that would be necessary in setting the specific contours of permissible nuclear "benefit"-sharing. This was not, however, out of any concern that the Authority would be too strict in drawing the line against peaceful use applications that entailed proliferation risks. Instead, the Commission seems in part to have feared that the Authority might be too *lenient*: "[i]f the agency were free to decide the rate of production of nuclear fuel and were to embark upon a policy of production exceeding recognized or actual beneficial uses … the conditions of world security would be greatly affected."[128] The UNAEC, in other words, was concerned to ensure that global nuclear policy was not made *so* solicitous of requests for peaceful uses that it threw nuclear weapons proliferation considerations to the winds.

Noting "the conflict between the requirements of security and those of preparing for large-scale application of peaceful developments" of nuclear energy, the UNAEC recommended that the proposed Authority to keep fuel production "at the minimum required for efficient operating procedures necessitated by actual beneficial uses, including research and development."[129] (Remember also that this discussion only occurred within a framework that presupposed the Authority's exclusive right to engage in fissile material production: even *internationally*-controlled production was thus understood to risk creating nonproliferation problems, and had to be kept to the bare minimum possible consistent with what was actually "beneficial.") In approaching the objective of sharing the "benefits" of nuclear technology, therefore, the Commission seems to have perceived a linkage between the idea of "actual beneficial uses" and "the

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126 "First Report of the United Nations Atomic Energy Commission to the Security Council" (December 31, 1946), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 50, 51 & 56.

127 *See also, e.g.*, "Statement by the United States Representative (Cooper) to the General Assembly" (December 12, 1950) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 263, 264 ("A real and effective solution to the problem [of controlling nuclear technology] was made essential by the fact that atomic energy developed for peaceful purposes is, automatically and inescapably, adaptable to military purposes.").

128 "Second Report of the United Nations Atomic Energy Commission to the Security Council" (September 11, 1947), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 93, 97.

129 *Id.* at 98.

conditions of world security." Nuclear "benefits" could not be approached independently of the issue of preventing states from developing nuclear weapons.

(2) *The Primacy of Security*

The UNAEC was quite firm that international control of nuclear energy was needed because the proliferation risks would be intolerable if each state were to claim the "right" to determine whether, and how much, fissile material to produce. Such a "right" was entirely inconsistent with global security.[130] As the Commission put it,

> "if the right to decide upon the number and size of such facilities and upon the size of the stockpiles of source material and nuclear fuel situated on their territory were left to nations, the control measures provided for in the [UNAEC's] first report would not, if applied alone, eliminate the possibility of one nation or group of nations achieving potential military supremacy, or, through seizure, actual military supremacy."[131]

As the Commission envisioned it, the proposed international Authority would define what was "dangerous" within the scope of parameters set by the international convention establishing it.

What would be permitted to national governments was a *policy* decision to be made with an eye to the global security impact – in terms of nuclear weapons proliferation – of permitting access to any particular type of technology or nuclear capability.

> "Dangerous activities or facilities are those which are of military significance in the production of atomic weapons. The word 'dangerous' is used in the sense of 'potentially dangerous to world security'. In determining from time to time what are dangerous activities and dangerous facilities, the international agency shall comply with the provisions of the treaty or convention which will provide that the agency shall take into account the quantity and quality of materials in each case, the possibility of diversion, the ease with which the materials can be used or converted to produce atomic weapons, the total supply and distribution of such materials in existence, the design and operating characteristics of the facilities involved, the ease with which these facilities may be altered, possible combinations with other facilities, scientific and technical

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130 The word "nonproliferation" did not yet appear in the international lexicon. Indeed it was the concern of the U.N. and the American proposals not merely – as would later be the case with the NPT – to stop the spread of weapons capabilities to *additional* states, but instead to ensure that *no* national governments retained a fuel-cycle capability at all. Nevertheless, the fundamental issue would remain the same throughout the nuclear era: grave concern about the implications for peace and stability of national acquisition of nuclear weapons capabilities.

131 "Second Report of the United Nations Atomic Energy Commission," *supra*, at 96.

> advances which have been made and the degree to which the agency has achieved security in the control of atomic energy."[132]

As had U.S. officials promoting the Baruch Plan, the UNAEC understood that this essentially *policy* question was also one that could change over time.

> "The dividing line between dangerous and non-dangerous activities will change from time to time. Many factors will be involved, and these factors will vary from one installation to another."[133]

The bottom line, however, was that the United Nations recommended that proliferation impact – and the closely related criterion of safeguardability – be made the keys to determining what technology can and should be permitted to national governments.

Thinkers of the period were painfully aware of what we might today call the problem of the "latent" or "virtual" nuclear weapons programs afforded by possession of nuclear fuel-making capabilities. As U.S. Secretary of State Dean Acheson put it, the true "measure of atomic armament" available to a country was to be found less in what it actually had "put into a bomb" than in "the amount of fissionable material which has been produce and is currently being produced" there. It was the essence of the U.S. and United Nations approach, therefore, to ensure that "no nation would be permitted to possess the means with which weapons could be made" – namely, fuel-production technology.[134]

This approach, it was recognized, would not be without cost. The UNAEC recognized that there was "conflict between the requirements of security and those of large-scale development and use of atomic energy for peaceful purposes." Security measures, for instance, might retard the development of nuclear energy, while the production and stockpiling of nuclear fuel – however useful that might be for reactor operation – "would hardly be consistent with security." Nevertheless, at least for the foreseeable future, the Commission stressed that "[i]n regard to the specific proposal for future production and stockpiling of nuclear fuels, it appears that at the present time policy should be dictated primarily by security considerations."[135] Where peaceful uses appeared inconsistent with preventing proliferation, in other words, security considerations must be paramount: sharing the "benefits" of nuclear technology was important, but not more important than preventing nuclear weapons development.

According to the Commission, the international Authority should "make every effort to widen the activities involving nuclear fuels and key substances permitted to nations, *as conditions warrant*," and should "be guided by the general principle that

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132 *Id.*, at 99; *see also id.* at 149-50 (offering same basic definition).

133 *Id.*, at 129.

134 "Address by Secretary of State Acheson to the First Committee of the General Assembly," (November 19, 1951), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 309, 216 & 326.

135 "Second Report of the United Nations Atomic Energy Commission," *supra*, at 127-28.

nuclear fuel is intended for beneficial use." Nevertheless, "[d]angerous facilities shall be provided for nations *only* as world conditions of security warrant *and* where economic justification exists."[136] Significantly, moreover, these two conditions were described as both being necessary: to be permissible, such technology access had to be *both* consistent with security – *i.e.*, nonproliferation, to use the modern term – *and* economically justified. Meeting merely one of these criteria was insufficient.

(4) *It Wasn't About "Rights" – and It Couldn't Be*

As had also been the case for the Acheson-Lilienthal Report and the Baruch Plan, the U.N. proposals were the antithesis of a "rights"-based approach to technology access. Indeed, the key protagonists in developing these U.N. proposals flatly rejected the idea that this was or could be an issue of state "rights." The potential implications of nuclear weapons development were too dire to permit this to be a matter of national government discretion. In order to prevent, as it were, a weapons proliferation tragedy of the commons,[137] making any specific technology access a matter of *right* was out of the question. As Canada, [the Republic of] China, France, the United Kingdom, and the United States put it in their joint statement of October 1949,

> "The development and use of atomic energy even for peaceful purposes are not exclusively matters of domestic concern of individual nations, but rather have predominantly international implications and repercussions. The development of atomic energy must be made an international cooperative enterprise in all its phases."[138]

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136 *Id.*, at 131 & 133 (emphasis added).

137 The phrase comes from a well-known 1968 article on overpopulation, in which it was suggested that individuals free to act independently in their own rational self-interest could produce a collective disaster by entirely consuming a shared resource. The example Hardin gave was that of a shared pasture that will destroyed by unrestricted livestock grazing, because as long as any of it remains ungrazed, there existed an economically "rational" reason for each villager to add another cow to the herd already has using it. *See* Garrett Hardin, "The Tragedy of the Commons," *Science*, vol. 162, no. 3859 (December 13, 1968), at 1243, *available at* http://www.sciencemag.org/cgi/content/full/162/3859/1243. For our purposes, by analogy, states with nuclear technology-access "rights," acting in their own self-interest, could produce collective catastrophe by exhausting the shared "resource" of a world in which nuclear weapons development was precluded. As Hardin put it, "[f]reedom in a commons brings ruin to all." As he saw things, at least,

> > "The only way we can preserve and nurture other and more precious freedoms is by relinquishing the freedom to [consume the shared resource], and that very soon. 'Freedom is the recognition of necessity' – and it is the role of education to reveal to all the necessity of abandoning the freedom [to consume it] …. Only so, can we put an end to this aspect of the tragedy of the commons."

Needless to say, Hardin's analysis would surely have been grimmer still had his grazing analogy had to cope with the additional challenges faced by the nuclear nonproliferation regime – which must struggle not only with aspiring nuclear technology consumers each acting out of economic self interest for genuinely peaceful purposes, but also with the occasional consumer whose intentions are malign (*i.e.*, who seeks to acquire nuclear weapons).

138 "Statement on Atomic Energy Control by the Representatives of Canada, China, France, the United Kingdom, and the United States" (October 25, 1949), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 216, 223.

As the U.N. Atomic Energy Commission saw it, preventing unrestricted national technology access rights was the only way to "bring the benefits of atomic energy to all nations, and at the same time ensure reasonable security against atomic war and, particularly provide a warning of any preparations for a surprise atomic war."[139] For "benefits"-sharing to be consistent with international peace and security, it had to be a *policy*-driven, not a *rights*-driven process.

B. *The Soviet Counter-Offensive: A "Right" to Chase The Bomb*

Majorities in the new United Nations organization supported the UNAEC plan, endorsing it and for a number of years describing the Commission proposals as being the only sensible approach offered to the challenge of dealing with nuclear technology.[140] Eager to acquire its own nuclear weapons, however, the Soviet Union mounted a fierce diplomatic campaign against it – a campaign striking, to 21st Century eyes, for its similarities to the propaganda campaign undertaken by the Islamic Republic of Iran against U.S.-led efforts to impose nonproliferation-driven limits upon nuclear technology-sharing.

Then secretly working to develop their own atomic weapons as rapidly as possible, the Soviets professed outrage at the U.N. plan for nuclear energy control. Developing themes that would be enthusiastically resurrected by the clerical regime in Tehran when confronted years later with international outrage over *Iran's* analogous nuclear efforts, and with American efforts to limit the spread of enrichment and reprocessing technology, the Soviets attacked the U.N. plan for being affront to national sovereign rights. The proposals were, they said, an American plot to monopolize control of nuclear energy – in effect, a conspiracy of the nuclear "haves" against the nuclear "have nots."

According to then-Ambassador Andrei Gromyko, for instance, the United Nations plan was "directed against the independence of other States," and was designed "to secure the monopoly position of one country [the United States] in the field of atomic energy." Denouncing the inevitability of "one-sided decisions" by the Authority, Gromyko declared that the USSR would refuse to allow "the fate of its national economy to be handed over to this organ."[141] Foreign Minister Andrei Vyshinsky similarly denounced "the notorious Acheson-Baruch-Lilienthal plan" as being "no more than a mockery of international control" which would function as "an American control organ."[142] Moscow's U.N. Ambassador, Jacob Malik, echoed that the U.N. proposals were a plan not for international control but for national monopolization: a plot whereby

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139 "Second Report of the United Nations Atomic Energy Commission," *supra*, at 129-30.

140 *See, e.g.*, General Assembly Resolution 502(VI): "Regulation, Limitation, and Balanced Reduction of All Armed Forces and All Armaments; International Control of Atomic Energy" (January 11, 1952) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 337, 338.

141 "Statement by the Soviet Representative (Gromyko) to the Security Council" (March 5, 1947), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 64, 73-74 & 76.

142 "Address by the Soviet Foreign Minister (Vyshinsky) to the General Assembly [Extract]" (November 8, 1951), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 281, 282.

"the United States monopolistic big capital" would somehow come to "own all atomic energy-producing plants and all raw material extracted throughout the world."[143]

As a diplomatic counter-punch, Moscow advanced its own competing plan for the "control" of nuclear energy. This plan would *not* have restricted nations' ability to pursue activities the UNAEC had described as "dangerous" (*e.g.*, producing fissile material), instead opting to place its reliance entirely upon periodic[144] inspections by an international organ that reported to the U.N. Security Council. As this subordination to the Council indicated, of course, the Soviet plan would also have made action against violations subject to a U.N. Security Council vote, with the natural opportunity for a veto by any permanent member (*e.g.*, the Soviet Union).[145]

Moreover, in yet another parallel to modern-day diplomatic offensives by Iran – a country that has itself benefited from being thus far subject to enforcement action only by international organs largely hamstrung by consensus or veto procedures (*i.e.*, the IAEA Board of Governors and the U.N. Security Council) – the Soviets stressed the importance of technology-sharing to empower "have-nots," emphasized the need to consider the unrestricted pursuit of nuclear technology as a *legal right*, and wrapped all these issues together with a strong emphasis upon the need of existing nuclear weapons possessors (*i.e.*, the United States) to disarm before any progress could be made. Moscow's

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143 *See* "Statement by the Deputy United States Representative (Cohen) to Committee I of the Disarmament Commission" (May 14, 1952), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 358, 358 n. 2 (citing Disarmament Commission *Official Records: Special Supplement No.1, Second Report of the Disarmament Commission*, at 78 [comments by Malik]).

144 The Soviet proposals insisted upon inspection being merely *periodic*, and Moscow opposed any continuous inspector presence. *Cf.* "Statement on Atomic Energy Control by the Representatives of Canada, China, France, the United Kingdom, and the United States" (October 25, 1949), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 216, 219 (denouncing periodic inspections as inadequate).

145 "Soviet Proposals Introduced in the United Nations Atomic Energy Commission" (June 11, 1947), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, 85, 86-87. As they explained it,

> "the question of sanctions against violators of the convention on the prohibition of atomic weapons is subject to decisions by the Security Council only. As it is known, procedure of adoption by the Council of decisions on sanctions as well as of other important decisions relating to the maintenance of international peace has been defined in Article 27 of the United Nations Charter."

"Letter from the Soviet Representative on the United Nations Atomic Energy Commission (Gromyko) to the British Representative (Cadogan)" (September 5, 1947), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 91, 93. As U.S. officials noted derisively, the Soviets thus wanted

> "an international agency whose recommendations would be subject to the veto of any one of the five Powers which are permanent members of the Security council. Such a power of veto would make any treaty unenforceable."

"Statement by the Deputy United States Representative (Osborn) to the United Nations Atomic Energy Commission" (July 20, 1949), *in id.*, at 194, 196. The other former allies from the Second World War denounced Moscow's proposals as being "so inadequate as to be dangerous" because they would "delude the peoples of the world into thinking that atomic energy was being controlled when in fact it was not." "Statement on Atomic Energy Control by the Representatives of Canada, China, France, the United Kingdom, and the United States" (October 25, 1949), *supra,* at 216, 217-18; [326] "Address by Secretary of State Acheson to the First Committee of the General Assembly" (November 19, 1951), *in id*. at 309, 326 (same).

proposals to the UNAEC, for example, declared that a control plan could only be agreed if nuclear weapons were prohibited *first*[146] – and that all signatories to such a weapons prohibition convention "must have a right to carry on unrestricted scientific research activities in the field of atomic energy."[147]

Within two years of first making these proposals, the Soviets detonated their first atomic bomb.[148] With the benefit of hindsight, therefore, Moscow's pursuit of "unrestricted" nuclear technology-access "rights" for ostensibly peaceful purposes is revealed as the dangerous fraud that it really was. Its outrageousness lies not in the fact merely that the Soviet proposals were *incompatible* with the U.N. plan for nuclear energy control. More fundamentally, those proposals were offered in order to *subvert* that plan, and to make the prevention of nuclear weapons proliferation – and indeed the world's nuclear disarmament, as envisioned in the Acheson-Lilienthal Report and the Baruch framework – quite impossible. This is a lesson that modern-day policymakers should not forget.

