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In a Dark Time: The Expected Consequences of an India-Pakistan Nuclear Exchange

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IN A DARK TIME: THE EXPECTED CONSEQUENCES OF AN INDIA-PAKISTAN NUCLEAR WAR

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INTRODUCTION

In the aftermath of nuclear tests by India and Pakistan in May 1998, the expanded prospect of regional nuclear war¹ may threaten South Asian security.² Although a variety of political and diplomatic measures³ will certainly be taken to control this increasingly menacing arms race,⁴ one that may even come to involve China,⁵ it is important that all pertinent decision-makers fully understand the stakes. Should India and Pakistan actually engage in nuclear exchanges,⁶ either by calculation or by inadvertence, the survivors would surely envy the dead.⁷

1. See generally Ram R. Subramanian, *Nuclear Proliferation in the Third World: Region-Specific Cases of India versus Pakistan*, 4 BROWN J. WORLD AFF. 95, 95-101 (1997).

2. Indeed, it is even conceivable that by removing the bombs from their respective "basements," the two enemy states will enhance bilateral deterrence and diminish the risks of nuclear war. This question has already been examined with respect to another theater of conflict, namely the Middle East. See Louis René Beres, *Israel's Bomb in the Basement: A Second Look*, 2 ISRAEL AFF. 112, 112-36 (1995); see also Gerald M. Steinberg, *Deliberate Ambiguity: Evolution & Evaluation*, in SECURITY OR ARMAGEDDON: ISRAEL'S NUCLEAR STRATEGY 28, 29-43 (Louis René Beres ed., 1986).

3. The argument for special or enlarged responsibility for "great power" nations to take such measures is drawn from codifications expressed in certain major nineteenth and twentieth century peace settlements and international organizations, and is deducible from the persistently decentralized authority structure of international law, known as the Westphalian System, that emerged in 1648. The role of "permanent members" of the United Nations Security Council has been particularly significant.

4. In addition to the more commonly discussed ideas about prompt bilateral and multilateral talks and about implementation of appropriate "hot line" agreements, such measures are apt to include more long-term confidence building measures ("CBMs"). See *Nuclear Weapons: A Comprehensive Study: A Report of the Secretary-General*, U.N. Department for Disarmament Affairs, 45th Sess., at 1, U.N. Doc. A/45/373 (1991); see also ALAN PLATT, *ARMS CONTROL AND CONFIDENCE BUILDING IN THE MIDDLE EAST* (Alan Platt ed., 1992). These measures are rooted historically and conceptually in the 1986 "Document of the Stockholm Conference on Confidence and Security-Building Measures." See Jorgen Holst, *Confidence-Building Measures: A Conceptual Framework*, 25 SURVIVAL 2, 2 (1983) (stating that CBMs are "arrangements designed to enhance assurance of mind and belief in the trustworthiness of states and the facts they create.").

5. Chinese involvement could change the dynamics of regional arms competition. In the event of a nuclear war involving China, together with India and Pakistan, the consequences would likely be on a vastly greater scale than what is described herein. In the absolute worst case scenario, Chinese involvement in a South Asian nu-

Indian and Pakistani leaders should begin by considering an authoritative 1975 study of nuclear war consequences. Prepared in the United States by a special committee of the National Research Council, National Academy of Sciences, the study provides:

In the worst case considered, about half of all nuclear weapons in current strategic arsenals, viz, 500 to 1000 weapons of yield 10 to 20 megatons each, and 4000 to 5000 lesser (sic) weapons with yields of 1 or 2 megatons each, i.e., a total of 10,000,000,000 tons of TNT equivalent are exchanged among the participants. No report can portray the enormity, the utter horror which must befall the targeted areas and adjoining territories.^x

The scale of this Report's assumptions is vastly greater than those that concern us here, namely a plausible nuclear war scenario for India and Pakistan in South Asia. Nevertheless, the likely kinds of physical and biological effects are still germane to our present inquiry. Some of these effects include temperature changes, contamination of foods by radionuclides, disease epidemics in crops and in domesticated animals due to ionizing radiation, shortening of growing seasons, irreversible injuries to aquatic species, long-term carcinogenesis due to inhalation of plutonium particles, radiation-induced developmental anomalies in persons in utero at the time of detonations, increase in skin cancers, and increased incidence of genetic

clear war would involve the United States.

