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Center for International Security and Arms Control
Stanford University
320 Galvez Street
Stanford, California 94305-6165

(415) 723-9625

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Rivalries Between Nuclear Power Projectors: Why the Lines Will Be Drawn Again

Michael M. May

Center for International Security and Arms Control

Stanford University

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Michael M. May is Professor (Research) of Engineering–Economic Systems at Stanford University and co-director of the Center for International Security and Arms Control.

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Center for International Security and Arms Control
320 Galvez Street
Stanford, California 94305-6165
(415) 723-9625
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Abstract

Nuclear war is generally believed to bring risks of destruction out of proportion to any gain that may be secured by the war, or to any loss that may be averted, except perhaps for the loss of national independence and group survival. Nuclear-armed states, however, continue to project military force outside their own territory in order to carry out rivalries for power and influence. Will these rival power projections lead to war, as they often did in the past? If not, how will they be resolved? This paper makes the case that, because of the recognized destructiveness of nuclear weapons, rivalries among major nuclear-armed states for power and influence outside their own territory are not likely to lead to central war among them, but that definite lines separating zones of exclusive security influence, such as prevailed during the Cold War, will reappear where circumstances prevent other compromises. This conclusion does not hold in the case of nuclear powers that are centrally vulnerable to conventional attack from each other: in that case, nuclear deterrence is less likely to be stable. Where lines are established, they may facilitate rather than prevent cooperation in dealing with the next century's global problems.

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Why Lines Will Be Drawn Again

It is a commonplace that international cooperation between governments has become increasingly important in providing whatever governments are able to provide in the way of human well-being. At the same time, the ability to successfully carry out international rivalries has become less important. Citizens of developed countries need from their governments such essentially global public goods as peaceful and safe transportation and access, workable and consistent market rules, and control of communicable disease and international crime, all of which require the governments to cooperate. They have less or little need for their governments to secure exclusive or preferred access to some resource or piece of land, or an exclusive or preferred relationship with another government, for colonies and the like.

Yet rivalries over strategic geographic positions and dominance and influence over territory continue. Not only do we see the tragedies in Yugoslavia, the difficulties over Kashmir, the wars in the Middle East, and numerous similar conflicts, but we also see very traditional-looking great-power disputes about territory and influence, such as the U.S.–Russian tug-of-war over whether some Central European states shall be allowed to join NATO, and the current United States–China dispute over whether Taiwan shall move further toward an autonomy that would place it more squarely

in the Western camp. As ever, disputants forsake gains, even in terms of security from their rivalry, by eschewing cooperation. The Prisoner's Dilemma is still with us, especially at times of possible change in governments, as today face the United States, Russia, and China. The requirements of domestic politics combine with allegiances to ideals, historical grievances and hopes, and suspicions and group prejudices to make relative power, relevant or not, the coin of the political realm.

Some states continue to carry out these rivalries in part by projecting military power, directly and through proxies, in regions abroad that they consider of strategic importance. While there have been such power projectors since history began, a major difference today is that several of them are nuclear-armed. The main ones are the United States, Russia, and China, with France, Great Britain, and India in the second rank.

In the past, rival projections of military power into these "strategic regions" usually led to wars among the power projectors. The more advanced the states, usually the worse the wars. World Wars I and II represent the acme of this tradition. The very horrors of these wars and the lack of benefit which even most of the victors derived from them began to change the tradition. The advent of nuclear weapons climaxed this process.

Whatever role is ascribed to nuclear weapons in preventing war, it is generally accepted that two-sided nuclear war would be so ruinous for the participants as to cancel any advantage that might accrue from winning militarily. In rivalries carried out by the projection of power abroad, the post-Nagasaki record suggests some acceptance of the idea that the one-sided use of nuclear weapons would set such a dangerous precedent that it must be avoided. Equally important, at least to date, the perception that nuclear war can have no winner has been accepted early enough in confrontations to avert escalation to a stage at which the two sides despair of avoiding war and the crisis becomes uncontrollable.

Thus, while rivalries between nuclear-armed power-projecting states continue, the presence of nuclear weapons, along with the generally disastrous extent of modern warfare and the lesser role of territory in determining the wealth and power of states, place a constraint on the extent to which these rivalries are carried out by military means or threats. The Cold War exemplified this constraint: lengthy but largely bloodless confrontation on either side of frozen lines of demarcation, peripheral wars (from the point of view of the major power projectors), arms races, and the ideologizing of differences, but not central war.

What will be the lasting features of continuing rivalries among nuclear power projectors in the future? Lasting features of behavior stem from lasting forces. Over the next few decades, the two forces noted above will continue to influence the behavior of nuclear-armed power-projecting

states. One, rivalry, derives its strength from appraisals of strategic advantage or necessity, often reinforced by the requirements of domestic politics. For instance, the Russian political establishment will not soon agree to what it calls NATO expansion, nor will NATO readily agree not to accept the applications for membership of such states as the Visegrad Four or Finland. The U.S. political leadership will not soon give up the notion that the United States has a national interest in maintaining assured access to Middle East oil, nor will that access fail to be viewed as preferential by China and Russia, especially as the demand for oil and its real price increase in the next century. Preferred access, secured traditionally by arms and technology trade, is seen as an ingredient of rival power. Beijing will not easily give up its claim on Taiwan, nor will the apostles of democratization give up theirs, nor will Japan soon rest easy about Beijing's claim. The validity of these rival claims in the modern world may be debated, but their existence at least for decades to come as a lasting political force seems incontestable.

The second force, that making for caution, derives its strength from the increased valuation that states, particularly those with developed economies, place on peace among themselves, and especially on the preservation of nuclear peace. While neither nuclear nor any other kind of deterrence is foolproof, or applies with equal effectiveness in all regions at all times, deterrence, especially nuclear deterrence, will continue to induce caution in nuclear-armed power projectors as they pursue rival goals. We may debate how effective this trend toward caution will be between India and Pakistan, with their greatly mismatched conventional forces; or between Iraq and Iran, or in the future between Israel and some Arab state, with their geographic proximity, small sizes, and consequent limited abilities to compensate for a loss in one place by a victory in another. But that the force exists, will persist, and will have special effect in states that have much to lose from war and many ways to compensate for a loss in any one region can hardly be disputed.

While the forces making for rivalry and for caution remain from Cold War days, other factors have changed. For one, the need for international cooperation to secure prosperity and even some aspects of security has become more obvious. For another, in Europe at the end of World War II, and in Asia after the civil war in China was won by the Communists and the war in Korea was stalemated, the places where lines would be drawn became quite clear: they would be, and were, drawn where the winning armies had stopped. No such clarity exists today, a lack which could make confrontation more dangerous.

The occasions that spark rivalries also have changed. Following World War II, Stalin demonstrated both by his statements[1] and his actions that he

preferred well-defined spheres of influence and power. While there is evidence that Mao was willing to reach some accommodation with the United States right after his civil war victory, Kim Il-Sung's Stalin-backed attack on South Korea and the U.S.-UN response soon made such accommodation impossible, a likely goal of Stalin in the first place.[2] In contrast, since the end of the Cold War most occasions for rivalry among the nuclear power projectors have arisen because of actions of smaller states in strategic regions rather than actions of power projectors. As Cold War lines became more fluid, some of these states considered taking steps, such as shifting alliances or acquiring nuclear weapons, that would limit or decrease the power of one or both of the power projectors interested in the region.

These actions by smaller states may or may not lead to confrontation, depending on whether the rival power projectors have higher priority goals which require cooperation among them. Ukraine, for example, initially wanted to keep the Soviet nuclear weapon systems on its soil, but eventually consented to the joint U.S.–Russian proposal that it give up its nuclear weapons. The existence of the joint proposal meant that the United States was willing to subordinate whatever rival interests it may have had in the region for the sake of supporting its global nonproliferation objectives, leaving Ukraine with little choice. A case with a similar outcome (no success for the smaller state, no exacerbation of rivalries between the concerned power projectors) was that of Iraq in 1990–1991. Here, the Soviet Union went along with the proposed U.S. solution, and Iraq was left with little choice except for the cost of compliance.

But, if the power projectors choose rivalry instead of cooperation, opposing or supporting the smaller state comes at some risk to the power projectors. Power projectors take these risks subject to the constraint of keeping the risk of central and in particular nuclear war among them very low, to the extent their information permits them to do so. A clearer partition between the spheres of influence of the rival power projectors is then a possible safe way out. Lacking a better one, where some compromise status for the state challenging the status quo is not acceptable, we are likely to see lines being drawn again, with exclusive security rights and responsibilities tacitly or openly granted on each side to one nuclear power projector only.

Where Lines Will Be Drawn

What determines where the lines will be drawn? We look at the cases where the security dimension of the status quo in strategic regions has been challenged since the end of the Cold War. In six of these cases, the challenge

took the form of a state seeking to obtain or retain nuclear weapons. In a similar number of cases, the challenge took the form of a state seeking to align itself with a different power projector than it had been aligned with earlier, or seeking to resolve an unclear situation.