C. *Retreat into Inspection-Driven Safeguards*

In the face of the Soviets' diplomatic counter-offensive – and after 1949, Moscow's own possession of atomic weaponry – the U.N. plan stagnated, and was eventually abandoned. By 1953, President Eisenhower has obviously given up on the grand American idea of entirely removing "dangerous" applications of nuclear energy from national hands. This was not to say that Washington had given up on the idea of preserving international peace and security as much as possible against the threat of nuclear warfare by working to prevent the *further* spread of nuclear weapons capabilities, of course: that effort continues to the present day. The United States, however, reluctantly fell away from the dream of international control, and eventually into support for a decidedly second-best regime of inspection-driven safeguards, upon at least *some* nuclear technologies, under a new International Atomic Energy Agency (IAEA).

In his famous "Atoms for Peace" speech to the United Nations, Eisenhower observed that while at one time the United States had enjoyed a monopoly upon nuclear technology, now "the knowledge now possessed by several nations will eventually be

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146 *See* "Letter from the Soviet Representative on the United Nations Atomic Energy Commission (Gromyko) to the British Representative (Cadogan)," *supra*, at 91 ("After the conclusion of [a] convention on the prohibition of atomic weapons, another convention can and must be conclude, to provide for the creation of an international control commission and for the establishment of other measures of control and inspection …."). Later, after they had themselves acquired nuclear weapons, the Soviets modified their approach by suggesting the possibility of accomplishing a nuclear weapons ban *simultaneously* with the establishment of an international energy control mechanism. *See, e.g.,* "Statement by the Soviet Government on President Eisenhower's 'Atoms for Peace' Address," (December 21, 1953), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 401, 405.

147 "Soviet Proposals Introduced in the United Nations Atomic Energy Commission," *supra*, at 88.

148 *See, e.g.*, "Statement by President Truman Regarding Atomic Explosion in the Soviet Union" (September 23, 1949), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 207, 207 (first announcing that "We have evidence that within recent weeks and atomic explosion occurred in the U.S.S.R.").

shared by others – possibly all others."[149] To help make the best of what therefore must clearly seemed to be – in light of his country's previous analyses and proposals – a rather bad situation, he proposed the creation of the IAEA, and urged the governments "principally involved, "to the extent permitted by elementary prudence, to begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials" to the Agency under safeguards to be devised against surprise seizure by countries in which such materials were being stored or used.[150]

Secretary of State Acheson had reemphasized in 1952 that "no system of inspection alone, be it periodic or continuous, can insure the effective prohibition of atomic weapons,"[151] and in 1954 U.S. representatives were still promoting proposals at the United Nations that would have involved the creation of a U.N. Disarmament and Atomic Development Authority responsible, *inter alia,* for "for the control of atomic energy to the extent necessary to ensure effective prohibition of nuclear weapons and use of nuclear materials for peaceful purposes only."[152] (These 1954 proposals still envisioned an Authority itself possessing the power to suspend the supply of nuclear materials to a violator state, and to close down plants utilizing nuclear materials there.[153]) Nevertheless, ambitious Baruch-era thinking was clearly falling by the wayside.

D. *The Disarmament Nexus*

One of the casualties of the collapse of these early efforts to come to grips with controlling access to "intrinsically dangerous" nuclear technologies was arguably any hope of containing the emerging and accelerating nuclear arms race between the United States and the Soviet Union, let alone of achieving genuine nuclear disarmament. Because fuel-making capabilities were inherently dual-use in nature – and thus were, according to Acheson-Lilienthal reasoning, fundamentally unsafeguardable by any IAEA-style inspection-based regime – and because there no longer existed any chance of removing such capabilities from at least *some* nations' hands, nuclear disarmament was coming to seem quite out of the question. What possessor country, after all, would bind itself to forego nuclear weapons if its neighbors' compliance with such a prohibition could not be assured? This connection between control of nations' access to fissile material production capabilities and the prospects for disarmament is one that we forget at our peril in 21st-Century debates over NPT Article IV issues.

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149 "United States "Atoms for Peace" Proposal: Address by President Eisenhower to the General Assembly" (December 8, 1953), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 393, 395.

150 *Id.* at 399-400.

151 "News Conference Remarks by Secretary of State Acheson on the Revised Soviet Proposal" (January 16, 1952), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 342, 343.

152 *See, e.g.*, "United States Working Paper Submitted to the Disarmament Subcommittee: Methods of Implementing and Enforcing Disarmament Programs – The Establishment of International Control Organs With Appropriate Rights, Powers, and Functions" (May 25, 1954), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 414, 414-18.

153 *Id.* at 419-20.

By the mid-1950s, at any rate, *both* Cold War adversaries – and the Western allies, for that matter – seem to have come to think in similarly pessimistic terms about the problems of controlling nuclear technology. With the only safeguards now available being the inspection of *nationally*-owned and -controlled nuclear facilities, U.S. authorities evinced increasing skepticism that the actual elimination of nuclear weapons capabilities could be achieved any more effectively than the acquisition of such capabilities could be precluded for anyone having access to an "intrinsically dangerous" technology such as fuel-making. President Eisenhower said the United States would be happy to reduce armaments in conjunction with other nations if an effective verification mechanism could be found, but he added pointedly that "[w]e have not as yet been able to discover any scientific or other inspection method which would make certain of the elimination of nuclear weapons."[154]

Notwithstanding their eagerness to score rhetorical points against the United States for being too reluctant – on account of the numerical superiority of the Warsaw Pact in Central Europe[155] – to abandon nuclear weapons, even the Soviets now seemed largely to agree. Soviet representatives described the challenge of nuclear technology control as being "particularly difficult," noting that "[t]his danger is inherent in the very nature of atomic production." Echoing earlier American pronouncements in the Acheson-Lilienthal Report and the Baruch Plan, as well as the conclusions of the U.N. Atomic Energy Commission, the Soviets now conceded that

> "production of atomic energy for peaceful purposes can be used for the accumulation of stocks of explosive atomic materials, and moreover, in ever greater quantities. This means that States having establishments for the production of atomic energy can accumulate, in violation of the relevant agreements, large quantities of explosive materials for the production of atomic weapons. The danger of this state of affairs becomes still more apparent if account is taken of the fact that, where the corresponding quantities of explosive atomic materials exist, production of actual atomic and hydrogen bombs is technically fully feasible and can be effected on a large scale."[156]

Accordingly, there would exist "possibilities beyond the reach of international control for evading this control and for organizing the clandestine manufacture of atomic and

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154 "Statement by President Eisenhower at the Geneva Conference of Heads of Government: Aerial Inspection and Exchange of Military Blueprints" (July 21, 1955), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 486, 487-88.

155 *See* "Statement by President Eisenhower Regarding Nuclear Weapons Tests" (October 23, 1956), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 698, 698-701 (arguing that the United States would agree to nuclear disarmament when it could be confident of otherwise ensuring "safety from attack," but that for the time being, the continuing need for America's nuclear arsenal was still "sharply accented by the unavoidable fact of our numerical inferiority to Communist manpower").

156 "Soviet Proposal Introduced in the Disarmament Subcommittee: Reduction of Armaments, the Prohibition of Atomic Weapons, and the Elimination of the Threat of a New War" (May 10, 1955), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 456, 465.

hydrogen weapons," even if there were "a formal agreement on international control." In such a situation, Moscow now warned, the security of States Party to a nuclear control treaty "cannot be guaranteed, since the possibility would be open to a potential aggressor to accumulate stocks of atomic and hydrogen weapons for a surprise attack on peace-loving States."[157] Arguments that had earlier been used by the West in favor of international control of nuclear energy, however, were now marshaled, in effect, in order to demonstrate the futility of treaty constraints.

The harm done to the cause of disarmament by failing to control weapons-facilitating nuclear technology soon became a major theme of the Eisenhower Administration's approach to U.N. disarmament discussions. The international community's failure sufficiently to assume control over access to the sort of "intrinsically dangerous" technologies identified in the Acheson-Lilienthal, Baruch, and UNAEC proposals, in other words, was dooming disarmament.

Citing the existence of a

> "barrier of science which prevents us at this moment, on the admission of the Soviet Union, the United States and every other delegation represented at this table, from making nuclear disarmament the safe hope for the world that we would wish it to be,"[158]

U.S. officials argued "[t]he present impossibility of establishing an effective inspection and control method that would completely account for nuclear weapons material." This meant, they said, that it was not possible to account for all nuclear weapons material, and that "the amount of unaccountability is of such magnitude as to be an unacceptable unknown quantity of vast destructive capacity."[159]

According to British Foreign Secretary Harold MacMillan, the "difficulties which have arisen in connection with the control of nuclear weapons and the materials of which they are made" helped explain why disarmament proposals were "stuck":

> "… [I]f we are in earnest about disarmament, we cannot go on admitting on the one hand that there are possibilities of evasion beyond international control, and proposing on the other hand the total abolition of nuclear weapons as our ultimate goal, but it would be misleading to pretend that it is a realizable goal in our present state of scientific knowledge. … I cannot agree on behalf of Her Majesty's Government, and I would not expect other Governments to agree, to abolish all our nuclear weapons as long as there is no assurance that every other state is doing the same. … [T]hese

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157 *Id.*

158 "United States Memorandum Supplementing the Outline Plan for the Implementation of President Eisenhower's Aerial Inspection Proposal, Submitted to the Disarmament Subcommittee" (October 7, 1955), *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 523, 524 (quoting comments of United Kingdom representative on October 5, 1955).

159 *Id.*, at 524-25

> thermo-nuclear weapons are now so deadly that the slightest margin of error or deception could be decisive for the fate of nations. The risks involved are quite unacceptable in present conditions. … [S]ome of the concepts of *total* nuclear disarmament which we have been using are quite out-off-date in the world as it is today and that we only mislead people by clinging to them."[160]

The United States, France, Canada, and the United Kingdom agreed, moreover, that it had by this point become essentially "impossible to account for *past* production of nuclear material" by states possessing fuel-making capabilities,[161] which underlined MacMillan's basic point. As the Americans described it, at least, Moscow's decision to torpedo the Baruch Plan had therefore doomed mankind to a stalemate on nuclear disarmament and the specter of a nuclear arms race. According to a White House publication in October 1956, both of these ills "stemmed largely from the repeated rejections by the U.S.S.R. of the Baruch proposals of 1946-47 for putting all atomic energy under international control."[162]

After Eisenhower appointed Harold Stassen to serve as his new Special Assistant to the President for Disarmament, Stassen led an interagency review of these issues which reached the grim conclusion that – on account, *inter alia*, of these problems of nuclear technology control and "the extreme importance of providing against surprise attack" – the United States should *not* agree even to a moratorium on hydrogen bomb (thermonuclear weapon) testing. As U.S. Ambassador Wadsworth later explained to the U.N. Disarmament Commission, "in the absence of agreement to eliminate or limit nuclear weapons under proper safeguards, continuation of testing is essential for our national defense and the security of the free world."[163] Given the pessimistic conclusions of so many participants about the effective safeguardability of the nuclear fuel cycle, Wadsworth's qualification could easily be read as nothing less than an indictment even of the *possibility* of arms control and disarmament, now that more and more countries possessed the nuclear fuel cycle.

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160 "Statement by the British Foreign Secretary (Macmillan) at the Geneva Meeting of the Foreign Ministers" (November 10, 1955) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 547, 549-51.

161 "Draft Resolution Introduced in the Disarmament Commission by the United States, the United Kingdom, France, and Canada" (July 3, 1956) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 645, 646 (emphasis added); *see also, e.g.*, "Statement by the French Representative (Moch) to the Disarmament Commission [Extract]" (July 10, 1956*) in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 658, 658 (arguing that "[i]t is now established that past production cannot be checked with sufficient accuracy" and that "the rapid growth of stocks, already foreseeable even [when estimated by French authorities in 1952 to have an accuracy rate of only 70 to 80 percent], must therefore by now have converted the margin of error into complete and total uncertainty").

162 "White House Memorandum: Weapons Tests and Peaceful Uses of the Atom" (October 23, 1956) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 702, 706.

163 "White House Memorandum: Review of Disarmament Negotiations" (October 23, 1956) *in Documents on Disarmament: 1945-1959, Volume I*, *supra*, at 708, 713 & 718.

The United States subsequently retreated from such heights of skepticism, of course, supporting the establishment of the IAEA (as advocated by Eisenhower himself in 1953) and its development at the center of a global system of safeguards for the peaceful use of nuclear energy. Disarmament prospects fared less well during this period, of course, as the United States and Soviet Union built increasingly large arsenals and the United Kingdom (1952), France (1960), the and China (1964) joined the nuclear weapons "club." With regard to peaceful uses, however, the world was for a time content to make do with the inspection-driven regime of safeguards upon nationally-controlled peaceful nuclear activities.

E. *Thinking About Technology Control*

Thus did the world end up gradually converging upon the institutionalized system of inspection-driven IAEA safeguards – a system which acquired additional legal import with the advent of the NPT, Article III of which required non-nuclear weapons states to accept IAEA safeguards "with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices."[164] Unfortunately, this was precisely the sort of regime that the Acheson-Lilienthal Report had warned would be entirely unable to preserve security in a world of widespread nuclear access to "intrinsically dangerous" capabilities such as fuel-making. As Albert Wohlstetter once grumbled, in the wake of the Soviets' rejection of the Baruch Plan,

> "we have come to rely on exactly the scheme regarded as unworkable by the authors of the Acheson-Lilienthal report and the Baruch Plan. We rely in essence only on accounting and inspection of dangerous activities in non-weapon states."[165]

The shift to inspection safeguards thus highlighted the importance of limiting access to such technologies – which, in turn, naturally necessitated *not* making their acquisition a matter of legal *right*.

President Eisenhower's "Atoms for Peace" speech gave a bit of a window into how it was anticipated that such a system might operate. As recounted above, he envisioned "elementary prudence" – that is, nonproliferation policy – as governing the degree to which the IAEA should be entrusted with nuclear materials and technology for sharing, under strict safeguards, with governments receiving international cooperation in nuclear peaceful uses. The materials and technology that were to be shared would come from the countries "principally involved" in nuclear work. The system, in other words, was imagined to revolve around a finite number of supplier states with extensive nuclear know-how, which would feed as much knowledge and material as was *prudent*, in light

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164 NPT, *supra*, at Art. III(1).

165 Albert Wohlstetter, "Spreading the Bomb without Quite Breaking the Rules," *Foreign Policy*, no.25 (Winter 1976), at 88, *in Nuclear Heuristics: Selected Writings of Albert and Roberta Wohlstetter* (Robert Zarate & Henry Sokolski, eds.) (Carlisle, Pennsylvania: Strategic Studies Institute, 2009) , at 301, 306.

of the obvious security risks, into an international cooperative network run under IAEA auspices and under a system of inspection-related safeguards.