6. It is conceivable that one state might attack the other in such a way as to preclude nuclear reprisal. In such a scenario, which could ensue either as a "bolt-from-the-blue" first-strike or as a result of crisis-escalation, the consequences of a nuclear war described here would befall only the state that did not strike first. This does not suggest a rational argument for aggression or preemption, but rather a compelling case for maintaining visibly secure and penetration-capable retaliatory forces on each side.

7. See DANIEL FREI, RISKS OF UNINTENTIONAL NUCLEAR WAR 3-4 (1983) (explaining that inadvertence can include both accidental nuclear war and unintentional nuclear war.) See also LOUIS RENÉ BERES, APOCALYPSE: NUCLEAR CATASTROPHE IN WORLD POLITICS 34-35 (1980) [hereinafter BERES, APOCALYPSE] (noting that as the nuclear arms race continues, the chances of nuclear accidents grow); Louis René Beres, *Tilting Toward Thanatos: America's 'Countervailing' Nuclear Strategy*, 34 WORLD POL. 25, 25-46 (1981).

8. NATIONAL ACADEMY OF SCIENCES, LONG TERM WORLDWIDE EFFECTS OF MULTIPLE NUCLEAR WEAPONS DETONATIONS (1975) [hereinafter 1975 NAS REPORT] (letter of transmittal by Dr. Philip Handler, President of the National Academy of Sciences).

disease that would not be limited to the offspring of the exposed generation, but would extend over many generations.

In addition, in assessing the likely effects of a nuclear war involving India and Pakistan, it will be important for decision-makers to look beyond individual effects in isolation. Interactions between individual effects could produce calamitous and still unforeseen consequences. Recognizing this some years ago, the United States Arms Control and Disarmament Agency concluded:

In attempting to project the after-effects of a major nuclear war, we have considered separately the various kinds of damage that could occur. It is also quite possible, however, that interactions might take place among these effects, so that one type of damage would couple with another to produce new and unexpected hazards. For example, we can assess individually the consequences of heavy worldwide radiation fallout and increased solar ultraviolet, but we do not know whether the two acting together might significantly increase human, animal or plant susceptibility to disease. We can conclude that massive dust injection into the stratosphere, even greater in scale than Krakatoa (the volcanic eruption) is unlikely by itself to produce significant climactic and environmental change, but we cannot rule out interactions with other phenomena, such as ozone depletion, which might produce utterly unexpected results. We have come to realize that nuclear weapons can be as unpredictable as they are deadly in their effects.⁹

But what, specifically, should concern both Indian and Pakistani planners when ruminating over the likely effects of a "limited" nuclear war?¹⁰ To answer this question, we must first subdivide a hypothetical "limited" nuclear war into three categories: (1) exclusively counterforce attacks against hard targets;¹¹ (2) exclusively counter-

9. UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY, WORLDWIDE EFFECTS OF NUCLEAR WAR . . . SOME PERSPECTIVES 23-24 (n.d.). This report was produced after the 1975 NAS REPORT. See 1975 NAS REPORT, *supra* note 8.

10. Limited nuclear war refers to a measured and strictly controlled nuclear exchange that is confined to military and industrial targets. The consequences of such a war between India and Pakistan, including "collateral damage," could conceivably result in millions of casualties. "Collateral damage" refers to the harms done to human and non-human resources as a consequence of nuclear strikes that are aimed at enemy forces and/or military facilities.

11. "Counterforce Strategies" refer to the targeting of an enemy's strategic military facilities. Such strategies can be dangerous not only because of the "collateral damage" that they might occasion, but also because they may heighten the likelihood

value¹² attacks against civilian populations;¹³ and (3) mixed counterforce/countervalue attacks.¹⁴ Moreover, in comparing the plausibility of these three possible nuclear attacks, it will be necessary to differentiate between objectives and capabilities of India and Pakistan, and prepare a comprehensive “strategic dialectic” in which India and Pakistan each anticipate the other’s reactions to its own relevant nuclear strategies and deployments.¹⁵

I. FORMING A COMPREHENSIVE “STRATEGIC DIALECTIC”

How shall this dialectic, a framework for understanding South Asian nuclear arms racing, be prepared? In essence, analysts placed in the shoes of Indian and Pakistani planners should approach the

of first-strike attacks. In the India-Pakistan context, such strategies could generate mutual and compelling incentives toward preemption.