The Nuclear Cases

Since the end of the Cold War, Iraq, North Korea, Ukraine, Belarus, and Kazakstan have been dissuaded in one way or another by power projectors from acquiring or retaining nuclear weapons. All of these states are in strategic regions, but the last three, former republics of the Soviet Union, are in regions where Russian power has been uncontested in recent times, and would be difficult to contest. Russia had the greater effective resolve in these three cases. The outcome further enhanced Russian power in those regions even as it supported the U.S. goal of a global nuclear nonproliferation norm. If lines are to be drawn around these regions owing to future confrontations, the outcomes of these cases make it easier for these states to fall on the Russian side.

In Iraq also, the stronger rival interest, as manifested by the greater capability to bring power to bear in the region, was served by the outcome: U.S. rivals did not contest U.S. power, and U.S. power relative to its rivals was reinforced by the outcome. One may argue that the U.S. dual containment policy with respect to both Iraq and Iran provides an opening for Russia to reassert its rival interests in the region. However, the dual containment policy was not necessitated by the outcome of the Gulf War. The Gulf War itself made it easier for the United States to ensure that, if lines are to be drawn in the Middle East, Iraq will fall on the U.S. side.

The outcome in North Korea is less clear than those above. A North Korean nuclear weapons capability would affect U.S. power projection more than Chinese power projection, because U.S. power projection capabilities rely on carriers at sea and bases on the territory of allies, both of which are more vulnerable to a nuclear force than is a broad Chinese front invasion of North Korea. In addition, the relative capability of the United States and China to bring power to bear against each other on the peninsula remains uncertain and circumstance-dependent. The Framework Agreement between the United States and North Korea reflects these ambiguities. It may resolve the nuclear proliferation issue, but, whether it does or not, from the point of view of United States–China relative power it is a delaying action, with ambiguous effect on the relative influence of China and the United States in the longer term.[3] The side with the greater effective resolve to pursue rival goals is not obvious, and the outcome does not obviously serve either side.

The interaction is not purely a two-sided one. The very ambiguity of the resolution gives leverage to the smaller state challenging the status quo. U.S. political and economic concessions to North Korea in return for its observation of the provisions of the Nuclear Non-Proliferation Treaty strengthen North Korea in its dealings with China and other East Asian neighbors, probably significantly more than a few nuclear weapons would strengthen it. This in turn makes it more likely that North Korea will continue to have some control over the management of the ongoing interaction, unlike, for instance, Iraq, which, by its invasion of Kuwait, applied force to the point where it lost control of the situation to the dominant power projector.

The sixth nuclear case, Iran, is murky. It is not clear whether Iran seeks nuclear weapons.[4] What is clear is that Iran has recently suffered the effects of a bloody war initiated by an adversary that has nuclear ambitions, and in which it received no support from any ally or group of states. These circumstances—isolation and an enemy capable of inflicting considerable damage, perhaps even conventional or nuclear defeat—are those under which demand for nuclear weapons usually arises.[5]

If Iran pursues a nuclear weapons program, the power projectors concerned are likely to attempt to prevent it, but each is likely to do so in such a way as to maximize its power there. Given that the U.S. policy is to isolate Iran as much as possible, and especially to deny it arms and nuclear technology, it is not surprising that Russia and China should seek to gain as much influence as possible with Iran by selling it arms and civilian nuclear technology and components, among other things. The risk that safeguarded fissile material from civilian nuclear power plants will be used for weapons is not very high based on the record to date. The Chinese precedent might give Russia pause, but Iran is not China either in capability or relative invulnerability. Relations between Iran and Russia are currently a complex mixture of dependency and competition for influence. An opportunity to move Iran further away from Western influence might well look sufficiently attractive to Russia that it would be viewed as worth the risk of supporting Iran's civilian nuclear program.

Tentatively, we conclude that cases of potential nuclear proliferation in strategic regions since the end of the Cold War have not been viewed with the (benign or otherwise) neglect with which the accession to nuclear status of far-away South Africa or U.S. client Israel was viewed during the Cold War. Nor have they been viewed with the diplomatic disapproval unaccompanied by stronger measures with which power projectors viewed nuclear threshold status for India and Pakistan. All of them (one arguably) resulted in strengthening of the global nonproliferation norm, principally through the agency of U.S. policy. In addition, cases of potential nuclear

proliferation in strategic regions since the end of the Cold War suggest a pattern of reinforcement of influence for the power projector better able to bring power to bear in the region, with a consequent loss of autonomy for the state which was the locus of concern for the power projectors.

The Non-Nuclear Cases: Europe

From the point of view of providing security, the former Soviet Union has been all but conceded to Russia: states in that region will not be threatened except by Russia and each other, and will not be rescued from Russia. The security of former Soviet republics will depend principally on the arrangements they make with Russia. This is true as a result of the balance of effective resolve in the region, regardless of whether or not Russia pursues a militant policy of restoring the Soviet Union in some fashion. Russian actions can be affected by economic and political pressure from outside the region, but, if what is happening now in the former Soviet Union is an indication, this effect will in general be marginal.

Whether a firm line of demarcation separating spheres of exclusive security influence will be drawn again in Central Europe depends primarily on Russia's behavior. Domestic Russian politics may leave Russian leaders little room for choice in these matters. To the extent it is possible, however, a Russian policy of benign neglect toward NATO expansion, and the country making no threatening move beyond its present boundaries (such as carrying out the Communist Party plank of reintegrating Eastern Ukraine into Russia) would go further toward stopping NATO expansion or making NATO into a poorly funded, dead-end alliance than would the more militant present Russian policy. There is no political will in either the United States or Western Europe for supporting expenditures and expending political capital on improving the security of Central Europe, absent a Russian threat. It is rather widely perceived instead that Europe is threatened, now and in the long run, more by internal divisions and by migrations from the south and southeast than by Russia, threats against which the sort of NATO expansion that Russia fears would be irrelevant.

If the present trend in Russian governmental attitudes continues, however, a line may again be drawn in Central Europe. Judging from capabilities alone, the West has the opportunity to move the line some distance east of the Cold War line and to make it stick through any resolve-testing that may occur. Both doing so and not doing so would have political repercussions in Russia and in Western states, to say nothing of the regional states concerned, but the forces of relative advantage would tend to make the lines stable once drawn.[6]

It is possible that more European states will look to independent nuclear deterrents for their security.[7] For the immediate future, the political costs

to the present non-nuclear European states of obtaining nuclear weapons argue against their pursuing that course. If, however, the EU and NATO fail to provide Central European states with security, the scenario may become more likely. Its attempted realization could pose major risks of war during the transition period, risks which could themselves lead the West and Russia to draw a firm line between their spheres of security influence.

Such smaller nuclear deterrents might not work in a crisis. Against Russian moves, the smaller Central European states would be unable to maintain a seamless deterrent, ranging from the ability to deter smaller conventional probes by countering them through the ability to deter nuclear or all-out conventional attack by retaliation. Massive retaliation alone is an unproven deterrent historically and a dangerous or ineffective one theoretically.[8] As a result, small nuclear powers could find their nuclear deterrents unstable or ineffective in a crisis in which Russia felt that its central interests were involved. In such a crisis, the ability to escalate by taking small steps with relative impunity and thereby gain increasing conventional advantages, an ability that Russia would have, could be crucial.

The Non-Nuclear Cases: East Asia

China is likely to become the dominant military presence in East and Southeast Asia over the next three or four decades, an evolution which will take longer if it suffers serious domestic disturbances.[9] As China continues its investments in modern land-based air and missile forces, U.S. force projection capabilities within range of these forces, in such places as Korea, the Taiwan Strait, and the China Sea, will become vulnerable to the new Chinese forces. The U.S. forces will thereby lose much of their value for determining resolve on either side, and, if kept in the area after that period, may become hostage to the vagaries of Chinese politics.

Wise leadership in both the United States and China may result in China taking its place again as one of the world's superpowers without serious conflict. Though the process of Chinese modernization is long and arduous, there is no technical or economic reason why it should not take place peacefully. There is also unfortunately no instance of concerted, wise leadership on all sides being able to bring about the peaceful, cooperative accession of a state to superpowerdom.

If, as is likely, there are to be periods of testing between the United States and China, a lesser amount of wisdom would result in the testing remaining bloodless and leading to the clear demarcation line predicted by this analysis. Taiwan provides a current example of both the possibility that crises, if carried far enough, will lead to clearly defined demarcation lines, and the ability of the regional state to influence the resolution of the crisis

as long as the dangers are not perceived as too high. Taiwan's global economic power and democratization have put pressure on the status quo, and China has carried out steps aimed at demonstrating to both Taiwan and the United States its effective resolve not to let Taiwan's move toward autonomy go any further.[10] The United States, for its part, insists that any settlement be carried out peacefully, a more compex policy than the straightforward defense of an ally would be. In order to deter either side from taking steps up the ladder of escalation, the United States cannot communicate clearly to both sides what its effective resolve is. As a result, there is a possibility that no side will be able to assess effective resolve correctly and, consequently, that the interaction among the sides may lead to a degree of escalation that all of them would prefer to avoid.