For a while, this appears to have been felt satisfactory. Nevertheless, the problem of technology control always lurked in the wings. This problem – so pointedly outlined at the very outset of the nuclear age by the Acheson-Lilienthal Report – could largely be ignored during the IAEA's first decades, because for many years it was apparently felt unlikely that many (or indeed perhaps any) additional countries would acquire the full nuclear fuel cycle anyway, or perhaps that at least some aspects of the cycle were not actually *too* dangerous. When such assumptions ceased to hold, however, the problem of control re-emerged with a vengeance, to form the core of today's disputes over Article IV of the NPT.

(1) *U.S. Intelligence Views the Proliferation Threat*

For some understanding of why it was felt acceptable, for so long, to rely upon IAEA inspections notwithstanding the problems long predicted with such an approach, it may be useful to examine how proliferation security threats were perceived at the time. A good window into such perceptions can be found in declassified proliferation-related U.S. National Intelligence Estimates (NIEs) from the 1950s and 1960s, which have become available in recent years. Specific detailed conclusions based upon intelligence information, of course, cannot be expected to have influenced decision-making on proliferation and nuclear technology issues outside the then limited number of recipients of such classified documents. Nevertheless, the old NIEs do provide a valuable window upon broader understandings among the expert community at the time with regard to the *type* of activities that presented proliferation risks, and how the (very public) global spread of nuclear technology could affect the security environment.

Clearly, the U.S. Intelligence Community worried about proliferation threats. In 1957, for instance, an NIE warned that "up to 10 countries" could produce at least "a few nominal (20-40kt) nuclear weapons using only native resources" within a decade (*i.e.*, by 1967) by means of exploiting "civilian atomic energy program[s] encompassing fairly large reactor and processing facilities" such as by producing weapons "clandestinely through concealed diversion of plutonium from inspected power plants."[166] In the wake of Eisenhower's "Atoms for Peace" speech to the United Nations, the potential proliferation implications of the spread of nuclear energy seem to have been clearly understood. An NIE in 1958 warned that "[n]uclear know-how applicable to reactor technology is rapidly being spread throughout the world by national and international programs for the peaceful development of nuclear energy," especially "dual-purpose reactors which generate both power for peaceful purposes and plutonium."[167]

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166 U.S. Director of Central Intelligence, *Nuclear Weapons Production in Fourth Countries: Likelihood and Consequences*, declassified U.S. National Intelligence Estimate, NIE 100-6-57 (June 18, 1957) [hereinafter *June 1957 NIE*], at 1 & 2-3, ¶ 11.

167 U.S. Director of Central Intelligence, *Development of Nuclear Capabilities by Fourth Countries: Likelihood and Consequences*, declassified U.S. National Intelligence Estimate, NIE 100-2-58 (July 1, 1958) [hereinafter *July 1958 NIE*], at 3, ¶ 13.

Interestingly, however – as this phrasing about "dual-purpose reactors" suggested – the focus of this concern was mainly plutonium reprocessing, not uranium enrichment. As the 1957 NIE put it, "[n]uclear weapons could be produced clandestinely through concealed diversion of plutonium from inspected power plants." To have a large and diverse nuclear weapons program would take "specialized facilities" such as "large plutonium producing reactor and isotope separation plants if U-235 is to be obtained." But "particularly for production of U-235," this was so difficult and expensive that only a few countries, it was felt, could "by themselves achieve such a program over the next decade."[168]

The principal perceived weapons proliferation threat, it seemed, was thus related to plutonium, not uranium weapons. This point was underlined by the 1958 NIE, which made the same basic points about how the main danger was expected to be plutonium, not U-235.[169] Even France, clearly a likely potential weapon developer and a country rapidly building a relatively sophisticated nuclear infrastructure, was mainly only a plutonium threat in the near term.[170]

The lack of general access to fuel-making capabilities was apparently critical. A number of countries planned nuclear reactor programs – thus raising at least *potential* issues related to the diversion of plutonium chemically reprocessed out of such reactor fuel they acquired – but they lacked the capability themselves to make uranium fuel. This enabled the supplier states to interpose proliferation-keyed restrictions that, it was felt, would allow nuclear power development on terms consistent with the maintenance of international peace and security.

According to the 1958 NIE, "[a]t present reactor fuels are available to have-not countries form major producers in the Free world only on terms intended to prevent diversion to weapon application."[171] Unless "present restrictions on the availability of fissionable materials for weapons application" were reduced[172] – or unless would-be weapons-possessors received "foreign assistance with development of isotope separation facilities or weapons design information"[173] – the risk was thus apparently felt to be a manageable one. To be sure, it was felt that

> "as world uranium production and commercial sales of power reactors expand, it appears likely that, *in the absence of international controls*, even a country without direct access to natural uranium will be able to acquire uranium and produce enough fissionable material to fabricate at least a few crude weapons."[174]

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168 *June 1957 NIE*, at 3, ¶ 12.

169 *July 1958 NIE*, *supra*, at 3, ¶ 14.

170 *Id.*, at 4, ¶ 16; *id*. at 1, ¶ 1 (estimating at least five years).

171 *Id*, at 5, ¶ 21.

172 *Id*.

173 *Id.*, at 5, ¶ 24.

174 U.S. Director of Central Intelligence, *Likelihood and Consequences of the Development of Nuclear Capabilities by Additional Countries*, declassified U.S. National Intelligence Estimate,

Provided that a lid could be kept upon proliferation-risky technology-sharing, however, the emerging nonproliferation regime was felt to be sustainable.

The assumptions behind such assessments, therefore, seemed to embody what we have seen as a "safeguardability" perspective. Plutonium reprocessing from reactor fuel was felt to be some danger, but the implication seemed to be that that proper safeguards could make this plutonium risk an acceptable one in light of the clear benefits that were perceived to exist from the development of electricity generation by nuclear reactors. There appears to have a been for many years, as Albert Wohlstetter later put it, a widespread "belief that plutonium from a power reactor is not very dangerous."[175]

Wohlstetter traced this assumption to a technical mistake: the early comment in the Acheson-Lilienthal Report that plutonium could be "denatured" – that is, made useless for weapons purposes – by leaving it in reactors long enough that its isotopic content of weapons-useful plutonium would become contaminated. As noted previously, the Report's authors had misgivings about the "denaturing" solution even as early as 1946, and worried about the potential for "public misunderstanding of what denaturing is, and of the degree of safety that it could afford."[176] Nevertheless, even the re-released text at least *sounded* optimistic about denaturing.[177] Though this initial hopefulness about denaturing as a "solution" was later discredited,[178] the Acheson-Lilienthal Report's treatment of the issue – in just the sort of "public misunderstanding" some had feared – encouraged the mistaken belief for many years that plutonium from spent reactor fuel could be made intrinsically "unusable or, at any rate, extremely ineffective when used in a nuclear explosive."[179]

NIE 100-4-60 (September 20, 1960) [hereinafter *September 1960 NIE*], at 3 ¶ 10 (emphasis added); *see also* U.S. Director of Central Intelligence, *Nuclear Weapons and Delivery Capabilities of Free World Countries other than the US and UK*, declassified U.S. National Intelligence Estimate, NIE 4-3-61 (September 21, 1961) [hereinafter *September 1961 NIE*] at 3, ¶ 5 (making similar point).

175 Wohlstetter, *supra*, at 306.

176 *See, e.g.*, Acheson-Lilienthal Report, *supra*, at 1 (recounting an official statement issued, after the first release of Report on March 28, 1946, that there had been "some public misunderstanding of what denaturing is, and of the degree of safety that it could afford," and noting that it was untrue "that a system of control based solely on denaturing could provide adequate safety").

177 Acheson-Lilienthal Report, *supra*, at 26.

178 *See, e.g.*, Wohlstetter et al., *supra*, at 48-54. As Amory Lovins has recounted in a detailed discussion of the plutonium issue, "the assumption that power-reactor Pu [plutonium] was unsuitable for bombs was questioned with increasing force" in the early 1970s. The notion was apparently widely discredited by 1974, and indeed in 1977 the United States announced that it had indeed "successfully tested a nuclear weapon made from reactor-grade Pu." Amory B. Lovins, "Nuclear Weapons and power-reactor plutonium," *Nature*, vol.283, no.5750 (February 28, 1980), pp. 817-23, at 1 (pagination from reprint in author's collection). Interest in denaturing seems perennial. Recently, an Israeli scientist has claimed to have developed an apparently new way of "denaturing" plutonium in reactor fuel. This, it is suggested, could "de-claw" the plutonium by making it, if separated, "unsuitable for use in nuclear arms." *See, e.g.,* Batsheva Sobleman, "Israel: Science against nuclear proliferation," *Los Angeles Times* blog posting (March 5, 2009), *available at* http://latimesblogs.latimes.com/babylonbeyond/2009/03/israel-science.html.

179 Wohlstetter, *supra*, at 305.

Confusion over "denaturing" led to a belief that reactor operation entailed low proliferation risks,[180] and this in may have contributed to the relative equanimity with which analysts – as evidenced, for instance, in the NIEs – approached nuclear reactor promotion. Whatever the accuracy of assumptions made at the time about the fundamental safety of reactors, however, the key point for present purposes is that the policy community during the "Atoms for Peace" era clearly approached nuclear technology-sharing through the prism of proliferation risk: a classic "safeguardability" framework in which the challenges of nuclear technology control were approached through a weighing of proliferation risks and anticipated benefits.

As for the proliferation risks from uranium enrichment (as opposed to the separation of plutonium from reactor fuel), the same point holds, although the dangers presented by *that* technology were apparently then considered manageable for different reasons. In practice, enrichment seems to have been felt to present little danger because the infrastructure costs of indigenously developing this capability were so high as to make it essentially unachievable by most countries anyway.[181] According to one high-level panel of U.S. Government experts in 1964, uranium separation plants were so "expensive and difficult to operate" that this factor might in itself "deter some potential nuclear powers from considering U-235 for weapons use."[182] Its analysis of a number of "potential nuclear powers" concluded that while all were "in position to develop fission weapons from plutonium," *none* was "likely to build gaseous diffusion plants for obtaining U-235 or to develop thermonuclear weapons, however, because of the high cost and technological complexity."[183]

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180 *Id.*; *see also* Wohlstetter et al., *supra*, at 49 & 71 (noting "some residual traces [persist] of a belief that a solution" based upon denaturing, and discussing denaturing issue). According to Lovins, basic facts about the weapons-usability of reactor plutonium were apparently still widely – and, he argued, dangerously – misunderstood even in the late 1970s. Lovins, *supra*, at 1.

181 The technical and financial entry barriers to the enrichment business were doubly fortunate, in fact, insofar as its costliness permitted existing supplier states to continue their monopoly upon fuel-making – and it was this monopoly that helped permit the emerging system of international nuclear benefit-sharing to manage the risk of plutonium reprocessing, because suppliers insisted that safeguards be applied upon the nuclear fuel they provide. In any event, U.S. officials estimated that anyone desiring "a substantial [nuclear weapons] capability," including "the production of U-235," would have to spend "astronomic" amounts of money. U.S. Director of Central Intelligence, *Likelihood and Consequences of a Proliferation of Nuclear Weapons Systems*, declassified U.S. National Intelligence Estimate, NIE 4-63 (June 28, 1963) [hereinafter *June 1963 NIE*], at 5, ¶2-3. The expense and difficulty was doubly great because ballistic missiles or other nuclear-capable delivery systems had not yet themselves proliferated: a new weapons state would have not merely to acquire nuclear explosive devices but also systems with which to deliver them.

182 Roswell Gilpatric et al., "Nuclear Weapons Programs Around the World," TS 190187 (December 3, 1964), declassified memorandum [hereinafter Gilpatric Report], *available at* http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB155/prolif-10.pdf, at 1.

183 Gilpatric Report, *supra*, at 9 (discussing India, Israel, Sweden, West Germany, Italy, Japan, and Canada). The Acheson-Lilienthal Report had been even more sanguine: "Whether any nation – we are excluding Great Britain and Canada – could achieve such an intensive program is a matter of serious doubt." Acheson-Lilienthal Report, *supra*, at ix; *see also id.* at 2 (noting "[s]trong arguments" that "the results attained in the United States cannot be paralleled by independent work in other nations"); *cf. id.* at 23.

There was another factor that seems to have made U.S. officials more comfortable with the proliferation risks of "Atoms for Peace": in the context of the intense Cold War nuclear rivalry between the United States and the Soviet Union, the highest priority was to prevent a newcomer's acquisition of a nuclear arsenal capable of upsetting the balance of power between the superpowers by posing a direct military threat of crippling nuclear attack against the United States. In a global environment in which the two predominant players and competing alliance leaders each possessed extremely large and rapidly-growing arsenals and faced a real risk of massive nuclear exchanges with each other, the prospect of *some* additional countries acquiring small, "entry-level" nuclear arsenals was felt to be a secondary concern. No one wished to see proliferation, but the *real* problem would only come if someone else acquired a *substantial* nuclear capability. This was felt to allow the global security system, in effect, the ability to "absorb" at least *some* proliferation if it could not be prevented: the alarming degree of *vertical* proliferation, in other words, made the prospect of a bit of *horizontal* proliferation seem less shocking. Such conclusions made the proliferation risks of "Atoms for Peace" seem easier to bear.

This – to modern eyes – somewhat relaxed view of proliferation risks was by no means a secret. A number of senior U.S. officials told the U.S. Senate in the 1950s, in effect, that while some governments might indeed be able to circumvent nuclear safeguards and develop a small nuclear arsenal, this was an acceptable risk because such a tiny stockpile would pale in significance alongside the superpowers' nuclear holdings.[184] U.N. Ambassador Harold Stassen told the United Nations in 1957, in fact, that the admitted risk of "relatively minor diversions for a few weapons" was manageable because "those few weapons would be restrained, canceled out and deterred by the remaining capability in the hands of nations on various sides."[185] The United States sought to prevent nuclear weapons proliferation, but what Washington at that point *really* feared was a so-called "knock-out" blow of the sort only possible at the hands of a major nuclear weapons state; preventing the acquisition of a small arsenal by a newcomer was only a secondary priority.[186]

This perspective seems to have colored the U.S. approach to safeguards and Washington's willingness to countenance proliferation risks in the dissemination of nuclear technology. U.S. officials understood that "[a]s the number of power and research nuclear reactors in a country increases, the potential for producing plutonium will increase." Accordingly, it was eventually "likely that any country will be able to obtain reactors which could be used for plutonium production … [and] could

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184 *See* Henry D. Sokolski, *Best of Intentions: America's Campaign Against Strategic Weapons Proliferation* (Westport, Connecticut: Praeger, 2000), at 32 (citing testimony) and "Atoms for Peace: A Non-Proliferation Primer?" *Arms Control*, September 1980, pp. 199-231.

185 "Statement by the United States Representative (Stassen) to the Disarmament Subcommittee: Nuclear Weapons and Testing" (March 20, 1957), *in Documents on Disarmament 1945-1959,* Volume II, *supra*, at 763, 766-67.