12. “Countervalue Strategies” refer to the deliberate targeting of noncombatant populations such as an enemy’s cities or industries. Although the consequences of a nuclear war between states that embrace countervalue strategies would be especially grave, the probability of such a war might be lower. This is because the preemption incentive would be reduced where neither side feels that its nuclear retaliatory forces are vulnerable to first-strike attacks.

13. See Geneva Convention IV: Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 3516-19 (introducing formal criteria for discriminating between combatant and non-combatant populations).

14. The especially intense hatred between India and Pakistan must be factored into analysis. Although it may be perfectly rational for both sides to always remain within the bounds of counterforce targeting, thereby confining civilian harms to “collateral damage,” overriding feelings of hatred could give rise to needless forms of countervalue targeting. This gratuitous policy could be the case, for each side, in both the scenario of preemptive attack and in the scenario of nuclear reprisal.

15. At this point it is unlikely that either India or Pakistan has a carefully established or recognizable doctrine on nuclear strategy. Hence, there now exists a condition of mutual doctrinal ambiguity that could easily undermine deterrence in South Asia and encourage nuclear war. Both India and Pakistan should acknowledge that in order to meet their deterrence objectives, they must ensure that their nuclear forces are sufficiently invulnerable and penetration-capable to assuredly destroy the other after riding out a first-strike attack. Neither state need take any steps to threaten the other’s retaliatory forces. All counterforce “improvements” by India and Pakistan would undermine their security. Such “improvements” would add nothing to invulnerability and penetration capability requirements, but they would heighten enemy incentives to strike first. Although it is true that such “improvements” could enhance nuclear war-fighting capabilities, the net assessment of refined counterforce capabilities must certainly be negative.

problem as an interrelated series of thoughts. Each thought or idea about enemy capabilities and enemy intentions presents a complication that moves inquiry on to the next thought or idea. Contained in this strategic dialectic is an obligation to continue thinking, an obligation that can never be fulfilled entirely because of what philosophers call an "infinite regress problem," but that must still be attempted as fully and as competently as possible. Without such a dialectic, those who work on pertinent security matters will focus only upon discrete moments in time or static phenomena, such as numbers of weapons, types of weapons, and leadership personalities rather than upon appropriately dynamic and generic interactions.

The advantages of a strategic dialectic will depend, in part, upon the coherence of the overall predictive enterprise. India and Pakistan do not face a random set of discrete and wholly separate military threats. Rather, there exists a general threat environment within which discrete threat components fit. The task for analysts and strategists here is not to determine in advance each and every specific threat component, but to identify a framework that will likely accommodate the understanding of a broad variety of possible threats for each country.¹⁶

A. PERCEPTIONS OF ENEMY AGGRESSION

In fashioning such a framework, it will be important to understand the extraordinary importance of perceptions. Should either India or Pakistan seek to reduce the vulnerability of its nuclear forces by some intentionally detectable combination of multiplication, dispersion, and hardening, each state could come to believe, erroneously, that the other is preparing for aggression.¹⁷ Such erroneous beliefs

16. Jurisprudentially, such threats would fall under the heading of "aggression." See *Resolution on the Definition of Aggression*, G.A. Res. 3314 (XXIX), U.N. GAOR, 29th Sess., Supp. No. 31, at 142, U.N. Doc. A/9631 (1974) (describing the crime of aggression under international law).