If the escalation, currently in abeyance, resumed and threatened to become dangerous, the present compromise status of Taiwan could be jeopardized and the probability of clear demarcation lines being eventually drawn would then increase. The side Taiwan would wind up on would depend on assessments of capability and will at the time, but, in either case, control of the crisis would pass from Taiwan to the power projectors.

On the other hand, so long as the danger is limited in the eyes of the power projectors, Taiwan retains some ability to control events and to bargain with both sides. Again, as was noted in connection with North Korea, an ambiguous resolution to the crisis makes the interaction less of a two-sided game than an escalating crisis would be. It is indeed entirely possible that much of the pre-election actions in Beijing and Taipei had more to do with bargaining between them about the likely eventual position of Taiwan in the Chinese hierarchy than with games between the United States and China, although the latter dimension could not be avoided. The U.S. interest in democratic governance gave President Lee Teng-hui a bargaining tool with China. As noted earlier, North Korea may have used the U.S. interest in nuclear nonproliferation in its bargaining for eventual position in East Asia in a similar way. These bargaining tools are in the hands of the Asian leaders involved and it would be unnatural if they did not use them.

Much the same thing, on a larger scale, may be happening with respect to Japan. Japan, despite its wealth and peacetime power, is not able to provide more than its own land with security, and that only if it pursues a cautious, non-aggressive foreign policy.[11] Japan's safety and prosperity over the long run depend on good relations with both the United States and China, somewhat as the United Kingdom's safety and security depend on good relations with both the United States and Europe. Japan has less maneuvering room than does the UK, however, given the developing hostile relationship between the United States, the waning superpower in

the area, and China, the rising one. Japan in the next century could be the locus for tests of effective resolve between the United States and China.

But Japan is powerful enough not to be a passive bystander in such testing. The process could be a more dangerous exercise for itself than it would be for either the United States or China. Japan may instead pursue a policy of integration into an Asian hierarchy. Although this hierarchy would probably be headed loosely by China, Japan would play a large and lucrative role in it. That is the historic Asian precedent, and, in some ways, it is better suited to the modern age than the free-for-all of Western history.[12] In this case, the U.S. interest in retaining an element of military power in East Asia gives the Japanese government a bargaining tool with China.[13]

Once rights to the distribution of oil in the South China and adjoining seas are settled, however, probably to Chinese advantage, Chinese military power would only play a stabilizing peacekeeping role in such a hierarchy. While the United States in that case might retain and even increase its political, commercial, and cultural engagement in Asia, its security boundaries would lie somewhere in the middle of the Pacific. Such a divorce between military power projection and other interactions would be unprecedented for the United States in Asia, but would mirror what has happened historically both between the former Western colonial powers and Asia since World War II, and earlier between the United States and Canada first, and then the United States and the rest of America.

How Spheres of Influence Can Ease Cooperation

As noted at the start of this paper, provision of such global public goods as sustainable development, protection of the environment and food supply, and control of migrations; agreements and rules for international trade, communication and transportation, and disease and crime control; and agreed norms of non-use of weapons of mass destruction are becoming ever more important international activities of governments. They are also activities that require cooperation rather than rivalry. Thus, the rivalries that are the subject of this analysis, real though they are, have lost most of their utility for the people concerned. Exclusive or preferred rights to territory are no longer the issue from the point of view of the welfare of citizens. But such rivalries remain a dominant political issue, and, if war is to be avoided, they will lead in some cases to well-defined spheres of security influence.

On the surface it might appear that the acceptance of exclusive security spheres would conflict with cooperation. This, however, is not so. Although the process of drawing boundaries can be confrontational, once the

boundaries are drawn, their acceptance facilitates cooperation for the provision of public goods. The mutual acceptance of national boundaries, for instance, has been a necessary condition for peaceful cooperation, rather than a hindrance to such cooperation. The acceptance of well-defined spheres of security influence relieves the security dilemma, especially in the nuclear age. Indeed, such acceptance, by providing a stable security framework, also provides a practical if non-ideal way of ensuring non-use of nuclear weapons, at least among the major power projectors and probably also among the states in the regions that these power projectors consider strategic.

Nor is there historical ground for arguing that cooperation between different types of governments is impossible or particularly difficult. The United States is cooperating with—and has in fact fostered—regimes such as those of Saudi Arabia and other Middle Eastern states, and, in the past, of Latin America, which have nothing in common with that of the United States. The United States cooperated with the Soviet Union when both felt that cooperation was to their advantage, and is today cooperating with China. Within wide limits, limits which exclude some aggressive and genocidal regimes, but which include a variety of others, reluctance to cooperate with types of governments that differ from that of the United States is a matter of ideology and domestic politics rather than international necessity.

Necessity, rather than political predilection, is likely to govern most of the U.S. foreign and security agenda in the next century. The twenty-first century will not be an easy century. The Chinese are only the next billion or so people who want, and can get, a share of the modern life. The likely characteristics of the mid–twenty-first century—a ten billion or greater population, a three-fold or more increase in demand for energy and the attendant environmental problems, large-scale urbanization, and ever more interactive communication networks, along with technically easier access to weapons of mass destruction—are likely to pose problems of sufficient magnitude for governments that the differences in governance may no longer be perceived as obstacles to cooperation, any more than they are in a wartime alliance. Emergencies can empower hitherto-unorganized groups to take action for the common good that these groups will not take in easier times.

Settlement of security questions, however, will be a necessary precondition to such cooperation. Without such settlement, the short-term risks of cooperation can outweigh the long-term benefits of cooperation. Thus, in an era where the provision of global public goods through government cooperation becomes an essential for survival rather than a supplement to nationally provided goods, the alternatives are likely to be settlement and

cooperation among different polities, or a significantly higher risk of catastrophe for all of them.

The non-use of nuclear weapons and other weapons of mass destruction is one of the public goods available only through international cooperation. Non-use of nuclear weapons has been sought, and to date achieved, by a combination of nuclear deterrence and nonproliferation. Contrary to much conventional political wisdom, nuclear deterrence and nuclear nonproliferation have been more synergistic than contradictory. In cases such as those of the non-nuclear U.S. Cold War allies, of such Cold War free riders on the European security arrangements as Sweden and Switzerland, and at one time of Taiwan, the decisions of the respective governments not to proliferate have depended on the existence of a stable security arrangement among the major power projectors backed by nuclear deterrence. The coupling of deterrence and nonproliferation was made explicitly by Germany, Italy, and Japan in 1970 when the nuclear Non-Proliferation Treaty (NPT) entered into force. It was not made at the Nuclear Non-Proliferation Treaty Review and Extension Conference in April 1995, presumably because the risk seen in 1970 had dwindled.

The actual durability of the indefinitely extended Nuclear Non-Proliferation Treaty, however, is hostage to the continued existence of stable security arrangements such as the ones discussed in this paper. The absence of a threat of devastating central war and the norm of non-use of nuclear weapons cannot realistically be dissociated from one another, judging from the record of past nuclear weapons decisions. Insecure and contested "buffer zones" are likely breeding grounds for crises and nuclear proliferation.

The value of nuclear deterrence, and, with it, the nuclear constraint on interactions among the power projectors, are likely to remain essential to that stability for some time to come, but they are not enough, even in purely nuclear terms. It is also necessary that the nuclear-weapons states treat their nuclear forces as means to continue providing general stability and peace rather than for any unilateral advantage. The non-use pledges taken by all five recognized nuclear-weapons states at the time of the NPT extension reflect their awareness of this political reality. A breakdown of these pledges could spark not only nuclear proliferation but nuclear use.

Conclusions and Policy Implications

We draw four conclusions from our analysis of the forces affecting the major nuclear-armed power projectors.

1. Rivalries among these nuclear-armed power projectors for territory and preferred influence in regions they deem strategic continue and are likely to continue for some decades at least.

2. Nuclear weapons (along with the other penalties imposed by modern war, and along with the lesser role that rival goods such as territory and exclusive influence play in the welfare and power of states) act as a pivotal constraint on those rivalries. The weapons are not themselves the means or the goals of rivalries, since a few hundred to a few thousand protected nuclear-weapons systems are sufficient for any deterrent purpose. By dramatically and obviously raising the cost of central war, however, they increase the value of accurately assessing effective resolve and thereby increase the likelihood of settlement short of war.

3. Where the power projectors cannot reach agreement about the management of security issues in regions they deem strategic, the regions are likely to be partitioned as a safety measure. A challenge to the status quo, whether by a regional state or a power projector, thus leads to an increased probability of partition into exclusive spheres of security influence. Where the boundaries of these spheres are drawn will depend on perceptions of relative effective resolve, one measure of which is the conventional and nuclear force likely to be brought to bear.