186 *See, e.g.*, Sokolski, *Best of Intentions*, *supra*, at 25-29. A number of ideas for increasing the effectiveness of safeguards in preventing the diversion of fissile materials were proposed by American officials in the negotiations that led to the creation of the IAEA Statute in 1957, but these were opposed by India, France, the Soviets, and Switzerland, and were not ultimately included. *Id.* at 30-31.

theoretically acquire the technical ability to produce at least a few crude weapons."[187] Nevertheless, because such a "few crude weapons" would not upset the global balance of power, it was not necessary to take heroic prophylactic steps – with the result that "Atoms for Peace" could proceed notwithstanding its potential to lead to *some* proliferation. Officials' devaluation of the systemic dangers presented by horizontal proliferation made "Atoms for Peace" seem more reasonable.

Such views are also reflected in declassified NIEs from the period. While U.S. intelligence did predict "a small increase in the number of countries having nuclear weapons,"[188] it also estimated that during the next decade no one would be able to acquire "sufficient nuclear capabilities … to produce a change in the basic world power situation" because "[t]he US and the USSR will still be so far ahead of all others [as] to dominate the scene without much question."[189]

> "In strictly military terms, the nuclear proliferation likely to occur over the next 10 years will almost certainly not upset global power relationships. None of the prospective or potential nuclear powers will acquire capabilities which, if added to those of the US or the USSR, would significantly affect East-West military relationships, or bulk large militarily as an independent force."[190]

Such proliferation-related geopolitical issue-triage – with its all but explicit conclusion that *some* proliferation need not be unduly troubling – may appear quite problematic to today's eyes, and entirely untenable even on its own terms in today's post-Cold War world of drastically reduced and still declining U.S. and Russian arsenals.[191]

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187 *September 1961 NIE*, *supra*, at 3, ¶ 5 & 4, ¶ 8.

188 *September 1960 NIE*, *supra*, at 11, ¶ 42.

189 *July 1958 NIE*, *supra*, at 18, ¶ 86. Moreover, the actual impact upon world stability of additional proliferation was understood to depend, to some degree, upon *who* got nuclear weapons. Not all potential possessors were equally worrisome.

> "The actual effect on the world situation is likely to depend on the country itself: the character of its government, the nature of its national aims and aspirations, the identity of its principal rivals, and the alliances and alignments in which it is involved, and the chief problems of its foreign relations."

Id. at 18, ¶ 87. In any event, a subsequent NIE noted, the most significant determinants of "pace and content of nuclear diffusion" were not "differences in national wealth and technical skill" but rather "national differences in political determination and strategic objectives." *June 1963 NIE*, *supra*, at 6, ¶ 5.

190 *June 1963 NIE*, *supra*, at 18 ¶ 47. Instead, the dangers of such small-scale proliferation were felt to be limited to the "political and psychological effects of the existence of such new weapons," and possible escalation of regional problems. *Id.* at 18-19, ¶ 47; *see also id.* at 19-20, ¶ 50 (arguing that "[a] new nuclear power may be emboldened by the possession of nuclear weapons to a more vigorous pursuit of its objectives against enemy states, and the result may be an increase in the frequency of local crises").

191 Whether or not such conclusions were reasonable half a century ago, they would be much harder to sustain today, when U.S. and Russian arsenals have been reduced so dramatically – and they would be less tenable still if further progress were made toward nuclear weapons abolition. *Cf.* Christopher A. Ford, "Five Plus Three: How to Have a Meaningful and Helpful Fissile Material Cutoff Treaty," *Arms Control Today* (March 2009), at 24, 33 n.23 ("…[U]ncertainty about the possible existence of an extra handful of weapons here or there might perhaps have been

Nor can we forget that some of the assumptions that underlay relatively optimistic assessments of the proliferation risks presented by nuclear technology – about the potential of "denaturing" to prevent the development of plutonium weapons from reactor fuel and the degree to which uranium enrichment technology would remain "out of reach" for would-be proliferators – clearly have not stood the test of time. We have already noted how the "denaturing" hopes raised by the Acheson-Lilienthal report proved illusory. No student of modern proliferation history, moreover, can ignore the degree to which the development of efficient, centrifuge-based uranium enrichment – and its widespread proliferation since the mid-1980s by Pakistani scientist A.Q. Khan – has upended the traditional assumption that "the uranium route" to a nuclear weapon is unachievable for all but the wealthiest and most sophisticated powers.[192]

Having the advantage of hindsight in viewing older and perhaps obsolete perspectives upon proliferation risk, however, should not obscure an important point: the nuclear technology-sharing enterprise of the 1950s and 1960s was grounded in a "safeguardability" perspective that evaluated risks and benefits rather than operating on the basis of any kind of technology "rights." We may think today that they got their facts wrong – that is, that decision-makers of the period were operating on the basis of faulty risk analyses – but to concede this is not the same thing as to discredit the "safeguardability" *principle* underlay past approaches. There is no indication that decision-makers during this period felt there to exist any sort of hard "right" to nuclear technology independent of proliferation risk. To the contrary, the "Atoms for Peace" era seems to have proceeded on the basis of quite the opposite assumption.

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acceptable in the context of a Cold War nuclear standoff between parties already possessing several thousand of such devices. The threshold of military significance arrives much more quickly where at issue is the potential arrival of a completely new player in the nuclear weapons business [today] or one country's achievement of breakout from a [future] nuclear weapons abolition regime.").

The Eisenhower Administration's argument, moreover, revolved almost entirely around the threat of *direct* nuclear attack by a future proliferator. Even though U.N. Ambassador Lodge conceded in 1956 that seeing the nuclear arms race "spread[] to more areas of the globe … could easily ignite a nuclear conflagration," the United States does not seem to have considered the potential impact of horizontal proliferation upon regional stability and extra-regional security relationships. *See* "Statement by the United States Representative (Lodge) to the Disarmament Commission" (July 3, 1956), *in Documents on Disarmament 1945-1959*, Volume I, *supra*, at 648, 649.

192 Ironically, the 1961 NIE noted that such developments might indeed undercut its assumption that uranium enrichment was unachievable for most would-be proliferators. It expressly assumed that "there will be no significant technological breakthrough in the next several years which would significantly alter the complexity or economic costs of developing a nuclear capability," such as "the perfecting of the gas centrifuge process for isotope separation" in order to "require less electric power, be adaptable to small capacity production, and be more easily concealed." An advance of this kind, the NIE warned, "would increase the number of countries which could afford to produce weapons." *See September 1961 NIE*, *supra*, at 4, ¶ 11. Fatefully – if unknowingly – foreshadowing the wide dissemination of URENCO-developed enrichment technology by Pakistan's A.Q. Khan, which would shatter many of these assumptions, the 1961 NIE also noted in passing that West Germany was already doing research on U-235 isotope separation, "including the gas centrifuge process," which could speed up separation from uranium ore. *Id.*, at 10, ¶ 41.

IV. *Article IV of the NPT*

It is useful to understand this "backstory" – the conceptual prehistory, as it were, of the challenge of nuclear technology control that confronted the drafters of the NPT – if one is to make sense of Article IV itself. It helps explain both that provision's actual text and the dynamics behind certain aspects of its negotiating history.

A. *Paragraph Two: Technology Transfers*

For those interested in establishing the Treaty's intended meaning, the language of the *second* paragraph of Article IV is the easiest to explain. To recap, Article IV(2) provides that all Parties

> "undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy."[193]

As hortatory language reflecting just the sort of generalized commitment to "benefit"-sharing that is described in the NPT's Preamble,[194] Article IV(2) seems relatively straightforward.

The only reasonable reading of "the *fullest possible* exchange" is to take this phrasing as qualifying, rather than amplifying, language: it signals a *limit* rooted in real-world practicalities (*e.g.*, supplier cost, economic rationality, or proliferation risk) rather than any sort of requirement that technology transfers must continue until it is simply *impossible* to provide anything more. U.S. and other Western policy pronouncements are thus surely correct that the NPT doesn't actually *require* a technology-possessor to give any particular technology to any particular recipient.

A discretionary rather than mandatory reading of Article IV's language on technology transfers is also the only interpretation consistent with the clear requirement in the first paragraph of Article IV that the right to develop and use nuclear energy must be conducted in conformity with the nonproliferation obligations in Articles I and II. If they are to conform their own conduct with Article I, for instance, nuclear weapons state possessors simply *must* have broad discretion in what to share, and *cannot* transfer technology to the extent that doing so is inconsistent with nonproliferation interests.

This reading is also consistent with longstanding themes of nuclear technology control policy – stressing *benefit*-sharing but acutely aware of the potential destabilizing effect that "peaceful" technology transfers could have in facilitating nuclear weapons development – that would have been quite well known to the U.S. and Soviet officials

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193 NPT, *supra*, at Art. IV(2).

194 *See* NPT, from the Preamble ("Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all ….").

who coordinated the NPT's drafting process. And indeed, the NPT's negotiating history bears this out: the parties rejected repeated efforts to *oblige* technology possessors to transfer technology.

Mexico, for instance proposed to make it a "duty" for technology-possessors to "contribute, according to their ability," in developing others' peaceful nuclear applications.[195] According to the Mexican ambassador,

> "it is essential to establish the legal obligations of the nuclear Powers … to contribute to the technological development of the others, and to transfer and place at the disposal of those countries their scientific and technological knowledge of the peaceful use of nuclear energy. We believe that the provision of such technical assistance should be made a legally-binding obligation …."[196]

Italy did not go quite so far, but nonetheless suggested new phrasing that would have specified an "inalienable right" to "obtain supplies of source and special fissionable materials intended for peaceful purposes."[197]

For its part, Nigeria proposed provisions that would have required nuclear weapons states to host scientific delegations from non-weapons states so that the latter could "collaborate with their scientists working on nuclear explosive devices, in order to narrow the intellectual gap" between them.[198] The repeated efforts made to specify that technology transfers must cover the full nuclear fuel cycle included a Spanish memorandum urging that the right of "participat[ing] as fully as possible in scientific and technical information for the peaceful uses of atomic energy" should be clarified in order "to refer specifically to the entire technology of reactors and fuels."[199] In the end, however, also proposals to oblige fuel-cycle technology transfer were rejected.[200]

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195 *See* Mexican Working Paper submitted to the Eighteen Nation Disarmament Committee: Suggested Additions to Draft Nonproliferation Treaty (September 19, 1967), *in* U.S. Arms Control and Disarmament Agency, *Documents on Disarmament 1967* (Washington D.C.: Government Printing Office, 1968) [hereinafter *Documents on Disarmament 1967*], at 394-95; *see also* U.S. Arms Control and Disarmament Agency, *International Negotiations on the Treaty on the Nonproliferation of Nuclear Weapons* (Washington, D.C.: U.S. Government Printing Office, 1969) [hereinafter *ACDA Negotiating History*], at 67.

196 *Documents on Disarmament 1967*, *supra*, at 397 (remarks of Amb. Castaneda).

197 Conference of the Eighteen-Nation Committee on Disarmament, ENDC/PV.367 (February 20, 1968), at 18; *see also ACDA Negotiating History*, *supra*, at 103.

198 "Nigerian Working Paper Submitted to the Eighteen Nation Disarmament Committee: Additions and Amendments to the Draft Nonproliferation Treaty, November 2 1967," *in Documents on Disarmament 1967*, at 557, 558; *see also* Zarate, *supra*, at 246-47 & 280-81 n.62.

199 Spanish Memorandum to the Co-Chairmen of the Eighteen-Nation Disarmament Committee (February 8, 1968), *in Documents on Disarmament 1968* (Washington, D.C.: ACDA, 1969), at 40; *see also ACDA Negotiating History*, *supra*, at 103.

200 *See, e.g.*, *ACDA Negotiating History*, *supra*, at 83; Conference of the Eighteen-Nation Committee on Disarmament, ENCD/PV.371 (February 28, 1968), at 20 (remarks of Canada's General Burns); *see also* U.S. State Department, *Promoting Expanded and Responsible Uses of Nuclear Energy* (April 16, 2007), *available at* http://www.state.gov/t/isn/rls/other/83210.htm.

Certainly, the final form of Article IV left advocates of unrestricted technology-sharing unhappy. Discussing the March 1968 treaty draft, for instance – a version that already included the "inalienable right" and "fullest possible exchange" phrasings[201] – some countries complained that it failed to ensure transfers of the full range of scientific and technical information.[202] In sum, the import of this negotiating history is clear, and it reinforces our conclusion about the highly qualified ("fullest possible") language of Article IV. The NPT clearly does *not* require specific technology transfers.

B. *Paragraph One: The "Inalienable Right"*

(1) *Textual Opacity and Confusion*

It is the first paragraph of Article IV – the one most frequently cited in today's technology-access debates for its grand phrasing about an "inalienable right" to nuclear technology – that is the hardest to understand. States Party to the NPT, it says, have an "inalienable right … to develop, research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II."[203] More broadly phrased than Article IV(2), which deals with "cooperat[ion]" and the "exchange" of technological information between states – and thus with technology *transfer* – the first paragraph seems also to cover *indigenous development*, and is therefore potentially the more significant. "Even if you *do* have discretion in what you supply us," one might imagine an Iranian representative arguing, "we have the 'inalienable right' under the NPT to seek, develop, and retain any capability we wish for peaceful purposes." This paragraph is indeed at the core of today's Article IV debates.

Let's start at the end of the paragraph. It would seem clear enough that the phrasing in Article IV(1) about "conformity with Articles I and II" means that having signed the NPT, a non-weapon State Party no longer has *any* right, much less an "inalienable" one, to anything acquired or possessed in violation of these core nonproliferation obligations of the Treaty. Ironically, for all of Iran's emphasis upon its Article IV "rights," the spare words of the "conformity" requirement thus neatly dispose of Tehran's recent arguments. Having acquired its enrichment infrastructure – and set off

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201 "Revised Draft Treaty on the Nonproliferation of Nuclear Weapons (January 18, 1968)," *in ACDA Negotiating History*, *supra*, at 150-54.

202 *Id.* at 117 (comments by Nigeria) & 120-23 (comments by Mexico, Chile, Australia, South Africa, and Israel). Their objections were addressed only to the extent that the final text was amended to refer to "exchange" of "equipment" and "materials" rather than just "information." *See* Draft Treaty on the Nonproliferation of Nuclear Weapons (May 31, 1968), *in ACDA Negotiating History*, *supra*, at 160-65; *see also id.* at 123.

203 NPT, *supra*, at Art.IV(1).

down the road to plutonium reprocessing as well, with the commencement of construction of its heavy-water plant and the heavy-water plutonium production reactor at Arak – using designs and seed technology from A.Q. Khan's smuggling network as part of a clandestine nuclear weapons program underway since the 1980s, Iran has *not* been "in conformity" with Article II and thus can claim no "right" to its fuel-cycle facilities.

Such an approach, however, raises as many questions as it answers. It is an interesting legal question, for instance, whether a country could "cure" its Article II noncompliance, and thus re-acquire any "right" forfeited pursuant to the last ten words of Article IV(1), merely by promising hereafter to use only for peaceful purposes what it had acquired in order to make nuclear weapons – or whether, instead, such ill-gotten gains must first be "disgorged" in the manner sometimes seen in civil litigation. (The legal doctrine of "unjust enrichment" might find relevance here, being both substantively appropriate and a marvelous *double entendre* to boot.) The former answer seems implausibly easy for any system at all concerned with preventing nuclear weapons proliferation, but even were such credulous leniency possible, Iran certainly has yet to persuade any serious observer that it has really turned over a new leaf.[204]

Nor should anyone interested in the legal meaning of these provisions forget that the "conformity" language of Article IV(1) refers not merely to Article II but also to Article I – that is, it would seem to impose qualifications upon the peaceful-use rights of the *nuclear weapons states* (the only ones subject to the provisions of Article I) as well as those of non-possessors. What does this mean? Could, say, China be said to have lost its right to engage even in peaceful nuclear pursuits if it had assisted, say, Pakistan or Iran with nuclear weapons development (*e.g.*, by supplying the nuclear weapons designs that A.Q. Khan later provided to Libya and perhaps others, or by providing Iran's first uranium hexafluoride centrifuge feedstock)?