17. See *Report of the Permanent Advisory Commission of the League of Nations*, League of Nations L.N.O. Spec. Supp. 7, at 16 (1923) (containing the Draft Treaty of Mutual Assistance which first gave defining the question of aggression particular significance). Since World War II, aggression has traditionally been defined as a military attack, not justified by international law, directed against the territory of another state. See *id.* An authoritative definition of aggression was adopted without a vote by the United Nations General Assembly on December 14,

would be even more likely if the states should simultaneously seek to further reduce nuclear force vulnerabilities by way of active and passive defenses. Ironically, in seeking to stabilize nuclear deterrence by signaling the enemy that its own nuclear forces are not vulnerable to disarming first-strikes, either India or Pakistan could create the impression that it is planning to strike first.¹⁸ Here, each state's attempts to convince the other that it is not preparing for a preemptive strike could backfire, creating new incentives for India or Pakistan to actually launch a preemptive strike itself.¹⁹

The alternative for each state would be to deliberately disguise efforts at nuclear force protection. Such subterfuge, however, could carry additional and substantial risks. Should India calculate that Pakistan's nuclear forces were vulnerable to first-strike attacks, or

1974. See *Resolution on the Definition of Aggression*, *supra* note 16. Article 1 of this Resolution is based on United Nations Charter Article 2 paragraph 4, enjoining members to refrain from "the threat or use of force against the territorial integrity or political independence of any state." *Id.* It also emerges in the definition that the first use of armed force represents *prima facie* evidence of unlawful conduct, but that "the relevant circumstances" may also be taken into account. See *id.* at 143. The requirement that to constitute aggression, the first use of force must be "in contravention of the Charter," clarifies the idea that there may exist some first uses of force that are entirely lawful. See *id.* It follows, *inter alia*, to qualify as aggression, a use of force must be carried out in order to achieve a prohibited objective. In other words, *animus aggressionis* is an essential element of the offense. See *id.*

18. See generally RICHARD NED LEBOW, BETWEEN WAR AND PEACE: THE NATURE OF INTERNATIONAL CRISIS 273-281 (1981); Richard Ned Lebow, *Deterrence: A Political and Psychological Critique*, in PERSPECTIVES ON DETERRENCE 25 (Paul C. Stern et al. eds., 1989) (stating that "deterrence is an attempt to influence another actor's assessment of its interests"); Richard Ned Lebow & Janice Gross Stein, *Rational Deterrence Theory: I Think, Therefore I Deter*, 41 WORLD POL. 208, 208-22 (1989); Robert Jervis, *Deterrence and Perception*, in STRATEGY AND NUCLEAR DETERRENCE: AN INTERNATIONAL SECURITY READER 57 (Steven Miller ed., 1984) (explaining that deterrence depends on perceptions). This extends to perceptions of third parties as well as main adversaries. See Jervis, *supra*, at 57. It underlies the way in which attempts at deterrence can fail if assumptions are incorrect. See *id.*

19. Under international law, there is an important distinction between a preemptive attack and a preventive attack. Preemption is the military strategy of striking an enemy first in the expectation that the only alternative is to be struck first. A preemptive attack is launched by a state that believes that enemy state forces are about to attack. A preventive attack, however, is launched not out of concern for imminent hostilities, but out of fear of a longer-term deterioration in the vital strategic balance. Hence, in a preemptive attack, the length of time by which the enemy state's action is anticipated is relatively short, while in the preventive strike the interval is considerably longer.

Pakistan that India's nuclear forces were vulnerable, each enemy state might want to exploit the other's current weakness. Moreover, because too great a vulnerability could encourage the other state to strike first, and because both India and Pakistan would understand this calculation, each side could have compelling reasons to launch prompt preemptive attacks.

B. THE COST-EFFECTIVENESS OF FIRST-STRIKES

In making their preemption decisions, both India and Pakistan—assuming rational leadership—would need to determine the cost-effectiveness of defensive first-strikes,²⁰ which might or might not meet the tests of anticipatory self-defense under international law.²¹ This determination would depend upon a number of critical and interrelated variables, including: (a) expected probability of enemy first-strikes; (b) expected disutility of enemy first-strikes; (c) expected schedule of enemy nuclear deployment; (d) expected efficiency of enemy active defenses over time; (e) expected efficiency of

20. See *United Nations Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States in Accordance with the Charter of the United Nations*, G.A. Res. 2625 (XXV), U.N. GAOR, 25th Sess., Supp. No. 28, at 121, U.N. Doc. A/8028 (1971), reprinted in 9 I.L.M. 1292, 1294 (identifying the problem of reprisal as a rationale for the permissible use of force by states, stating that "States have a duty to refrain from acts of reprisal involving the use of force."). The right of self-defense in international law must not be confused with reprisal. Although both are commonly known as measures of self-help short of war, an essential difference lies in their respective purposes. Taking place after the harm has already been experienced, reprisals are punitive in character and cannot be undertaken for protection. Self-defense, on the other hand, is by its very nature intended to mitigate harm.