4. Keeping regional states in an insecure position will increase their demand for nuclear weapons. Thus, "buffer zones" between power projectors are likely to be breeding grounds for nuclear proliferation, and reaching clear security agreements among power projectors is conversely likely to decrease the chances of nuclear proliferation. In cases of rivalries among nuclear-armed but smaller states, where the conventional forces are not sufficient enough to credibly defend national territory, mutual nuclear deterrence is more likely to be unstable.

5. Cooperation among major powers for the provision of essential public goods will be increasingly necessary, and could be facilitated by acceptance of lines defining spheres of security influence.

Although these conclusions do not call for wholesale revisions to the present U.S. security policies, nevertheless there are several policy implications for the United States.

1. By taking into account political resolve as well as economic and military capabilities, the United States must determine where lines are likely to be drawn and where they can be defended, rather than oppose the drawing of

lines as a matter of principle. Making the expansion of democracy a goal of security policy (as opposed to diplomatic, economic, and other non-military aspects of policy) is likely to lead neither to security nor to the expansion of democracy. Rather, it is apt to place added stress on an already stressed international security order and to make cooperation toward the provision of public goods more difficult.

It is quite possible that U.S. interests in East Asia in democracy, nuclear nonproliferation, and maintaining a military presence are being used by Asian leaders in their bargaining for relative position in the East Asian hierarchy of states, a hierarchy likely to be dominated in the long term by China. There is nothing inherently damaging to the United States in this, but the United States should gauge to what extent its political, military, and other investments in the region are furthering its own goals and to what extent they are not. In the end, there may be no line drawn within East Asia, and the region will become entirely free of Western military (though not economic or political) influence.

Judging from current clashes, aggressions, and disunity, lines may well be drawn again in Europe. In that case, U.S. interests will be involved. A politically united Western Europe will be essential, now as in 1949, for the participation of the United States to be politically possible, whether or not the EU is itself a major security actor.

2. Where they judge that lines will be drawn, the United States and its allies must maintain a conventional and nuclear countervailing deterrent, in proportion to the threat. Alliances are as or more essential today as they were during the Cold War: lines cannot be drawn in Europe or elsewhere by the United States alone.

3. The United States must continue a policy of cooperation across all lines toward the provision of some increasingly essential global public goods, including the global public good of non-use of nuclear weapons. This will be a difficult task, requiring continued engagement with regimes which the United States would rather condemn. There is, however, no alternative to such a policy, given the extensive problems that will require international cooperation in the next century, and given that the pace of political change in the states whose cooperation is essential is not likely to make all major powers into democracies by the time the problems must be addressed.

Notes

[1] Stalin's statement to George C. Marshall, for example, at the time of the foreign ministers conference held in Moscow in April 1947 (See Forest C. Pogue, *George C. Marshall, Statesman: 1945–1959* [New York: Viking, 1987], 190–191, and David McCullough, *Truman* [New York: Simon and Schuster, 1992], 561); and to Averell Harriman when Harriman was ambassador to the Soviet Union in 1945 (See Walter Isaacson, *The Wise Men: Six Friends and the World They Made* [New York: Simon & Schuster, 1988], 332–333). These and other such incidents illustrate the gap between the universalist approach of the United States to many security issues, and the more territorialist approach of some other states to the same issues, a gap which remains relevant to the situations discussed here.

[2] Sergei N. Goncharov, John W. Lewis, and Xue Litai, *Uncertain Partners: Stalin, Mao, and the Korean War* (Stanford, CA: Stanford University Press, 1993), 145, 152.

[3] Michael J. Mazarr, "Going Just a Little Nuclear: Nonproliferation Lessons from North Korea," *International Security* 20, no. 2 (Fall 1995): 92–122.

[4] S. Chubin, *Survival* 37, no. 1 (Spring 1995): 86–104.

[5] Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: University of Chicago Press, 1984); Leonard S. Spector, *Going Nuclear* (Cambridge, MA: Ballinger Publishing Co., 1987), 45–57 on Iran; Cameron Binkley, *Decisions by Chief Political Actors to Acquire Nuclear Weapons* (Stanford, CA: The Stanford University Center for International Security and Arms Control, August 1994, working paper).

[6] See *Survival* 37, no. 1 (Spring 1995), 7–66, for articles discussing this issue.

[7] John J. Mearsheimer, in "Back to the Future: Instability in Europe after the Cold War," *International Security* 15, no. 1 (Summer 1990): 5–56.

[8] Debate over the effectiveness of a policy of massive retaliation began soon after the policy emerged, and most commentary and U.S. government decisions highlighted the limitations of this policy. See, for example, William W. Kaufmann, in *Military Policy and National Security* (Princeton, NJ: Princeton University Press, 1956), 20–23; Bernard Brodie in *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959), 248–263; Richard M. Nixon, *1999: Victory without War* (New York: Simon & Schuster, 1988), 201. In a recent game theoretic analysis, Robert Powell, in *Nuclear Deterrence Theory: The Search for Credibility* (Cambridge: Cambridge University Press, 1990), especially pp. 26–32, formulates in a stricter way the lack of credibility of massive retaliation alone under most circumstances.

[9] See Charles Wolf, Jr., et al., *Long-Term Economic and Military Trends, 1950–2010* (Santa Monica, CA: RAND, 1989); Michael D. Swayne, *China: Domestic Change and Foreign Policy* (Santa Monica, CA: RAND, 1995); Paul Dibb, *Toward a New Balance of Power in Asia*, Adelphi Paper 295 (New York: IISS/Oxford University Press, 1995); Mark J. Valencia, *China and the South China Sea Disputes*, Adelphi Paper 298 (New York: IISS/Oxford University Press, 1995); Alastair Iain Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence," *International Security* 20, no. 3 (Winter 1995/96): 5–42.

[10] Evan A. Feigenbaum, *Change in Taiwan and Potential Adversity in the Strait* (Santa Monica, CA: RAND, 1995).

[11] Michael M. May, "Correspondence: Japan as a Superpower?" *International Security* 18, no. 3 (Winter 1993/94): 182, in response to Christopher Layne, "The Unipolar Illusion," *International Security* 17, no. 4 (Spring 1993): 5.

[12] See Kishore Mahbubani, "The Pacific Impulse," in *Survival* 30, no. 1 (Spring 1995): 105–120, for the development of somewhat similar views from an Asian standpoint.

[13] For discussions of these and related issues, see Denny Roy, "Assessing the Asia-Pacific 'Power Vacuum'," *Survival* 37, no. 3 (Autumn 1995): 45; Richard Betts, "Wealth, Power, and Instability: East Asia and the United States after the Cold War," *International Security* 18, no. 3 (Winter 1993/94): 34; Chalmers Johnson and E. B. Keehn, "The Pentagon's Ossified Strategy," *Foreign Affairs* 74, no. 4 (July–August 1995): 109–111; and Michael M. Mochizuki, "The Past in Japan's Future: Will the Japanese Change?" (Review Essay) *Foreign Affairs* 73, no. 5 (September–October 1994): 133–134.

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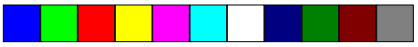


Appendix

While the analysis presented in the body of this paper depends on qualitative assessments believed to be based on experience, some of it may be presented more clearly and accurately with the aid of theory. In particular, the effect of the possession of nuclear weapons on the security dilemma and the rationale for and against adherence to a nuclear nonproliferation pact can be presented in the language of game theory. The question of what group of states can enforce a norm and provide the public good (for the group of states) that flows from this norm can also be examined using the theory of collective action. While this examination breaks no new theoretical ground, it may place this analysis in a body of theoretical work and clarify possible directions for further research.

The Game of Avoiding Disaster Today

The effect of nuclear weapons on the perceptions of states that feel they are or may be in the future seriously threatened can be illustrated in an admittedly simplified way by the use of game diagrams. Although such diagrams leave out much that is relevant to a state's decisions, they have the advantage of making it difficult to overlook what some of the more important trade-offs are.

Consider three situations. The first involves two rival, roughly matched states, 1 and 2, without nuclear weapons, for which winning a conventional war would be preferable to the status quo of peace, which in turn is preferable to losing. In cases from antiquity to the present in some Middle Eastern states, this was the traditional situation: boundaries were insecure, winning wars usually led to territorial and other gains, and general

prosperity as well as elite power often depended on how much territory the state controlled. The Iraq–Iran situation may be a modern example, although the two states are far from symmetrical in their degree of dissatisfaction with the status quo and other relevant variables.

The second situation also involves two rival, roughly matched states, but this time both assess the value of peace as greater than that of war, whether won or lost. Winning, of course, is still better than losing. This may well be the situation in which modern prosperous states find themselves: adversaries in the past and competitors still, but competitors for which the value of peace (a public good for the two in this context) outweighs any value to be derived from war. France and Germany since World War II are examples. We note the importance of elite and popular perceptions: economically, France and Germany stood to gain more from peace than from victory in war at the time of World War I. Nevertheless, that assessment was not widely shared, and war occurred. Now, that assessment, valid for the past hundred years or so, is widely shared, and it has become more difficult than it was earlier in the century for a government that is perceived to be willing to risk war to come to power.