And no matter who the violator might happen to be, what does it mean that the right referred to in Article IV is an "inalienable" one? Technically, this could mean no more than that one's peaceful use rights cannot be sold or transferred to another party, but it is hardly clear what this would actually add to the effective meaning of Article IV. (Was such transfer considered in any way a danger?) Another possibility is that "inalienable" essentially *doesn't* mean anything in particular – that is, that it was simply "color language" designed to serve the political purpose of emphasizing that the drafters thought that the right somehow to take advantage of nuclear know-how for peaceful purposes was a *very important* one.

Iran and its apologists sometimes seem to suggest that "inalienability" means that *nothing* can abridge the right to use any nuclear technology for peaceful purposes, but this is untenable as a matter of statutory interpretation because it would erase the

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[204] It is also worth remembering that the U.N. Security Council, acting pursuant to Chapter VII of the United Nations Charter, has imposed clear international legal obligations upon Iran to suspend its enrichment and reprocessing activities – obligations that operate quite independently of whatever the NPT's Article IV otherwise says (or doesn't say) about Tehran's "right" to engage in such work.

"conformity" requirement so carefully included alongside the "inalienable right" phrasing. Nor would "inalienability" seem to impose any obstacle, in principle, to a forfeiture-implying reading of the "conformity" qualifications of Article IV(1). After all, history's most famous invocation of "inalienable" rights – the reference to "Life, Liberty, and the Pursuit of Happiness" in the U.S. Declaration of Independence – has never been taken to mean that someone's right to liberty, for instance, cannot be infringed (*e.g.*, by imprisonment) as the result of a sufficiently serious instance of law-breaking.[205]

It is thus not surprising, for instance, that the committee drafting the NPT rejected Romania's suggestion that the right described in what became Article IV be declared an "absolute right."[206] It could not be *truly* absolute, for – as Wohlstetter would later phrase things – this was a *nonproliferation* treaty, not a nuclear development treaty. As the Mexican ambassador to the committee drafting the NPT noted, it "could not be otherwise" than that peaceful use rights were qualified by the requirements of nonproliferation. Explaining his country's proposal for the inclusion of a peaceful use provision in the NPT that had been modeled on the approach taken in the Treaty for the Prohibition of Nuclear Weapons in Latin America (a.k.a. Treaty of Tlatelolco), the Mexican representative made clear that it was essential to limit peaceful use rights to those who were in compliance with nonproliferation rules. This

> "reconciles the comprehensive and absolute prohibition of nuclear weapons, without any exception or reservation, with the rights of States members … to peaceful use of the atom for their economic and social development. Both principles – that of the prohibition and that of the use – are embodied in the Treaty. However, whereas the prohibition … is absolute and unconditional, the use – and this could not be otherwise – is subject … to the condition that it may not involve a violation of breach of that unrestricted prohibition."[207]

This was to be no less true for the NPT than it had been for Tlatelolco. That a limitation of the "inalienable right" was intended is therefore clear, and absolutist Iranian interpretations of "inalienability" are self-evident nonsense. Despite this understanding about what "inalienable" *doesn't* mean, however – or perhaps partly as a result of it – the specific legal import (if any) of the word remains, at the least, a question mark.

As a matter of treaty interpretation, the various issues raised by the text of Article IV are thus not easily or even necessarily coherently resolved. (This is true, furthermore, even without getting into vexing questions about *Who decides?* that are made especially pointed if Article IV is supposed to refer to "hard" technology rights that might be turned

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205 Zarate has also made this point, *see* Zarate, *supra*, at 282 n.66, as did I in internal arguments with State Department lawyers beginning in 2004.

206 "Romanian Working Paper Submitted to the Eighteen Nation Disarmament Committee: Amendments and Additions to the Draft Nonproliferation Treaty, October 19, 1967," *in Documents on Disarmament 1967*, *supra*, at 525, 525.

207 "Statement by the Mexican Representative (Garcia Robles) to the Eighteen Nation Disarmament Committee: Latin American Nuclear-Free Zone and Nonproliferation of Nuclear Weapons, March 21, 1967" in Documents on Disarmament 1967, *supra*, at 162, 163.

intermittently "on" or "off" according to their would-be possessor's conformity with nonproliferation rules.)

Then, of course, there are questions pertaining to what Article IV does *not* say. Notably, for example,, Article IV does *not* specify a requirement for conformity with Article III of the NPT, though this idea was endorsed by consensus at the 2000 NPT Review Conference. It would certainly seem *reasonable* to provide that non-nuclear weapons States Party to the Treaty may not enjoy the right to possess or use nuclear material or engage in nuclear activities, even for peaceful purposes, without applying nuclear safeguards as indeed they are required to do by Article III. Why was this not done, and what might the omission imply? Could a country be in violation of the NPT by refusing all safeguards upon its nuclear activities and yet shelter behind a "right" to continue these activities solely on grounds that its work was not connected to a weapons program (and thus not an Article II violation)? It would be odd, at the least, to read the NPT in that fashion, and even Iran – which endlessly trumpets its purported return to safeguards compliance when arguing for its "right" to enrich uranium – does not seem to take such a view. But the text of Article IV provides little clue as to what we should think.

Most fundamentally, perhaps, the text of Article IV(1) is quite unhelpful in specifying what specific "rights" it might be thought protect in the first place. The right specified in that paragraph is the right "to develop, research, production and use of nuclear energy for peaceful purposes," but what does this entail? This vague and questionably grammatical phrasing could equally plausibly support very different readings. Does Article IV(1) refer[208] to a right merely to develop, research, produce, and use nuclear *energy* itself? Or does it say something further, about involvement with the underlying technologies that make such power production possible?

The former reading might not imply too much in terms of "hard" technology-access privileges. (Perhaps the right to operate some kind of power reactor?[209]) If the latter reading were adopted, however, the argument for an ENR-privileging Iranian reading becomes somewhat stronger. But Article IV(1) does not make its meaning clear, and it certainly does *not* refer explicitly to the "production" of nuclear *fuel* – merely to that of "energy." Its eloquence at signaling the importance of peaceful uses and the

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208 Whatever else it might mean, the best reading of Article IV(1) does not see that paragraph as *conferring* the "inalienable right." Its phrasing seems merely to *refer* to some pre-existing right, though the "conformity" requirements (which refer to articles of the NPT itself) are obviously a new constraint accepted by all States Party by virtue of their agreement to the Treaty's terms. The origin of such a pre-existing right, however, is unaddressed. Conceivably, it comes from no place more profound or more codified than the basic assumed "right" of *any* sovereign state, in a fundamentally anarchic international system, to do *anything it wants* in the absence of positive legal constraint. Since the NPT seems expressly to limit that very right, however – thereby providing just such a positive constraint – it adds little to the discussion to make this point.

209 On the other hand, as noted previously, some nuclear experts reject the view that nuclear power plants are safeguardable in any country of whose peaceful intentions one is not already quite confident. Even, the most proliferation resistant light water reactor, they argue, comes with fresh fuel and produces plutonium-laden spent fuel that could be diverted to help make bombs without the IAEA necessarily finding out in a timely fashion. *See, e.g.,* Gilinsky et al., *supra*.

existence of *some* right to partake in peaceful exploitation of the atom is in no way matched by its clarity in describing what any of this actually means in practical terms. If one insists upon looking for a "hard" rights-based discourse in Article IV, this ambiguity might seem strange in a document the drafters of which clearly *did* know how to write clearly, in lawyers' language, about obligation and prohibition.[210]

(2) *Negotiating History*

The negotiating history of Article IV (1) is not particularly helpful, but it may shed some light upon such conundra. There exist some statements in the record which suggest that the delegations participating in the NPT's drafting – in Zarate's words – "viewed nuclear fuel-making in a manner similar to nuclear explosives for peaceful purposes: that is, as potentially aiding and even constituting, the manufacture of nuclear weapons."[211] A British representative, for instance, stressed that "deal[ing] effectively with nuclear weapons" required "concentrating on the fissile material," while a Swedish representative remarked in 1966 that prohibiting merely the final stage of the "manufacture" of nuclear weapons was insufficient.[212] Building upon these insights, in fact, Burma's delegate declared in 1966 that

> "[a]n undertaking on the part of the non-nuclear weapon Powers not to manufacture nuclear weapons would in effect mean forgoing the production of fissionable material … [because] such production is the first essential step for the manufacture of these weapons and constitutes and important dividing line between restraint from and pursuit of the nuclear [weapons] path."[213]

This is not necessarily to suggest, of course, that it was expected that Article IV would actually *prohibit* nuclear fuel-making for non-nuclear weapons states. That fuel-making was recognized as a somewhat proliferation-problematic technology, however, seems unmistakable. Perhaps for this reason, a Mexican proposal of 1966 to specify Parties' right to use nuclear energy for peaceful "in any manner"[214] was not adopted.

In a sense, this is hardly surprising. In light of what we have seen of the long prehistory of the technology control problem – in which from the very dawn of the nuclear age nuclear fuel-making was seen as "inherently dangerous" and as presenting

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210 *Compare, e.g.*, NPT, *supra*, at Arts. I, II, & III *with id.* at Art. IV.

211 Zarate, *supra*, at 256-57.

212 Henry Sokolski, "The Nuclear Nonproliferation Treaty and Peaceful Nuclear Energy," testimony given before the House Committee on International Relations, Subcommittee on International Terrorism and Nonproliferation, March 2, 2006, available at http://www.internationalrelations.house.gov/archives/109/sok030206.pdf (*quoting* ENDC/PV.82 (September 7, 1962) "Statement by the Swedish Representative [Alva Myrdal] to the Eighteen Nation Disarmament Committee: Nonproliferation of Nuclear Weapons," ENDC/PV.243 (February 24, 1966)).

213 Zarate. *supra* at 257 & 286 n.91 (*quoting* ENDC/PV.250 (March 22, 1966), at 28 (statement of U. Maung Maung Gyi)).

214 "Statement by the Mexican Representative ... March 21, 1967," *supra*, at 164; *see also ACDA Negotiating History*, *supra*, at 67.

special proliferation risks on account of the identity of its techniques and processes with what one would need in order to produce fissile material for nuclear weapons – it might in fact be more surprising had this point *not* arisen during the drafting of the NPT. To regard the drafters of Article IV as having suddenly conducted a complete *volte-face* from such insights and longstanding concerns, by drafting Article IV(1) to give countries an affirmative *right* to engage in such activity, would have been remarkable indeed.

Perhaps it is simply the case that the drafters did not think it *necessary* to be clearer about the *non*-inclusion of fuel manufacture within the Article IV(1) "right" because they shared the apparent assumptions we have seen among U.S. intelligence analysts and others of the period that the spread of fuel-making capabilities was unlikely to present too much of a proliferation problem – provided that technology *transfers* were controlled – because such a capability was financially and technically out of reach of almost all states anyway. Certainly, as we have seen, every proposal was rejected that attempted to ensure that transfers under Article IV(2) *did* cover fissile material production technology. If it were felt that without such transfers no new states would be able to develop such capabilities in the first place, closing the door to mandatory sharing and trusting in the discretion of the then-supplier states would have left there scarcely any need to labor longer over specifying the parameters of Article IV(1)'s "inalienable right." As long as it did not unquestionably *include* fuel-cycle capabilities, which the drafters ensured that it did not, that might have been seen as enough.

Some Western observers have suggested that this may have been in fact precisely what happened. They include Australian nuclear safeguards authority John Carlson,[215] but I myself have also argued the point. As I put it in a 2007 speech cleared by the U.S. interagency process,

> "[b]ack at the time the NPT was negotiated, enrichment technology was available to very few, not widely understood, and commonly treated as tightly-controlled national security information because of its utility in producing fissile material for weapons. Enrichment technology was not expected to be widely available, so it was easy to promote 'Atoms for Peace' because peaceful nuclear cooperation was seen as largely building power reactors to be run on fuel produced by the few states that already had the technology."[216]

Former Clinton Administration official Rose Gottemoeller has written, too, that "[h]istorically, economic reasons have limited the number of states possessing the full range of fuel cycle activities."[217]

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215 *See, e.g.*, John Carlson, "Addressing Proliferation Challenges from the Spread of Uranium Enrichment Capability," presentation by Russell Leslie, on behalf of John Carlson, to the Institute for Nuclear Materials Management Annual Meeting, Tucson, Arizona (July 9-12, 2007), from PowerPoint slide 2.

216 Ford, "The NPT Review Process and the Future of the Nuclear Nonproliferation Regime," *supra*.

217 Gottemoeller & Arnaudo, *supra*, at 17.

A review of the negotiating history suggests little reason to believe that the drafters of the NPT ever expected technology-possessors to share such things as uranium enrichment, or non-possessors to get if they did not. While some non-possessors tried unsuccessfully to win agreement on "participation" rights that includes such technology, the delegations from technology *possessor* states who spoke favorably about international cooperative efforts seem generally to have had in mind only relatively innocuous technologies not directly related to nuclear weapons – *e.g.*, nuclear reactors for electric power generation, or equipment related to agriculture, industry, seawater desalination, and fusion research – rather than such things as uranium production capabilities.[218]

One exception came with regard to fast-breeder reactors, the development of which, in West Germany and elsewhere, a 1967 U.S. State Department statement declared need not be impeded by the Treaty.[219] (Here we may perhaps see an example of the confused optimism about plutonium safeguards decried by Wohlstetter and others in the wake of the Acheson-Lilienthal Report's treatment of the "denaturing" issue.) Nevertheless, the point seems to hold with regard to uranium enrichment technology – the capability perhaps most at the center of today's diplomatic-cum-legal disputes with Iran. It may simply not have been felt necessary to provide any real clarity in Article IV(1) as to the scope of the "inalienable right."

(3) *A Reconciliation?*

Clearly the temptation is great, in today's diplomatic context, to read Article IV ambitiously – to rely upon it both as a sword with which to compel the granting of countries' every wish for technology transfers, and as a shield with which to fend off efforts to limit access to capabilities that entail significant proliferation risks. Arguably, however, the best way to make both textual and substantive sense of Article IV – to sidestep and help explain the question-begging confusions and omissions of its phrasing, to lift the suggestive but all too opaque veil of its negotiating history, and to reconcile all of this with consistent themes running through the history of the international community's pre-NPT struggle with these same issues of nuclear control – is to retreat from the assumption that Article IV is really about "hard" technology rights at all. Perhaps the secret to understanding its specific, concrete, and invariant legal import is that it really *has* no such import, and was not intended to.

Article IV undoubtedly embodies and articulates – as the NPT's Preamble makes quite explicit – a strong commitment to ensuring that the benefits of nuclear technology are shared as widely as possible. This has always been understood as one of the major goals of the Treaty, and has been a lodestar for international nuclear cooperative efforts at least since Eisenhower's "Atoms for Peace" speech in 1953. In this author's view, however, the most tenable way to read Article IV essentially stops there, without wading

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218 *See ACDA Negotiating History*, *supra*, at 60 & 125.

219 "Statement by the Department of State on Nonproliferation and Peaceful Nuclear Activities, February 20, 1967," *in Documents on Disarmament 1967*, *supra*, at 96, 96-97 (also stating that selling U.S. plutonium to EURATOM for electrical power generation purposes would be permitted).

into the conceptual and jurisprudential quicksand of trying to tease concrete, *per se* legal requirements out of its tortured syntax.

It is probably a mistake, and likely to be fruitless, to search for *any* sort of "bright line rules" for technology control within the ambit of Article IV. It would be very hard, for instance, to maintain that the NPT simply *prohibits* the possession or proliferation of nuclear fuel-making capabilities. After all, it would have been easy simply to *say* this if such had been the intention, and the drafters were not entirely strangers to the art of clear writing. Furthermore, as we have seen, even the drafting committee's co-chair, the United States, made clear in 1967 that the Treaty would not necessarily preclude even non-weapons states' development of fast-breeder reactors.[220] Nor, while it was clear enough that technology transfers would not be *mandatory*, was it established that they would necessarily *exclude* everything to do with fissile material production. (During the negotiations, moreover, Switzerland at one point spoke up to make the point – apparently without contradiction – that the Treaty would not outright prohibit "transfer[s]" of "enrichment of uranium, [or] extraction of plutonium from nuclear fuels, or manufacture of fuel elements or heavy water, when these processes are carried out for civil purposes."[221]) Except for nuclear weapons themselves – and the obviously related case of "peaceful nuclear explosions," which we will examine below – it would be hard to find a *per se* rule of technology exclusion in the NPT.

At the same time, however, it would seem that no *per se* rule of technology *inclusion* was intended either. The language of Article IV is quite notably ambiguous, and repeated efforts to make it more specific in just such ways were rejected, leaving us with nothing completely clear except that the drafters considered it very important to the scheme of the Treaty that – as the Preamble nicely summarized – "the benefits of peaceful applications of nuclear technology ... should be available for peaceful purposes

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220 The official summary of the negotiations paraphrases these statements by recounting that the United States had proclaimed that "[t]here was no area of peaceful nuclear development that would be precluded by a treaty." *ACDA Negotiating History*, *supra*, at 64. The actual U.S. statement, however, does not quite go so far. While it does emphasize that fast-breeders are not precluded, it does not make the *per se* claim quoted, and does in fact *rule out* sharing the technology involved in "peaceful nuclear explosive devices." *See* "Statement by the Department of State," *supra*, at 96-97

221 "Swiss Aide-Memoire to the Co-Chairmen of the Eighteen Nation Disarmament Committee: Draft Nonproliferation Treaty, November 17, 1967," *in Documents on Disarmament 1967*, *supra*, at 572, 572; *see also* ACDA *Negotiating History*, *supra*, at 81. (An undated U.S. document from the same period also explained to the government of Australia that the treaty would prohibit

> "[n]either uranium enrichment nor the stockpiling of fissionable material in connection with a peaceful program … so long as these activities were safeguarded under Article III. Also clearly permitted would be the development, under safeguards, of plutonium power reactors …."

U.S. Government, undated "Aide Memoire to the Government of Australia" [declassified version], at 2, ¶ 5. Admittedly, however, this response concerned only the scope of what activities *would violate Article II* of the NPT, and it is likely true that none of those activities constitute *per se* Article II problems if not undertaken for purposes of furthering nuclear weapons development. *Cf. 2005 Noncompliance Report*, *supra*, at 64-65 (setting forth U.S. standards for Article II compliance assessments). The undated U.S. document thus did not address whether or not these technologies felt within the ambit of the "right" discussed in Article IV.)

to all." All seemed to share a genuine commitment to this principle, even as they declared their firm commitment to the overarching goal of the Treaty in preventing the further spread of what the Mexican ambassador called "these terrible weapons of mass destruction"[222] and retained an acute awareness of the fact that the "dual-use" nature of much nuclear technology meant that more widespread possession of some capabilities necessarily involved proliferation risks.

An obvious way, and perhaps the only way, to reconcile these elements was, in effect, to follow the path blazed by the Acheson-Lilienthal Report, the Baruch Plan, and the U.N. Atomic Energy Commission in adopting a vision of nuclear technology control strongly committed to the sharing of *benefits* yet approaching specific questions of technology access on a case-by-case basis with an eye to whether or not potential proliferation risks could be adequately controlled. Article IV, in other words, may be nothing more (and nothing less) than a pragmatic effort to carve out, from an instrument otherwise much concerned with specific legal requirements, a space in which nuanced *policy* judgments could be utilized to surmount the seeming tension between nonproliferation and peaceful uses. Rather than reifying the idea of technology access "rights," therefore, sophisticated readers of Article IV are better advised to understand it – ironically, despite its colorful invocation of an "inalienable right" – as a *de-legalization* of peaceful use issues and a return to the fountainhead of today's international nuclear cooperation system: President Eisenhower's call to use "atoms for peace" with an eye to the "elementary prudence" of nonproliferation.

Let me stress that this is not the *only* way to read Article IV. For the most part, it is *possible* to read it – or at least its first paragraph – as Iran and others contend. Both a more contextually-dependent, *policy*-privileging reading and an absolutist, *rights*-privileging interpretation are therefore "legally available," as it were. In my view, however, the former understanding is the better one, being less plagued by the confusing text of Article IV, less confounded by the complexity of its negotiating history, and less substantively surprising and indeed contradictory in light of the long history of how key players (and the United Nations itself) struggled with the challenge of technology control in the years leading up to the drafting of the Treaty.

Such an approach would also be consistent with the discussion in the Preamble of the importance of sharing the *benefits* that nuclear technology can bring. This language seems clearly to reference and build upon what we have already seen to be a longstanding international discourse of benefit-sharing that goes back to the earliest days of the Baruch Plan and UNAEC deliberations. The central theme of this discourse was in effect that specific technology-sharing issues should be dealt with on a case-by-case basis – informed by proliferation risks – even as every effort is made to ensure that recipients "benefit" from nuclear applications even when they are themselves denied access to particular technologies.

Indeed, U.S. documents at the time explicitly described Article IV as embodying the principle of *benefit*-sharing described in the Preamble. In an explanatory telegram

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222 *Quoted in ACDA Negotiating History*, *supra*, at 65-66.

sent to U.S. embassies and missions around the world, for instance, Article IV was described as a

> "specific elaboration[] of the principle, stated in the preamble, 'that the benefits of peaceful applications of nuclear technology … should be available for peaceful purposes to all Parties, whether nuclear weapon or non-nuclear weapon states'."[223]

It would be at least somewhat strange to read Article IV's "specific elaboration" of the principle of benefit-sharing in such a way as to repudiate the reason it had long been felt necessary to speak in terms of sharing *benefits* – as opposed to sharing specific *technologies* – in the first place.

And this brings us to a final point. Perhaps most importantly, approaching peaceful use issues through the prism of *benefits*-sharing within nonproliferation parameters is perhaps the only way to read Article IV that does not make that provision the enemy of the *rest* of the NPT. By contrast, a "hard" rights-reifying interpretation pits Article IV squarely against the overarching nonproliferation purpose of the Treaty. However egregious his behavior in helping shield Iran from suffering consequences for its noncompliance until he declared it "too late" to stop Tehran's enrichment effort,[224] IAEA Director General ElBaradei is nonetheless quite right to warn darkly of the potential consequences of a looming world full of "virtual" nuclear weapons states. That looming world, however, is a natural consequence of strong technology-rights readings of Article IV.

Reading the NPT's peaceful use provisions as being not about *per se* technology access "rights" but rather about the importance of exercising substantive policy judgment – that is, achieving a prudential balance between the benefits to be had from nuclear technology and the global security risks created by some means of achieving such sharing – thus seems like the best way to understand Article IV *as part of the NPT as a whole*, rather than just a cluster of phrases read in isolation. Such a reading may not be obligatory as a matter of statutory interpretation, but it certainly seems the wisest one.

A policy-privileging reading that sees the "inalienable right" of the NPT's Article IV through the prism of nonproliferation requirements is also the one most consistent with broader notions of probity in treaty interpretation that counsel signatories' fidelity to "the object and purpose" of a Treaty even in the period *before* their final ratification of an instrument.[225] It is also most consistent with those maxims which counsel turning to supplementary means of interpretation (*e.g.*, negotiating history) in cases where looking

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223 U.S. Department of State, diplomatic cable entitled "Aide-Memoire on the Draft Non-Proliferation Treaty (NPT)" [declassified version] (August 24, 1967), at 3-4.

224 *See, e.g.*, AFP, "UN nuclear chief says Iran should stop expanding enrichment" (June 14, 2007); Associated Press, "Iran: no halt to enrichment" (May 25, 2007).

225 Vienna Convention on the Law of Treaties (May 23, 1969), 1155 U.N.T.S. 331, at Art. 18(a).

merely at the text itself might leave a provision's meaning obscure or "lead[] to a result which is manifestly absurd or unreasonable."[226]

Civil Law legal systems and some significant international conventions also often incorporate a doctrine of "abuse of rights" (*abus de droit*), whereby the law will be read so as not to give any right to engage in activity that will tend to imperil such rights and freedoms.[227] As the principle was famously put in a 1961 judgment of the European Court of Human Rights,

> "no person may be able to take advantage of the provisions of the Convention [for the Protection of Human Rights and Fundamental Freedoms] to perform acts aimed at destroying the aforesaid rights and freedoms."[228]

Though I managed to persuade the U.S. Government to hint at the notion in cleared remarks given to the 2005 NPT Review Conference,[229] *abus de droit* does not appear elsewhere to have been raised in an Article IV context. Nevertheless, the principle seems quite appropriate in Article IV discussions, where the danger is precisely that technology-access "rights" purportedly recognized by the NPT's Article IV could in practice undermine the entire Treaty. It would, at the very least, be a perplexing reading of Article IV of the Nuclear Nonproliferation Treaty that facilitates that provision's use as a tool for *weakening* international protections against nuclear weapons proliferation.

(4) *The Case of PNEs*

Before we conclude, it is useful to mention the clearest case of the benefit-sharing principle – and the way in which it did *not* necessarily entail sharing specific technologies – offered in the history of the NPT: the curious case of "peaceful nuclear explosions." As early as 1949, Soviet authorities had apparently begun professing interest in using nuclear

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226 *Id.* at Art. 32.

227 *See, e.g.*, Charter of Fundamental Rights of the European Union, at Art.54 ("Nothing in this Charter shall be interpreted as implying any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms recognised in this Charter or at their limitation to a greater extent than is provided for herein."), *available at* http://www.europarl.europa.eu/comparl/libe/elsj/charter/art54/default_en.htm; Universal Declaration of Human Rights, *available at* http://www.unhchr.ch/udhr/lang/eng.htm, at Art.30 ("Nothing in this Declaration may be interpreted as implying for any State, group or person any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms set forth herein.").

228 Lawless v. Ireland (E.C.H.R., Series A, No.3) (July 1, 1961), *available at* http://www.ena.lu/judgment_european_court_human_rights_lawless_ireland_july_1961-020004456.html, at ¶7 of discussion of law.

229 *See* Principal Deputy Assistant Secretary of State Christopher Ford, "NPT Article IV: Peaceful Uses of Nuclear Energy," Statement to the 2005 Review Conference of the Treaty on the Nonproliferation of Nuclear Weapons, New York, New York (May 18, 2005), *available at* http://www.state.gov/t/vci/rls/rm/46604.htm ("NPT parties have the responsibility to implement Article IV in such a way that not only preserves NPT compliant parties' right to develop peaceful uses of nuclear energy, but also ensures against abuse of this right by States Party pursuing nuclear weapons capabilities.")

explosions for "such peaceful purposes as moving mountains, irrigating deserts, and clearing jungles."[230] (At least as late as 1964, the Soviets still entertained ideas about "the removal of overburden from mineral deposits and the creation of waterways and harbors by means of nuclear detonation."[231]) Early on, U.S. officials ridiculed this idea, plausibly inferring that it was merely a cover for nuclear weapons ambitions. As one U.S. representative observed, after all, "if nations have devices in their possession which can level mountains, they also have in their possession devices which can level cities."[232] Nevertheless, the idea of "peaceful nuclear explosions" (PNEs) did not go away so easily.

During the course of the NPT's negotiations, in fact, countries as diverse as Brazil, Switzerland, India, and Nigeria all suggested that PNE technology should be made available to all countries under the aegis of peaceful nuclear cooperation.[233] In late 1967, for instance, Brazil proposed amending Article IV to provide an "inalienable right" that "include[d] nuclear explosive devices for civil uses."[234] Brazil tried again in February 1968.[235]

Giving access to the specific technology necessary to conduct PNEs, however, was entirely indistinguishable from sharing nuclear weapons technology, and was thus regarded by many other participants as being entirely out of the question within the ambit of a treaty devoted to the nonproliferation of nuclear weapons. Significantly, this did not result in an outright rejection of the *idea* of PNEs, but rather an acceptance of the importance of giving access to any *benefits* that could be derived from such explosions, yet emphatically *without* giving access to the technology. PNEs thus present, in effect, the classic example of the benefit-sharing principle as a way of serving the cause of peaceful nuclear uses *and* the cause of nonproliferation.[236]

The solution was to make clear that while PNEs were permissible and theoretically available to all Parties, only their *benefits* would be shared, with the

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230 "Statement by the United States High Representative (Hickerson) to the Ad Hoc Political Committee of the General Assembly (November 11, 1949)," *in Documents on Disarmament, 1945-1959*, *supra*, at 225, 227.

231 Gilpatric Report, *supra*, at 3.

232 "Statement by the United States High Representative (Hickerson)," *supra*, at 227.

233 *See ACDA Negotiating History*, *supra*, at 81 & 84-86.

234 "Brazilian Amendments to the Draft Nonproliferation Treaty, October 31, 1967," *in Documents on Disarmament 1967*, *supra*, at 546, 546.

235 *See* Zarate, *supra*, at 247 & 281 n.64 (*quoting* "Brazilian Amendments to the Draft Treaty on Nonproliferation of Nuclear Weapons," ENDC/201/Rev.2 (February 13, 1968)).