The third situation involves again two rival, roughly matched states, but now both have the deterrent nuclear force defined earlier in this paper. Thus, there can be no winner if there is war between them and it turns nuclear, although, given the great uncertainty in nuclear war, there is at least a perceived advantage in striking first, while all of the attacker's systems including command and control systems are operative. In other words, there is a significant and poorly calculable likelihood of disaster to both sides, out of proportion to the value of any relative gain obtainable from war, and there is at the same time a low and also poorly calculable likelihood that striking first would confer some advantage by mitigating the disaster to some degree.

The three situations are depicted in Figures 1, 2, and 3. The arrows denote, as usual, the actors' preferences among the outcomes. Thus, the vertical arrows denote State 1's preferences given what State 2 does, and the horizontal arrows denote State 2's preferences given what State 1 does. The numbers in the payoff tables (0, ±1, ±2, ±3, ±4) have, also as usual, only ordinal, not cardinal, values. The only exception is the symbol $-\infty$ (infinity), which denotes a cardinal value very low compared to the numbers.

	STATE 2 ATTACKS	STATE 2 NEGOTIATES
STATE 1 ATTACKS	-1, -1 Uncertain losses due to conventional war for both	+1, -2 State 2 probably loses State 1 probably wins
STATE 1 NEGOTIATES	-2, +1 State 1 probably loses State 2 probably wins	0,0 Status quo (winning is better, losing worse)

Figure 1
Conventionally armed, traditional states

	STATE 2 ATTACKS	STATE 2 NEGOTIATES
STATE 1 ATTACKS	-2, -2 Uncertain losses due to conventional war for both	-1, -3 State 1 probably loses State 2 probably wins
STATE 1 NEGOTIATES	-3, -1 State 2 probably loses State 1 probably wins	0,0 Status quo (winning is better, losing worse)

Figure 2
Conventionally armed, modern states

The first situation is the classic Prisoner's Dilemma, in which the Attack–Attack strategy is dominant (that is, preferred by both sides whatever each side thinks the other will do), even though it is not the best outcome for either side. The second situation offers two possible outcomes for the case in which each side pursues its best strategy given that the other side does too (two Nash equilibria): Attack–Attack and Negotiate–Negotiate. The Negotiate–Negotiate strategy is the better outcome of the two for both states (Pareto-dominant), but the analysis so far offers no assurance that it will be pursued as long as there is a relative advantage to attacking.

What can offer a degree of assurance to that effect is that the game is actually repeated, under circumstances which differ but yet are sufficiently similar that learning can occur. In such a repeated game, if "perfect

information" is assumed, which means if each actor in the game is assumed to know how far the other is prepared to go in defending its interest, then confrontations do not lead to crises and the winner of the sequential game is the side with the greater "effective resolve," the side willing to push the confrontation the furthest.[1] Perfect information is in practice never fully available, but it may be a good approximation in the case of protracted sequential games for most major powers. When information is not perfect, for instance when misperceptions exist, crises can occur and the outcomes can be much less favorable.

When both states are well-informed and prefer the status quo to war whatever its outcome, they become risk-averse, and equilibrium is sought early so that crisis can be avoided. Such equilibrium could be attained either by one state quitting or by compromise; for example, by agreeing on a partition of the territory in contention, or to a common treatment of each other's minorities, or by establishing an agreed framework for resolving further disputes. Institutions such as the European Union and other post-war European organizations can then be empowered to deal with further conflicts peacefully.

	← or →?	
	STATE 2 ATTACKS	STATE 2 NEGOTIATES
STATE 1 ATTACKS	– ∞, – ∞? Uncertain possibility of huge losses for both ↑ or ↓?	– ∞, – ∞? Same as attack–attack, but possibly worse for 2 ↓
STATE 1 NEGOTIATES	– ∞, – ∞? Same as attack–attack, but possibly worse for 1	0,0 Status quo, better than nuclear war
		→

Figure 3
Nuclear-armed states

The third diagram shows why nuclear weapons are thought to provide abundant security, and also why a first-strike advantage is thought to be potentially destabilizing. If both actors are rational and well-informed, they are likely to find that it makes so little difference in the huge expected losses from nuclear war whether they strike first or second that the Negotiate–Negotiate strategy will be dominant regardless of its payoff, at least up to the point that the status quo is perceived to be as bad as some finite expectation of a nuclear war. That would seem to give the two sides

a lot of room to bargain. Indeed, it gives them so much room to bargain that the existence of nuclear weapons becomes irrelevant to the settlement of any normal disputes. Only in extreme circumstances is the nuclear deterrent valuable.

A perceived significant difference between first-strike and second-strike outcomes, which could stem from either a perceived significant difference between the two states' deliverable nuclear weapons after absorbing a nuclear attack, or from a perceived significant difference between the two states' control capability after such an attack, could turn the preference arrows around. Other factors enter the situation as well, however. In particular, a considerable expectation that war is inevitable is needed before the confrontation becomes unstable, even if there exists a perceived significant difference between first-strike and second-strike outcomes.[2] Such an expectation could arise if the two actors are less than well-informed about each other; for instance, if they have distorted views of their opponent's rationality and humanity (an altogether too frequent occurrence). There could then be a significant chance of war even for rational actors.

Again, these diagrams bring out only some aspects of the situations depicted. States are subject to many influences, internal and external, besides those that can be shown in the diagrams. Nevertheless, any substantial prospect of a disastrous war must loom large in a state's calculations, and the state's decision-makers are then likely to face trade-offs something like those depicted in the diagrams. For a non–nuclear weapons state that has been and still believes itself to be seriously threatened, and which must rely on itself alone for its survival (such as Iran today), nuclear weapons can be an attractive option. A timely acquisition program would avoid the disastrous situation of an enemy (such as Iraq) obtaining these weapons first. If states perceive themselves to be centrally threatened with no early prospects of settlement, the prospect of peace through nuclear deterrence is likely to outweigh both the subtler risks of crisis instability that may develop after the two states turn nuclear, and the prospects for attaining an agreed peace as a result of a sequence of interactions leading to more complete information on both sides and a sequential equilibrium.

Centrally Threatened States and Group Security

Acquiring nuclear weapons is obviously only one way for a state to deal with a perceived central threat. In the past, decisions by states not to acquire nuclear weapons when both a capability to do so and some security incentive existed were motivated by the perception that other means to ensure security would be available to meet a perceived threat. These other means included alliance with the United States in the case of non-nuclear NATO members and in the 1970s of South Korea and Taiwan; and the perceived stability of the local security balance in the case of Sweden and Switzerland in the 1950s. The relationship between alliance—particularly alliance with a nuclear-weapons state—and nonproliferation was highlighted in 1970 when Germany, Italy, and Japan were influential in limiting the duration of the then-new nuclear Non-Proliferation Treaty to 25 years, on the ground that they could not be sure that their alliance with the United States would last any longer.[3]

Alliances and other forms of reliance on the prevailing international order have always been used by smaller states to obtain for themselves a degree of security. Current examples of states seeking such arrangements include the Visegrad Four states and Finland, as well as the province of Taiwan. In pre-nuclear-weapons days, these alliances provided security for a time, but shifts in alliances made for consequent shifts in relative power of the power projectors of the day, which in turn often led to war among the power projectors. In contrast, over the fifteen years following the advent of the atomic bomb, a series of crises led to very firm lines being drawn between the rival power projectors. These lines were then no longer contested, in good part because of the fear of triggering nuclear war.

These lines are now beginning to shift, however. These shifts, because they still affect the perceived relative power of the power projectors, not least through the agency of their domestic political contests, could be very dangerous. Assessment of these dangers and of possible policies to allay them forms the substance of a large, realistically oriented current literature, dealing usually with one or the other of what we have called strategic regions.

In what follows, we ask a more general and in some ways a simpler question: what is the extent of the commitment that must be made, and the risk that must be taken, if a state that perceives itself to be centrally threatened is to be given, by a power projector or by a group of other states, security that it perceives to be adequate?

Let us consider a group of states interested in providing security adequate, let us say, to prevent the introduction of nuclear weapons into the region. The group could consist of neighbor states, as in Latin America,

in which case the group must be willing to bear at least some of the costs (including the risks) of organizing itself. The group could also be a group of major powers backing the nuclear Non-Proliferation Treaty (NPT), or it could be one power projector (defining one as the minimum group size) offering a security alliance or guarantee. What incentives and disincentives might be provided by such groups to two states as they decide whether to join and observe the regime? The decision for each state will depend in part on an assessment as to whether the other will not only join formally but also observe the provisions of the regime. The situation is diagrammed in Figure 4.