236 In 1976, Wohlstetter observed that PNEs were "[t]he reduction to absurdity of the dichotomy" between "peaceful" and military uses. "These plowshares, in all essentials, *are* swords." Wohlstetter et al., *supra*, at 46. More recently, Zarate has argued similarly that the PNE issue demonstrates the importance of the principle that "[w]hen the IAEA cannot effectively safeguards the nuclear material involved in an allegedly-peaceful application of nuclear technology, then the NPT does not protect the right of states to develop, access or use that allegedly-peaceful application of nuclear technology." Zarate, *supra*, at 255.

technology itself remaining under NWS control.[237] As the United States explained this approach,

> "any benefits which may emerge from the development of peaceful nuclear explosive devices should be made available to the world. As for the actual *use* of these devices, the United States has said that this service ought to be performed by the nuclear-weapon powers without discrimination for the non-nuclear-weapon powers."[238]

According to the representative of Mexico, the country that had itself first proposed the basic language that became Article IV, this solution to the PNE problem – namely, distinguishing between sharing *benefits* and necessarily sharing *technologies* – flowed naturally from "the spirit which pervades the Treaty and is expressed in the Preamble." In the event of a conflict between specific "peaceful" applications of nuclear technology and nonproliferation, he made clear, one must give priority to nonproliferation. His explanation of this key insight – given here in the context of the PNE debate, but of obvious broader significance – is worth quoting in detail:

> "…[I]f unfortunately it were necessary to choose between the manufacture of nuclear devices which, though intended for peaceful purposes, were basically identical with nuclear weapons, and the renunciation of all nuclear explosions as the only means of avoiding the proliferation of those terrible weapons of mass destruction, the spirit which pervades the Treaty and is expressed in the Preamble clearly indicates which of those two alternatives would be chosen …. [That choice is] a solution which precludes the spread of nuclear weapons and at the same time ensures that the States which … do not possess them are not deprived of the immense benefits which their economic development might derive from the use of nuclear explosions for peaceful purposes."[239]

This is a discourse not of *technology-access* rights but of rights to *benefits* from technology, the specific modalities of which must be assessed on the basis proliferation impact. In the end, Article V of the NPT embodied this approach quite clearly: the *benefits* of PNEs would be made available to all, but the *technological capability* to conduct such explosions would be permitted to no additional countries whatsoever.[240]

V. *Conclusion: Safeguardability, Real Benefit, and Technology Access*

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237 *See ACDA Negotiating History*, *supra*, at 52, 60, 81, 84-85, 104-06, & 124.

238 "Statement by the Department of State on Nonproliferation and Peaceful Nuclear Activities, February 20, 1967," *supra*, at 97 (emphasis added).

239 *Quoted in ACDA Negotiating History*, *supra*, at 65-66.

240 NPT, *supra*, at Art.V (providing that the "potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party … [and that] Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body").

The preceding pages have argued that while a rights-privileging approach to technology access under the peaceful use provisions of the NPT and a more flexible and prudential policy-privileging interpretation are both "legally available" alternatives, the latter reading is by far the better one. At a minimum, the Treaty in no way *requires* a fixation upon *per se* technology access as the "right" described in Article IV. Eschewing the reification of technology access "rights" that seems to be becoming today's Article IV conventional wisdom, moreover, would return harmony to the fundamental scheme of the NPT, preventing that provision from actually undermining the instrument of which we must presume it was intended to be a constructive and coherent component. In fact, abandoning today's legally unnecessary and substantively dangerous rights-fetishism would open the door to what might end up being some very wise and principled public policymaking, in response to the challenges of reconciling the legal and substantive imperatives of nonproliferation with the international community's longstanding commitment to sharing the benefits of nuclear technology.

"De-legalizing" the peaceful use issue – that is, carving out conceptual "space" in which the operation of *policy* judgment can and should be employed – would have significant implications for how technology-sharing issues are approached within the NPT regime. Specifically, it suggests at least two important areas for further research and analysis.

A. *Safeguardability*

First, much more attention must be given to the effective "safeguardability" of specific nuclear technologies and capabilities. This is the logical consequence of a policy-privileging approach to Article IV. In order to assess whether a particular type of technology may appropriately be shared with, or should be possessed by, non-weapons states – or whether, instead, it is only the *benefits* of this technology that should be shared – it is necessary to know what proliferation risks it would actually entail. As the example of "peaceful nuclear explosions" demonstrates, *some* technologies may not be safely left in the hands of non-nuclear weapons states at all. The principle of benefit-sharing referenced in the NPT's Preamble – and of which Article IV itself is an embodiment – is designed to accommodate this possibility, allowing for the *de facto* prohibition of non-weapons state possession of such a technology as long as possessors help make its *benefits* available in the alternative.

This approach, however, puts a premium upon having a deep understanding of proliferation risks and safeguards possibilities, for it is the interplay between these two factors that will determine whether any particular capability – or, in the alternative, merely its *benefits* – may be shared with or possessed by non-nuclear weapons states. Such assessments will be, of course, judgment calls. As illustrated by old assumption that "denaturing" would make widespread plutonium handling relatively safe, furthermore, judgments made at one time can later be understood as faulty. An answer that makes sense today may require revision tomorrow. We might, for example, discover certain capabilities to be more dangerous that once supposed, or be pleasantly surprised to learn that we had previously *over*estimated certain risks. Or perhaps we will simply

devise cleverer ways of managing what seems today to be a danger so great as to preclude safe non-weapons state access to a particular technology.[241]

The contextuality – and hence impermanence – of technology-access judgments under the benefit-sharing framework of the NPT, however, is in fact more of a strength than a weakness, for it allows mistakes to be corrected, understandings to be improved, innovations to be incorporated, and a complex and changeable world to be accommodated without shattering the Treaty regime. It may be true that we do not in fact know what hindsight will reveal to be the best answer. Nonetheless, this sort of *not knowing* is no excuse to avoid making the wisest decisions we can on the basis of the best information available to us today. We should embrace this, for it is the essence of responsible public policymaking.

Because of its potentially dramatic implications with respect to technology access, exercising such judgment responsibly requires that we pay attention to the growing chorus of critiques of IAEA safeguards capabilities. This is particularly the case with regard to questions concerning the Agency's ability adequately to monitor bulk-handling facilities and large-scale enrichment operations, where even small error margins can quickly produce material accountancy uncertainties sufficient to mask the disappearance of quite notable quantities of fissile material. We should worry about criticisms that the figures used by the IAEA to define a "significant quantity" (SQ) of fissile material (*i.e.*, the amount that one would need in order to manufacture a nuclear weapon) are much too high, and that the IAEA's benchmark "conversion times" for turning such material into a weapon – on the basis of which IAEA safeguards procedures and inspection periodicity are in large part determined – are therefore too long.[242] And we should be more than slightly concerned not merely that only 89 states have thus far adopted the IAEA Additional Protocol that the Agency deems necessary in order to help detect undeclared nuclear activities, but indeed that the IAEA *itself* believes this Protocol to provide insufficient inspector authority in the face of denial and deception by the host government.[243]

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241 After all, even with respect to PNEs, one ambassador centrally involved in crafting the NPT's peaceful use provisions held out at least some hope that "technological progress" might "one day" "make[] it possible to distinguish clearly between nuclear explosives for peaceful and for warlike purposes." *ACDA Negotiating History*, *supra*, at 65 (*quoting* Mexican representative).

242 *See, e.g.*, Cochran, *supra*.

243 The IAEA Director General has made it clear that even the AP's new authorities are inadequate to the challenges presented by IAEA verification activities in the face of the sort of denial and deception activities undertaken by Iran. In 2005, after two years of work to detail Iran's covert nuclear program, the Director General of the IAEA called upon Iran to provide cooperation and transparency above and beyond that required by the AP. IAEA, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," GOV/2005/67 (September 2, 2005), at ¶ 50 ("such transparency measures should extend beyond the formal requirements of the Safeguards Agreement and Additional Protocol"); *see also* IAEA Board of Governors, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," GOV/2006/14 (February 4, 2006), at operative ¶ 1 (deeming it necessary for Iran to "implement transparency measures … which extend beyond the formal requirements of the Safeguards Agreement and Additional Protocol").

Exercising our judgment responsibly also requires that we pay much more attention to matters such as the challenge of "timely warning" within the IAEA safeguards framework. Because it is obviously more important to *prevent* the diversion of material or technology into nuclear weapons than simply to *document* a proliferator's Treaty-violative *fait accompli*, the idea of timely warning is quite fundamental to the concept of nuclear safeguards. The IAEA's model for comprehensive safeguards agreements makes clear that

> "the objective of safeguards is the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection."[244]

Timeliness, however, is not a purely technical issue. It has long been recognized that keeping "civilian and military applications of nuclear energy" separate means

> "more than simply detecting a violation of an agreement. It means early detection of the approach by a government toward the making of a bomb in time for other governments to do something about it."[245]

This understanding of timeliness has long been the position of the U.S. Government. As we have seen, the Acheson-Lilienthal Report made clear that such timely warning was essential to any workable nonproliferation system: safeguards must provide "danger signals" that "flash early enough to leave time adequate to permit other nations – alone or in concert – to take appropriate action."[246] This view of timely warning has been recently reaffirmed. However unhelpful it may have been with regard to the precise meaning of Article IV, the U.S. State Department's reply to the Article IV query from Congressman Lantos nonetheless stressed "the need to ensure timely warning of diversion to non-peaceful purposes sufficient to permit an effective response."[247] Timeliness, therefore, has long been understood with an eye not simply to the specific conversion time required for a particular SQ of fissile material, but also to *the time it would take for the international community to respond to the violation detected.*

Needless to say, this makes the already demanding business of nuclear safeguards even more problematic. How much advance warning is, in fact, "timely" enough to permit a response to a violation? If one is to judge by the remarkable sloth of the IAEA Board of Governors in reporting *Iran's* safeguards noncompliance to the U.N. Security

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244 IAEA, The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, INFCIRC/153 (Corrected) (June 1972), at 9, ¶ 28, available at http://www.iaea.or.at/Publications/Documents/Infcircs/Others/infcirc153.pdf.

245 Wohlstetter, *supra*, at 307; *see also* Fred C. Iklé, "After Detection – What?" *Foreign Affairs* (January 1961), at 208.

246 Acheson-Lilienthal Report, *supra*, at 9.

247 Bergner letter, *supra*, at 2.

Council only three years after it was discovered[248] – despite such reporting being a requirement of the IAEA's own Statute[249] – genuine timeliness would seem, to put it mildly, rather hard to achieve.

Such worries are important under a policy-privileging peaceful use framework of benefits-sharing – and contemporary critiques deserve careful study in order to determine whether they do indeed indicate significant flaws in the safeguards framework – because of their potential implications for what technologies can safely be shared with, or possessed by, non-weapons states within the NPT regime. Some observers have already begun to draw grim conclusions. NPEC's Sokolski, for instance, argues that

> "not all nuclear activities can be safeguarded – that the IAEA cannot detect military diversion from some facilities (like nuclear fuel plants) early and reliably enough to assure we can stop or deter them before any bombs are made"[250]

Such critiques of IAEA safeguards, if warranted, could cut powerfully against technology-sharing, particularly with regard to ENR technology on the grounds that its possession can, in effect, allow states to proceed "to the very brink of acquiring nuclear arms – so that the final dash can be completed in a matter of … days."[251] As Roberta Wohlstetter pointed out many years ago in her insightful assessment of the implications of India's misuse of "Atoms for Peace" cooperation in order to develop the nuclear device it tested in 1974,

> "a government can, without overtly proclaiming that it is going to make bombs (and while it says and possibly even means the opposite), undertake a succession of programs that progressively reduce the amount of time needed to make nuclear explosives, when and if it decides on that course. This can be done consciously or unconsciously, with a fixed purpose of actually exploding a device or deferring that decision until

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248 *See, e.g.*, Christopher A. Ford, "The Nonproliferation Bestiary: A Typology and Analysis of Nonproliferation Regimes," *New York University Journal of International Law and Politics*, vol. 39, no. 4 (Summer 2007), at 937, 955.

249 *See* Statute of the IAEA, at Art. XII(C), *available at* http://www.iaea.org/About/statute_text.html#A1.12 ("The inspectors shall report any non-compliance to the Director General who shall thereupon transmit the report to the Board of Governors. … The Board shall report the non-compliance to all members and to the Security Council and General Assembly of the United Nations.").

250 Sokolski, "Nuclear Policy and the Presidential Election," *supra*, at 10. He points out, to give one example, that while IAEA estimates it would take only 7-10 days to convert separated plutonium into nuclear weapon, the IAEA's own detection goal is only to inspect facilities containing such material once a month. Sokolski, "Too Speculative?" *supra*, at 122-23 and Henry Sokolski, editor, *Falling Behind: International Scrutiny of the Peaceful Atom* (Carlisle, PA: U.S. Army War College, Strategic Studies Institute, 2008), pp. 3-62.

251 Sokolski, "Nuclear Policy in the Presidential Election," *supra*, at 10.

later. But it is more than holding out the option. It involves steady progress toward a nuclear explosive."[252]

In India, this "process of drifting toward a bomb"[253] occurred largely outside the IAEA system and the NPT. The existence of safeguards and Article II obligations, however, may not offer much protection against such drift – especially if no clear or detectable specific decision is made to develop nuclear weapons until late in the process.

Because even a country with the purest of motives can change its mind, moreover – and indeed, because acquiring the capability makes such a change of course toward nuclear weapons easier, quicker, and less risky[254] – the nonproliferation regime cannot rely entirely upon safeguards even if they *are* effective in providing timely warning of diversion during such time as they are applied. Recognizing that there was ultimately no way to prevent a host country's seizure even of internationally-owned and -controlled facilities located in its territory, the Acheson-Lilienthal Report advocated locating such nuclear plants according to "strategic" criteria, apparently in the hope that host governments would be deterred from appropriating them by the likelihood that rival nations would quickly follow suit by seizing (and presumably diverting to weapons uses) nuclear facilities located in their *own* respective territories.[255]

If the powerful Atomic Development Authority envisioned by the Report and the Baruch Plan was expected so nervously to contemplate the risk of seizure, how much less secure must the IAEA feel in a world in which all nuclear facilities are nationally owned and Agency inspectors work only at the pleasure of host governments? It is, after all, hardly difficult simply to expel IAEA inspectors as North Korea did in December 2002, *en route* to its nuclear test of October 2006. The international community might hope to *deter* such steps – at least if it can improve its currently woeful record of steadfastness against NPT and safeguards noncompliance – but there seems very little chance flatly to *preclude* them as a matter of safeguards methodology or design.

This is one reason why the idea of "safeguardability" as the touchstone of Article IV analysis has such significance. If IAEA safeguards are indeed as problematic as

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252 Roberta Wohlstetter, "The Buddha Smiles: U.S. Peaceful Aid and the Indian Bomb," *in Nuclear Policies: Fuel without the Bomb* (Cambridge, Massachusetts: Ballinger, 1978), *reprinted in* Zarate & Sokolski, *supra*, at 339, 340.

253 *Id.* at 349.

254 *See, e.g.*, *id.* at 349.

255 Acheson-Lilienthal Report, *supra*, at 47 ("It will probably be necessary to write into the charter itself a systematic plan governing the location of the operations and property of the Authority so that a strategic balance may be maintained among nations. In this way, protection will be afforded against such eventualities as the complete or partial collapse of the United Nations or the Atomic Development Authority, protection will be afforded against the eventuality of sudden seizure by any one nation of the stockpiles, reduction, refining, and separation plants, and reactors of all types belonging to the Authority. … The real protection [against seizure] will lie in the fact that if any nation seizes the plants or the stockpiles that are situated in its territory, other nations will have similar facilities and materials situated within their own borders so that the act of seizure need not place them at a disadvantage.").

alleged in some modern critiques, one might be compelled to conclude, with Sokolski, that

> "nuclear fuel-making activities cannot be considered 'peaceful' unless they are conducted in states that already have nuclear weapons. At the very least, it suggests that spreading fuel-making activities to new non-weapons states would be contrary to the NPT."[256]

Viewed through the prism of such safeguards critiques, in other words, the authors of the Acheson-Lilienthal Report – with their emphatic dismissal of the possibility that a safeguards system could *ever* make nationally-controlled nuclear facilities genuinely safe from a proliferation perspective – could end up having the last laugh.

This is not the place to assess the merits of current safeguards critiques based upon materials accountancy, significant quantity estimates, presumed conversion times, timely warning, and inspector authorities in the face of determined denial and deception. The questions that have been raised, however, underscore the importance of making safeguards adequacy a subject for much more serious study and attention. The stakes are enormously high.