	STATE 2 OBSERVES	STATE 2 DEFECTS
STATE 1 OBSERVES	Status quo, plus some incentives from the group	For 1, disadv. in war, incent. from group. For 2, the reverse.
STATE 1 DEFECTS	For 1, adv. in war, disinc.from group. For 2, the reverse	The situation in Figure 3, with added disincentives from the group

Figure 4
Observing the NPT. The direction of the preference arrows will depend on the values of the group-provided incentives and disincentives as they affect the two-sided situation.

The payoffs "advantage, disadvantage in war" refer to a two-sided war, crisis, or confrontation between States 1 and 2. Clearly, among the incentives and disincentives that could be offered by the group are intervention in such war or crisis.

While the wording in Figure 4 is the same for States 1 and 2, in actual fact the situation is not usually if ever symmetric. Thus, India and Pakistan are examples of two states in the "Defect–Defect" box. They are not well matched militarily, however, India being much stronger. The value of such nuclear security as each may perceive it has, and of the group-provided disincentives, is different for each country. Israel and its Arab opponents are in one of the "Observe–Defect" boxes, with Israel the defecting state. What value in its continuing confrontation with the Arab states Israel has gotten from its nuclear forces cannot be known, although, if a recent statement by Israel's foreign minister Ehud Barak represents the central Israeli perception, that value is perceived to be quite high.[4] In all situations,

the value of group-provided incentives (whether positive or negative) for observing the regime depends on the details of the security situation locally, and is not derivable from this model.

One conclusion, however, is largely independent of the details of these situations. It concerns what the general magnitude of group-supplied security incentives and disincentives as perceived by the governments of States 1 and 2 must be. That general magnitude must be such as to compensate for whatever nuclear deterrence might yield in the way of assurance that a major conventional war, especially a lost conventional war, will not occur. It is not sufficient to give positive security assurances against the possibility of a nuclear attack, as was done in connection with the NPT Extension Conference in 1995.[5] Nuclear weapons are perceived to buy assurance against a disastrous conventional war also. They were indeed so perceived by the United States and its NATO allies during the Cold War, and are so perceived by the Russian general staff now.[6]

The expected loss from war depends of course both on the war that might occur and on its likelihood. For a Chile or a Switzerland, this expected loss is not very high, not because war would not be destructive, but because the perceived probability of war there is low. For an Iran facing a resurgent Iraq, or for an Israel in that same position, the probability and the expected loss are much higher. The perceived value of security and other incentives provided by the group therefore would have to be commensurably high to lead to an Observe–Observe equilibrium.

In general, where nuclear nonproliferation efforts were successful (aside from the cases of states that could not acquire nuclear weapons or that faced in their estimation no significant external threat), some power projector or group of states provided equivalent security, usually by alliance. Thus, a perhaps surprising conclusion that emerges from this analysis is that the bilateral structure of extended nuclear deterrence and associated conventional deployments, far from being antithetical to the NPT, was part and parcel of the bargain as far as some of the most seriously threatened regions of the world were concerned. The structure (however unwelcome by some) provided the security that might otherwise have been sought through the acquisition of nuclear weapons.

Where states do not perceive themselves as centrally threatened, and where they do not have the capability to acquire nuclear weapons, the bargain is perceived quite differently. Political arguments of fairness then dominate the declared position of the states. For them, there is an inherent contradiction in the NPT allowing some states to retain nuclear weapons: the goal of the NPT should be to eliminate what is perceived as a global menace as well as some states' special privileges, rather than to reinforce a security bargain.

But in the strategic regions of the world, a realist calculus seems to have prevailed, at least judging from the record. As a result, the power projector concerned paid a price for ensuring the security, and thereby the nonproliferation, of states in these regions. The United States and later other major West European states paid the price for nonproliferation in Europe; the United States paid it in Japan and in South Korea; and, in a totally different, autocratic way, the Soviet Union paid it for its clients in Central and Eastern Europe.

Power Projection Under a Constraint

We noted earlier that, of the post–Cold War cases of threatened nuclear proliferation in strategic regions, none went against the power projector with the stronger effective resolve as measured by the military capabilities that could be brought to bear, and that the stronger effective resolve in defending a rival interest was recognized without crisis or war. This became the rule during the Cold War, when indeed each side's sphere of influence came to be so well recognized that "crisis" was too strong a word to describe the reactions when either side took some military or other security-related action on its "own" side. Eventually, nuclear weapons made it obvious, and politically acceptable, that it was too dangerous to fight directly over issues which, though affecting strategic regions, were outside the boundaries of the power projectors' home countries. Nuclear weapons thus served as a constraint that led the power projectors to pursue their rival interests outside their boundaries without knowingly taking significant risks of direct war with each other.[7]

The premise that nuclear weapons operate as a constraint on risk-taking among power projectors, which leads to stable compromise solutions if each side pursues its best strategy and has enough information, is reinforced by a game-theoretical look at a sequence of interactions between two nuclear-weapons states in a strategic region. Note that the game may be initiated by a smaller state in a strategic region. At each step in the sequential game, each actor has the choice of giving up, probing further the resolve of the other actor, or continuing to negotiate if the other actor and the smaller state involved are willing. Probing is safe for a while, but eventually carries with it risks out of proportion to the reward and should therefore eventually be rationally unacceptable. With perfect or near-perfect information, this is perceived on both sides early on, and there is little or no escalation. The choice beyond a certain point is between continuing to negotiate and giving up. Interactions in strategic regions occur under the constraint that an outcome perceived to involve even a small risk of nuclear war will be avoided, no matter what other conse-

quences it will have. Nuclear weapons operate both to make the dangers of war very high and to make them obvious, and both to make reaching a sequential equilibrium more advantageous, and, by informing both sides, to make it more likely.

The analysis of a sequential game between nuclear power projectors should capture the following factors.

1. The power projectors pursue their rivalries subject to the constraint that they do not wish any crisis to become unstable, which means that they do not wish the probability of war p to exceed some value p* which is less than the value sufficient to make the payoff of striking first exceed the payoff of negotiating.[8] The game is not necessarily a zero-sum game. Indeed, the payoffs to consensual actions are often greater than the payoffs to competitive actions. Even more often, the payoffs to different players lie along different axes and are not commensurate.

2. Information about either the amounts of the payoffs mentioned above or the value of p at step i in the estimation of player j is not necessarily complete. Denote by $\underline{p}_i^i$ the value of p in the estimation of player j at step i given the information available to that player at that step. Then, the constraint means that:

[1] $$\underline{p}_i^i < p^*$$

which might or might not mean that:

[2] $$p^i < p^*$$

where the value of p without underlining denotes the value at that step given complete information.

3. Any step the players take can change the probability of war p_i and the degree of completeness of the information λ_i^j available to player j after step i. If λ is taken to range from 0, meaning no information, to 1, meaning complete information, we can write:

[3] $$p^i - \underline{p}_i^i = f_i^j\left(\lambda_i^j\right)$$

[4] $$f^j = 0 \text{ when } \lambda_i^j = 1$$

[5] $$\left|f^j\right| > 0 \text{ when } \lambda_i^j = 0$$

f^j denotes the degree to which player j misapprehends the probability of war given the information set λ_i^j. It could be positive or negative depending on whether that player at that step underestimates or overestimates the probability of war. It need not be a monotonic function of λ (that is, a player could swing from overestimating to underestimating p as that player's information set changes). To keep the model simple, it could be assumed to be only a function of λ: only lack of information as perceived by the decision-maker prevents a true estimation of p, rather than panic, for example, or an agency issue.

4. The power projectors are not the only players that can change the values of p and λ. Regional states involved in the game can also do so. In particular, a regional state can increase the value of p without any action on the part of the power projectors, as witness the current actions of President Lee of Taiwan, or the actions of Fidel Castro before and perhaps during the Cuban Missile Crisis, or the actions of Serbia and Middle Eastern states on several occasions. Because the regional state shares only some of the interests of the power projectors, and because the power projectors are assumed to have installed and maintained crisis-limiting devices such as hot lines and other information-imparting mechanisms, it could be assumed that this increase in p is limited, and, in particular, that the regional state cannot by itself increase p beyond p*. Accepting and then removing that assumption could give some insight into the value of these information-imparting devices.

Under what conditions does a game as defined above have a sequential equilibrium? Assume that, starting somewhere in the players' information sets, it is possible to reach outcomes in which $p < p^*$, here dubbed safe outcomes. Are there strategies with which players can reach safe outcomes no matter where they start in their information sets? Is it possible to find conditions under which a strategy leads to safe outcomes independently of the payoff and probability structure of the game?

Combining [1] and [3], we have:

[6] $$p^i < p^* + f^j\left(\lambda_i^j\right)$$

so that a safe outcome is one in which:

[8] $$f^j\left(\lambda_i^j\right) \leq 0$$ where i = f denotes the final step of the game.