B. *Real "Benefits"*

Another question raised by the benefit-sharing approach to NPT peaceful use issues is precisely what it means for a particular technology to be of "benefit" or to have a "benefit" worthy (or capable) of being shared at all. After all, in order for there to be any intelligible weighing of proliferation risk against the benefits offered by a particular technology – not to mention any coherent way of understanding how to provide such benefits to others *without* sharing that technology in the event that the proliferation risk proves unacceptable – there has to be at least *some* benefit in the offing in the first place. If no real benefit is offered by a particular technology, in other words, it is not worth even *having* a discussion about whether any proliferation risk should be borne in its pursuit. Not even the smallest proliferation risk could possibly be justified by something that provides *no* benefit.

Having demonstrable benefits to offer is in no way *per se* dispositive with regard to the propriety of technology sharing, of course. A judgment that a particular technology cannot or will not be properly safeguarded, for instance, could make even a very valuable application prohibitively costly from the standpoint of global security. At least with respect to technology transfers, however, a showing of real benefit is presumably *necessary* to open the policy debate, even if this is not sufficient to decide the issue: without demonstrable benefit, there is no case to plead, as it were, in the court of safeguardability.

(This is not to say that *indigenous* technology development efforts should be prohibited if they cannot make any coherent showing of benefit. A non-beneficial

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[256] Sokolski, "Nuclear Policy in the Presidential Election," *supra*, at 10.

technology that presents no proliferation risks would surely be permitted, for countries presumably retain the right to squander scarce resources upon otherwise harmless flights of fancy if they wish to do so. Economic irrationality may be quite relevant when drawing inferences about the intentions underlying an indigenous development program for purposes of Article II compliance analysis, but should not be regarded as dispositive in this regard. A "safeguardability" interpretation of Article IV would insist merely that neither transfer nor indigenous development be permitted to non-nuclear weapons states where this would entail significant proliferation risks.)

But what constitutes a demonstrable benefit? One would imagine that the benefit is relatively clear if the question at issue is the use of radioactive isotopes to sterilize disease-carrying tse-tse flies, or the production of isotopes in a research reactor in order to support medical oncology. How, however, is one to evaluate claims of real benefit in the context of a claim upon nuclear fuel-making capabilities, or even nuclear electricity generation itself? It takes nuclear technology of some sort in order to generate cancer-curing isotopes, but there are often a number of possible ways to acquire electric power. Does the availability of alternatives matter? Or their relative merits or efficiencies?

One presumably should not simply *assume* the genuineness of benefit just because it is asserted.[257] That is a lesson we should perhaps learn from the odd history of the "peaceful nuclear explosions" concept. Some delegations to the NPT's drafting committee appear to have believed that PNEs would really be valuable excavating tools. After some considerable trouble was taken to allow for the *possibility* of providing PNE "benefits" to non-weapons states, however, it turned out that no one really wanted such services. (Whatever legitimate interest in PNEs may once have existed, it was apparently quickly overtaken by economic rationality and public health considerations. Alternatively, the entire issue was nothing more than a pretext for would-be proliferators all along – as indeed is suggested by India's disingenuous claim of "peaceful" intentions when it detonated its first nuclear weapon in 1974.) With PNEs, transfer of the basic technology itself was flatly prohibited by the NPT, and even the "benefits" of PNE services ultimately ended up being withheld, because their advantages turned out to be illusory. It is quite doubtful that any nuclear weapons state would today provide such NPT-authorized services even if someone could figure out a reason to request them, but in fact no one wants such services anyway, because their irrationality is now well understood.

Especially in light of the PNE experience, it thus seems reasonable, in assessing the merits of particular technology- and/or benefit-sharing proposals, to consider the degree to which they make demonstrable economic sense. Particularly if a claimant wishes the nonproliferation regime to accept any potential increase in proliferation risk – even a small one – it ought to be possible to show that there is a real *need* for the thing being sought. Judging need simply by the presence of a mere *desire* for what is requested

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257 *Cf., e.g.*, Roberta Wohlstetter, "The Buddha Smiles: U.S. Peaceful Aid and the Indian Bomb," *reprinted in* Zarate & Sokolski, *supra*, at 339, 341 (noting that "[t]he identification of civilian nuclear energy with economic progress is sometimes made in self-consciously symbolic terms with no pretense at hard economic argument, but merely as an invocation to modernity").

should be insufficient. (Therein lies tautology: the issue would not have arisen if there were no desire. If requests are not simply to be rubber-stamped – which would represent the betrayal of policy judgment, rather than its exercise – something more objectively defensible must be required.) This presumably rules out requests grounded merely in

> "the rhetorical identification of investments in civilian nuclear energy with economic development and catching up with the advanced countries … with no pretense at hard economic argument."[258]

Arguably, therefore, claimants should be expected to show that they have a real economic need for whatever it is they seek by way of international nuclear cooperation.

This idea of economic rationality as a criterion with which to evaluate technology-sharing requests and as a partial basis for inferences about purpose is by no means entirely foreign to the NPT's contemporary peaceful use discourse. The U.S. working paper on Article IV at the 2005 NPT Review Conference, for example, emphasized that any nuclear fuel cycle facility being acquired by a non-weapons state "should conform to and be fully consistent with the scale of that country's nuclear programme as measured by international standards and economic factors."[259] Coming at this issue from the other side, U.S. arms control compliance assessment experts also view a nuclear program's economic *irrationality* as being one of the factors that can help suggest the likelihood of that program being intended to support nuclear weapons work in violation of Article II of the NPT. The "lack of a reasonable economic justification for this program" was explicitly noted in the long U.S. list of factors contributing to its first explicit Iranian noncompliance finding in 2005.[260]

The principle of necessary benefit has long antecedents. It was presaged in the early proposals by the United Nations to keep fuel production to the absolute minimum required for "*actual beneficial uses*" and to give access to safe forms of nuclear technology only, *inter alia*, "where economic justification exists."[261] The Acheson-Lilienthal Report itself actually suggested the idea of using market mechanisms in order to help allocate "non-dangerous" nuclear facilities – that is, ones that could safely be left in national hands – in a fashion designed to ensure both that they were responsive to real needs and that nuclear applications were not inefficiently utilized vis-à-vis other energy sources. The Report's idea was to permit and support the development of safe peaceful nuclear capabilities "on the basis of competitive bidding among interested nations." Such bids, the Report said, could be limited

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258 Roberta Wohlstetter, "The Buddha Smiles," *supra*, at 341.

259 NPT/CONF.2005/WP.57, *supra*, at 3, ¶ 14.

260 *2005 Noncompliance Report*, *supra*, at 80.

261 "Second Report of the United Nations Atomic Energy Commission to the Security Council," *supra*, at 97, 98, 131, & 133 (emphasis added).

> "to those warranted by the costs of alternative sources. … In this way the maximum usefulness of fissionable materials with the greatest conservation of other sources of power would be secured."[262]

The Report was quite clear that its authors believed "mankind can confidently look forward to beneficial uses" of nuclear energy.[263] Particularly in light of modern debates about the relative merits of various energy sources, however – sources which are competing both for market share and for the attentions of governments eager to maximize energy security and speed the development of non-fossil fuel sources while yet struggling in a time of economic hardship with the imperative of efficient resource-allocation – the Report's notion of competitive cross-sectoral bidding is an idea that may deserve to be dusted off and given a second look.

In fact, it has been a requirement of U.S. law for many years, embodied in Title V of the Nuclear Nonproliferation Act of 1978, that the United States work to assist developing nations in developing non-nuclear energy sources, and that to this end it should undertake "general and country-specific assessments" of the "energy alternatives" available to such countries.[264] Promoting non-nuclear energy sources is not necessarily the same thing as *discouraging* nuclear ones, of course. Nevertheless, especially in the context of a statute the aim of which is to ensure "more effective international controls over the transfer and use of nuclear materials and equipment and nuclear technology for peaceful purposes in order to prevent proliferation,"[265] Title V is certainly consistent with the idea that nuclear energy proposals should be undertaken only when they compare favorably to available *non*-nuclear alternatives.[266]

Nor is the United States alone in providing precedent for assessing nuclear technology issues through the prism of demonstrable economic benefit. Indeed, France has been even more explicit about the importance of tying nuclear technology-access issues to some notion of *real* benefit. A French working paper in 2005, for instance, specified that technology exports "should only be envisaged" where, among other things, there existed "an economically rational plan for developing such projects."[267] A working paper jointly presented by eight nations in 2008 as part of the preparatory process for the

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262 Acheson-Lilienthal Report, *supra*, at 48-49.

263 *Id.*, at 17.

264 Nuclear Non-Proliferation Act of 1978, Public Law 95-242 [H.R. 8638], 92 Stat. 120 (10 March 1978) (as amended by Public Law 99-661 [National Defense Authorization Act for Fiscal Year 1987; S. 2638], 100 Stat. 3816 (11 November 1986)), at Title V, § 503, *available at* http://www.nti.org/db/china/engdocs/nnpa1978.htm.

265 Nuclear Non-Proliferation Act of 1978, *supra*, at § 2(2).

266 The WMD Commission described Title V as requiring "general and country-specific assessments of the relative merits of nuclear and non-nuclear energy sources for meeting the energy needs of developing nations." *WMD Commission Report*, *supra*, at 93; *see also* Sokolski, "After Iran," *supra*, at text accompanying notes 18-19. The Commissioners, however, seem to have felt that the U.S. Government had failed to live up to the intent of Title V, and needed to do better. *See WMD Commission Report*, *supra*, at 51 (recommending that the United States "implement Title V of the Nuclear Nonproliferation Act of 1978, which requires energy assessments for developing states").

267 NPT/CONF.2005/PC.III/WP.22, *supra*, at 2.

2010 Review Conference also declared that international nuclear cooperation plans must "reflect[] economic reality and the real needs of recipient countries."[268]

Private sector experts addressing how to square the NPT's peaceful use provisions with its nonproliferation purposes have sometimes stated this point quite clearly. Many advocates of what I have termed the "safeguardability" approach to Article IV issues, in fact, have long also argued the need to tie technology access to demonstrable benefit. Albert Wohlstetter, for example, suggested that in order to "mak[e] sensible trade-offs," a peaceful use policy consistent with the nonproliferation purposes of the NPT would also need to consider "distinctions … between *optimal* economic alternatives and the next best use of resources."[269] Eldon Greenberg argued similarly that technology transfers should be judged in part according to whether there existed "reasonably discernable civilian nuclear power benefits,"[270] warning that many longstanding past assumptions about the benefits of nuclear power generation "have … largely proven to be false." Taking aim, as had Wohlstetter, at the notion of sharing plutonium reprocessing technology – a significant issue at the time – Greenberg declared that

> "[i]n such circumstances, the Treaty should not be interpreted as creating an obligation to facilitate or a right to participate in reprocessing and plutonium use. To the contrary, it is more appropriate to view the Treaty as creating the presumption today that assistance or activities relating thereto have more to do with weapons than with peaceful purposes and, therefore, generally would fall within the prohibitions of Articles I and II."[271]

Similarly, Leonard Weiss argued the impermissibility of transferring fissile material production capabilities not only "because such technology cannot be effectively safeguarded" but also because it "exhibits no compelling economic need anywhere in the world."[272] Henry Sokolski has also argued for more honest cost comparisons between nuclear power and its alternatives, suggesting that such projects should be notionally competed against each other in order to help identify projects that are uneconomical and dangerous.[273]

The merits of the specific economic case many of these "safeguardability" authors marshaled against plutonium recycling, and the merits of the argument made by some

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268 Canada, Estonia, France, Republic of Korea, Poland, Romania, Ukraine, and United Kingdom, "Nuclear Power Development: Meeting the World's Energy Needs and Fulfilling Article IV," NPT/CONF.2010/PC.II/WP.40 (May 9, 2008), *available at* http://daccessdds.un.org/doc/UNDOC/GEN/G08/612/88/PDF/G0861288.pdf?OpenElement, at 8.

269 Wohlstetter et al., *supra*, at 47.

270 Greenberg, *supra*, at 1.

271 *Id.*, at 18.

272 Weiss, "The Nuclear Nonproliferation Treaty," *supra*.

273 *See* Henry Sokolski, "Market Fortified Non-proliferation," in *Breaking the Nuclear Impasse* (New York: Century Foundation, 2007), at 81-143.

today against uranium enrichment, or even against nuclear power *in toto*, are far beyond the scope of this paper. Also unaddressed here will be the merits of longstanding assumptions – from the time of the Acheson-Lilienthal Report through the "Atoms for Peace" era and into the present day – that nuclear power *does* offer significant benefit to the developing world. The key point, however, is that advocates of policy-privileging "safeguardability" approaches to Article IV have long suggested, in effect, that it would be incoherent and untenable to judge proliferation risk against nuclear technology "benefits" without bringing into the analysis a relatively rigorous and intellectually defensible standard for assessing such benefit.

If this is so – and the idea is certainly plausible, not precluded by text of Article IV, and consistent both with the NPT's own Preamble and with longstanding themes in the international community's struggle with peaceful nuclear use issues – a requirement of demonstrable economic need could have significant implications for today's fuel-cycle debates. As Gottemoeller and Arnaudo recount, for example,

> "[a]ccording to traditional calculations, acquiring the full fuel cycle – the indigenous capability to enrich fissile material to produce nuclear fuel, to generate electricity using that fuel in reactors, and to reprocess or store the spent fuel – only made sense with a large nuclear energy program. A country would have to be generating more than 25,000 megawatts of electricity in nuclear reactors – equivalent to about 15 current-generation, light water reactors – before it made economic sense to acquire the full fuel cycle."[274]

In this light, it would seem that "some of those rushing to acquire new capabilities have down played the question of the costs and risks of the full nuclear fuel cycle" to the point that they "do not appear to be making rational economic choices."[275] This author is presently in no position to assess in any useful detail the relative merits of any particular country's claim to need a nuclear power infrastructure, but a case can be made for *some* such assessment.

To be sure, it must be admitted that rejecting the simplistic, technology-focused, "rights"-privileging pseudo-literalism of today's Article IV conventional wisdom in favor of a more sophisticated, policy-privileging, benefits-sharing approach to peaceful nuclear uses under the NPT would place significant demands upon policymakers. It would deny them the easy option of avoiding difficult decisions by retreating behind the judgment-precluding absolutisms of legal "rights" and *per se* rules. It would require them to work harder in understanding the issues of nuclear technology control that have challenged the international community since the beginning of the atomic era. It would require of them more wisdom in making difficult judgment calls, and oblige them to take positions for which others (and history) will hold them accountable. It would also deprive policymakers, in some countries at least, of the easy rhetorical weapon of "rights denial" that they have so far happily wielded in service either of their legitimate technology-

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274 Gottemoeller & Arnaudo, *supra*, at 15, 17-18.

275 *Id.*, at 18.

acquisition policies or in support of their illegitimate nuclear weapons ambitions. For all of these reasons – and no doubt more – a policy-privileging interpretation of Article IV may remain unpopular in many quarters.

Such reasons to oppose a "safeguardability" interpretation, however, are discreditable. If we wish our understanding of Article IV to *make sense* – and to be one consistent with, rather than an enemy of, the rest of the NPT – it will be necessary to adopt such a reading despite such complaints. Policymakers should not fear having to exercise wisdom and discretion, and they should not be permitted to avoid it.

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