Calling p_0 the value of p before any power projector has made a move, but possibly after a regional state has precipitated a crisis:

[9] $$p_i = p_0 + \Sigma_i \left\{ f^{j\,\prime} \left(\lambda_i^j \right) \delta\lambda_i^j \right\}$$

where $p_0 < p^*$ and is usually close to 0 unless a regional state has precipitated a crisis. Thus, actions that increase λ decrease p. Presumably, actors who wish to reach safe outcomes will pursue strategies that increase λ. Can we characterize strategies in terms of $\delta\lambda$?

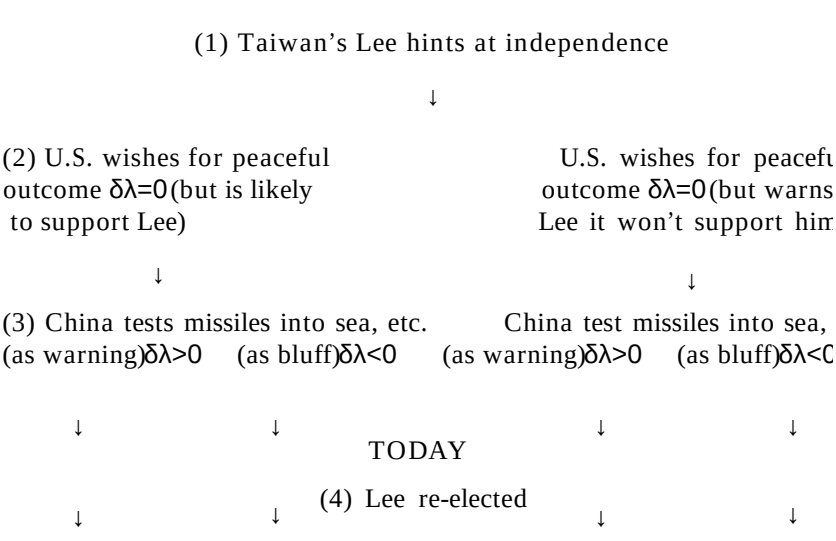
Consider the current case of Taiwan. In what follows, some of the steps shown as sequential could be simultaneous. Neither the Chinese nor the Americans may know which track they are on themselves. The present is after step 4. As far as the simple version of the game shown is concerned, if Beijing has determined it will unconditionally use force to the best of its ability to prevent Taiwanese independence, its steps of carrying out missile tests in what had been a highly traveled sea near Taiwan increase information and reduce the risk of war with the United States. If the United States has decided to back Lee, moving the Seventh Fleet into a position to affect (at least some) Chinese operations similarly increases information and reduces risk. These conclusions seem counterintuitive, but may nonetheless be true; the Chinese themselves have a proverb (as one might expect) to the effect that waving the sword can be peaceful.

In that case, the crisis, given the strategy of maximizing information, might bring about a clearer demarcation than existed before the crisis if domestic politics in the country that should theoretically back down are such that the information is accepted and acted upon. If, on the other hand, the United States and/or China are mis-signaling, or if the information cannot be accepted and acted upon in the country that should theoretically back down, the outcome could be war. This is clearly not the preferred outcome for either side, no matter who wins. Is there a strategy that can guarantee either side a safe outcome, independently of what the other side does? The answer will be yes if there is no consideration of minimizing the cost of reaching that outcome in terms of lost opportunity of gain should another strategy be followed. But there is always such consideration. The formalism makes the underlying situation, insofar as it is a two-sided game between power projectors, clear, but leads to no new insight for actual policy. In addition, as noted in the text, this is not just a two-sided game between power projectors. The Taiwanese government has the option to raise or lower the temperature of the confrontation.

Risks to power projectors could thus be high when smaller states in strategic regions perceive their security to be sufficiently threatened to consider acquisition of nuclear weapons or to shift their alliances, or

otherwise to change the status quo. One way in which power projectors can limit the risk to themselves is for the power projectors to learn from confrontations and to draw definite boundary lines between the areas where each will pursue its rival interests by force or the threat of it. The sequential equilibrium reached through learning from confrontations that carry risks out of proportion to the rewards is in a sense the inverse of the game of deterrence with less than perfect information described in Powell.[9] There, the states take steps on the slippery slope to disaster, the less perfect the information, the further. Here, the states climb back from an initial position of imperfect information toward one where information is better and there is a higher likelihood of reaching a non-disastrous outcome.

The theory of two-sided games between power projectors does not convey the breadth of the actual spectrum of policy choices open to the power projectors or the regional state involved. In particular, it does not capture the bargaining value of the crisis to the regional state. The outcome of the Taiwan crisis at this writing would seem to have all participants coming out ahead: the United States got its peaceful election, Taiwan may be able to bargain with China with increased leverage, and the outcome of the bargaining may reinforce China's view that Taiwan is a province (if a privileged one) of China. This outcome could be reinforced or jeopardized by actions from any of the three participants. A formal discussion of the three-sided game would come closer to the real situation but still not fully encompass it. Such a discussion lies beyond the bounds of this appendix (to say nothing of the capabilities of the author).



The peaceful survival of states has often required that certain costs be paid in the form of an ability, putative or demonstrated, to defeat or inflict sufficient damage on an attacker. These costs may be provided by the state itself or by other states or groups of states. One conclusion from the foregoing analysis is that the world's nuclear weapons future will be determined in part by what states or groups of states will pay these costs on behalf of what other states. The willingness of individual states or groups to pay costs to secure the peaceful survival of the groups' members is therefore a central question.

What kind of a good for the group of states is the peaceful survival of individual states? Is it a public good for the group or is it a good that benefits the individual states or is it something else? Peaceful survival within states—i.e. civic peace, which depends on the state's ability to settle most disputes among individuals and groups within the state without recourse to violence—fulfills the definition of a public good reasonably well: sharing it does not diminish its value to individual members and it is costly and difficult to deny it to any member of the group if the rest are to have it. Peace within a family, a tribe, a city, and other groups possessed of a common purpose is one of the earliest of public goods identified and sought in human history, and it has been valued above most others.

Peace among tribes, nations, states and other groups that identify themselves as different from one another, however, does not fulfill the definition of a public good as well. On the contrary, to the extent these entities base their prospects of peaceful survival on their prospects for defeating or inflicting sufficient damage on an attacker, assuring these prospects is not viewed as a public good for the group of entities concerned, since its basis, the capability for victory, is a private, highly rival good. In particular, a state improving its prospects for peaceful survival by building up its military power or making alliances gives rise to the usual security dilemma whereby one state's increase in security is its neighbor's decrease in security.

To the extent that some groups of states have come to perceive, or to conclude on the basis of experience, that war among them would leave even the winners worse off than maintaining the peace, and to perceive further that one state breaking the peace can affect the peaceful survival of all states in the group (in Europe today, for instance), peace among the states in those groups has come to be perceived as both a public good for the group, and a good to be preferred to those other goods that peace has been given up for in the past, such as territory, dominance, ideological supremacy, the training of young men, and improved standing with key domestic constitu-

encies. As a result, the states in these groups are more willing to pay the political and other costs of mechanisms that can resolve disputes among them without war, and the sovereignty-limiting agreements that make these mechanisms possible. It remains to be seen (in the former Yugoslavia, for example) to what extent they are also willing to pay for a police function to be used against those among them who break the peace or violate the underlying agreements. That peace within the group is not at all times and everywhere treated as a preferred public good does not mean that there is not an evolution in that direction, just as the continuing intrastate feudal wars of the late Middle Ages in Europe did not mean that there was not an evolution toward centralized state government authority there.

Nuclear peace (by which I mean the absence of nuclear war, not, or not necessarily, the prevention of war through nuclear deterrence) has come to be considered by states to be a public good under nearly all circumstances. They perceive that nuclear war would be very unlikely to leave any participants better off than they were before, and instead would bring significant risks to the group directly through global effects and indirectly in terms of the possibility of igniting nuclear arms races, nuclear crises, and general loss in the ability to maintain nuclear peace for the group. A presumption exists that all states must share in nuclear peace if any are to have it. The proposed "no first use" norm derives some of its appeal from this perception. Nuclear peace also seems to be a good preferred to other goods, but this conclusion has not been thoroughly tested. Since Nagasaki, nuclear-weapons states have abstained from using nuclear weapons in the wars they have fought, but they may not have estimated they would derive much advantage from such use.

This evaluation of nuclear peace as a preferred public good can change the way in which security in general, not just security against nuclear war, is perceived by governments. To the extent that states' overall security is tied to the maintenance of nuclear peace, that overall security itself becomes, at least in part, a public rather than a private good for a group of interacting states. All states in the group have an interest in maintaining those aspects of the individual state's security which, if lost, could bring a risk of nuclear war. Those aspects are usually the ones thought to involve central interests, such as the integrity of the territory, national autonomy, regime survival, and access to required resources, rather than peripheral ones. Thus, where the maintenance of nuclear peace has been judged by states to be an important ingredient of security, as with the security of Europe during the Cold War, preventing nuclear attack is not thought sufficient. Preventing such conventional attack on central interests as could credibly lead to the involvement of nuclear weapons is also necessary.

As with most public goods, providing nuclear peace requires that costs be paid by the group or some members of it.[10] These costs could include, depending on the circumstances, the costs and risks of maintaining a nuclear deterrent; conversely, the costs and risks of giving up the security that accompanies the possession of nuclear weapons; the costs of leading alliances for the United States and the Soviet Union during the Cold War; and, conversely, the costs, political and economic, of ceding the leadership of an alliance to other states. The answer to the question of who will provide nuclear peace depends on the answer to the question of who is able and should rationally be willing to bear the costs and risks of provision for itself and possibly for a group of other states. The answers will differ for different groups of states with different incentive structures.

In the foregoing analysis, we have concluded that, in regions where two or more very powerful nuclear-weapons states are willing and able to project force to maintain what they consider vital interests, if there are challenges to the status quo, clear lines defining the areas where each power projector is willing to intervene are likely to be drawn, as they were in Europe and East Asia during the Cold War. This conclusion follows both from the high cost of providing nuclear peace to individual states in these regions, and from the risk-averse behavior likely to be engaged in by the major powers concerned. In these regions, again as during the Cold War, a nuclear nonproliferation regime will be dependent upon and complementary to a state of mutual nuclear deterrence paid for largely by the power projectors involved, rather than incompatible with it.

There could be free riders on this arrangement. In the fifties, during the Cold War, Sweden and Switzerland considered or started nuclear weapons programs and then stopped, because they judged that, given the stability of the overall situation and the U.S. posture and commitments particularly, there would not be sufficient additional security in the nuclear weapons deployment that they could afford to warrant the high transaction costs of acquisition.[11] The providers of nuclear peace in such regions are the power projectors who maintain and take the risks of a stable deterrent and security structure there.

Most of the world's states do not lie in such strategic regions. For a majority of the non-nuclear-weapons states, acquisition of nuclear weapons has been out of the question for economic and political reasons. Adherence to the nuclear nonproliferation regime was a largely cost-free way to prevent or delay potentially dangerous larger regional powers from acquiring nuclear weapons, and to gain some good will and a limited measure of technical help for civilian nuclear development from the larger international community, led in most cases by the United States or the

Soviet Union. The costs, including the risks, of providing nuclear peace to such states are minimal.

Some states are not aligned or not sufficiently aligned with either bloc to be provided with security by the bilateral standoff, and yet believe they face central dangers. It is from these states that non-adherents and doubtful adherents to the nuclear nonproliferation regime, such as Iraq, South Africa, and recently North Korea, were drawn. With the more fluid lines of demarcation between security spheres that mark the post–Cold War period, the number of these states could increase. In some of these cases, the global group of states, acting through the United Nations Security Council (UNSC), may provide nuclear peace, through a norm of nonproliferation and nonuse. To do so, the UNSC will have to be empowered to pay the costs of provision, which include not only the costs of enforcing the norms, but more importantly the costs of providing such security as will lower the demand for nuclear weapons to the level where enforcing norms is feasible.

This brings us back to the power projectors' role, however. Using the terminology of collective action theory (see note 10), some states have more ability than others to make a group "privileged"; that is, to ensure that the transaction costs needed to provide the group with a collective good are paid. Typically, such states are relatively well endowed with one or (usually) more of the forms of power and influence that are relevant to the collective good being sought. If this collective good is, as is the case here, some form of security, typically the "privileging" member of the group will have more than the usual endowment of the capability to project military power.

The privileging member will need not only the usual inputs of economic resources, mobilizable political will, and military experience to mount and maintain projection forces, but also some inputs having to do with the relationships of the projecting power and other states. Reputation for trustworthiness as an ally or effectiveness in carrying out operations, diplomatic and organizational experience, and ideological acceptability are inputs that also affect a state's ability to provide security to a group. Furthermore, this ability is not a single-valued variable applicable to the whole world. The United States probably has more of it than any other state right now, but, as noted, it would be hard put to provide security to the states in the former Soviet Union or on the continent of Asia. Russia and China, Britain and France, and India all have varying measures of this ability to provide security in different parts of the world.

This means that the privileging members of the global group of states are the very power projectors which, in regions strategic to them, act in more unilateral, rival ways. It is difficult to see what balance of incentives could

bring about a very different outcome. In particular, it is difficult to see how the global group of states could play a larger role in the provision of nuclear peace than one limited by the considerations described above. For instance, what could bring the United Nations Security Council, headed by the Permanent Five, to go beyond the assurances of nonuse of nuclear weapons that they have given, and actually assure the security of Pakistan against India, or Ukraine against Russia? A threat of nuclear war might mobilize the Security Council into taking costly, risky action, in the same way that emergencies tend to make hitherto unorganized groups privileged. But a principal motivation for a state to go nuclear is to protect itself against a superior conventional opponent. If security guarantees are to be given in such situations, it is difficult to see how the Security Council could give them.

Nevertheless, global norms of nonuse and restricted nuclear proliferation have utility. They have utility first of all for those groups of states, noted above, that are not threatened by either an outside power or one of their own members. Under such circumstances, the incentives to acquire nuclear weapons are small or negative, and they are usefully reinforced by the weight of world opinion and possibly economic sanctions. They also have utility for very small powers such as Malta, which could be threatened by an intermediate-size power but have no means of acquiring nuclear weapons themselves. For such states, where the costs and risks of intervention are limited and the major powers are not in contention, the UN could play an effective role.

Most importantly, perhaps, the norms have utility in committing the major powers to some preliminary action in structuring the global group of states so as to provide it with the most primitive and necessary of public goods, survival at each other's hands. Eventually, with the manufacture and use of ever more powerful means of destruction ever more widely available, such provision will be necessary. It may well be necessary before the major powers are ready to give it. Separately and together, the major powers have a poor record of providing for the survival of others. The nuclear peace issue, by posing a threat to them as well as to less-powerful states, gives them an incentive to act to make the whole group of states privileged, at least in this regard. They may only be able to do so, according to this analysis, by partitioning the regions where their own rival interests are importantly involved, but a start even in easier regions is better than nothing. It can provide institutional patterns and learning that can be called upon later, and perhaps not too much later.

Notes

[1] Robert Powell, *Nuclear Deterrence Theory: The Search for Credibility* (Cambridge: Cambridge University Press, 1990), 38ff., for this result and results in related cases.

[2] Powell, op. cit., pp. 117–135.

[3] They did not press that argument in 1995, when they supported indefinite extension of the NPT. They may no longer have seen a serious threat to their survival or autonomy, or they judged that threat to be more distant than the threat of nuclear proliferation. More practically, perhaps, they may have judged that the political advantages of going along with the United States on this issue outweighed whatever remaining value that alliance with the United States could bring them, given the limits that domestic U.S. politics would place on U.S. commitments.

[4] "Israel's greatest strength [is] its perception as a nuclear power among Arab states." Foreign Minister Ehud Barak, quoted in ClariNet e.News (Reuters), January 22, 1996.

[5] See United Nations Security Council Resolution 984 (1995), adopted by the Security Council at its 3,514th meeting on 11 April 1995, and the statements made by each of the nuclear weapon states referred to therein (S/1995/261-265).

[6] See Pavel Grachev, "Nuclear Weapons Are a Means of Deterring Any Aggression Against the Russian Federation," *Nezavisimaya Gazeta*, 9 June 1994, translated in *Current Digest of the Post-Soviet Press* (July 6, 1994); Fred Hiatt, "Russians Favoring Retention of Nuclear Deterrent," *The Washington Post*, 25 November 1992.

[7] The earliest scholarly analysis of this effect was probably that of Jacob Viner, "The Implications of the Atomic Bomb for International Relations," in *Proceedings of the American Philosophical Society* 90, no. 1 (January 1946): 53–58. For a recent look at the role of nuclear weapons during the Cold War and in the future, see Steve Weber, "Security after the Revolutions of 1989 and 1991: The Future With Nuclear Weapons," in Patrick J. Garrity and Steven A. Maaranen, eds., *Nuclear Weapons in the Changing World: Perspectives from Europe, Asia, and North America* (New York: Plenum Press, 1992), 199–221.

[8] See Powell, pp. 120ff.

[9] Powell, op. cit., pp. 38ff.

[10] Mancur Olson's *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, Massachusetts: Harvard University Press, 1965) is the classic general treatment of the difficulties a group has in providing itself with public goods. For a survey of more recent work, see Todd Sandler, *Collective Action: Theory and Applications* (Ann Arbor: The University of Michigan Press, 1992).

[11] See Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: University of Chicago Press, 1984); Cameron Binkley, *Decisions by Chief Political Actors to Acquire Nuclear Weapons* (Stanford, CA: The Stanford University Center for International Security and Arms Control, August 1994, working paper).