21. See Beth M. Polebaum, *National Self-Defense in International Law: An Emerging Standard for a Nuclear Age*, 59 N.Y.U. L. REV. 187, 190-91 (1984) (explaining that the customary right of anticipatory self-defense has its modern origins in the *Caroline* case, which concerned the unsuccessful rebellion of 1837 in Canada against British rule). The *Caroline* case transformed the right of self-defense from an excuse for armed intervention into a legal doctrine. See *id.* Following this case, the serious threat of armed attack has generally justified defensive military action. In an exchange of diplomatic notes between the governments of the United States and Great Britain, then-United States Secretary of State Daniel Webster outlined a framework for self-defense that did not require an actual attack. The framework permitted military response to a threat so long as the danger posed was "instant, overwhelming, leaving no choice of means and no moment for deliberation." *Id.*

one's own active defenses²² over time;²³ (f) expected efficiency of one's own hard-target counterforce operations over time; (g) expected reactions of unaffected regional enemies and friends; and (h) expected international community reactions to one's own preemptive attacks.²⁴

22. The essential components of a multi-layered active defense system would include space-based surveillance, boost-phase intercept, wide-area coverage, and terminal point defense. Sea-based systems, primarily because of their mobility-deployability, could provide effective wide-area ballistic missile defense ("BMD") coverage.

23. In this situation, efficiency must be measured in terms of population protection as well as retaliatory force protection. In principle, antiballistic ("ABM") systems can be configured to protect populations as well as deterrent forces. In the United States, current plans for theater missile defense ("TMD") and national missile defense ("NMD") are designed for dual protection. TMD refers to defenses against shorter-range theater and tactical missiles that might be used against forward-deployed forces. NMD, in contrast, would defend against long-range strategic missiles that might be used to attack urban populations.

24. Such world community reactions would surely be determined more by politics than by law. Nevertheless, there is now considerable jurisprudential support for the particular reasonableness of anticipatory self-defense in the nuclear age. See, e.g., LOUIS HENKIN ET AL., *INTERNATIONAL LAW: CASES AND MATERIALS* 933 (1980) (citing WOLFGANG FRIEDMANN, *THE THREAT OF TOTAL DESTRUCTION AND SELF-DEFENSE* 259-60 (1964); JOSEPH M. SWEENEY ET AL., *THE INTERNATIONAL LEGAL SYSTEM: CASES AND MATERIALS* 1460-61 (3d ed., 1988) (citing Myres McDougal, *The Soviet Cuban Quarantine and Self-Defense*, 57 AM. J. INT'L L. 597, 598 (1963). Long before the nuclear age and its particular exigencies, scholars had supported the principle of anticipatory self-defense. See SAMUEL PUFENDORFF, III, *ON THE DUTY OF MAN AND CITIZEN ACCORDING TO NATURAL LAW* 32 (Frank Gardner trans., 1964). Pufendorff reasoned:

[W]here it is quite clear that the other is already planning an attack upon me, even though he has not yet fully revealed his intentions, it will be permitted at once to begin forcible self-defense, and to anticipate him who is preparing mischief, provided there be no hope that, when admonished in a friendly spirit, he may put off his hostile temper; or, if such admonition be likely to injure our cause. Hence, he is to be regarded as the aggressor, who first conceived the wish to injure, and prepared himself to carry it out. But the excuse of self-defense will be his, who by quickness shall overpower his slower assailant. And for defense, it is not required that one receive the first blow, or merely avoid and parry those aimed at him.

Id.

Similarly, Hugo Grotius, in his discussion of war that exists in the absence of formal declarations, explains why the state considering anticipatory self-defense need not wait for such declarations. See HUGO GROTIUS, *COMMENTARY ON THE LAW OF PRIZE AND BOOTY* 96 (James Brown Scott ed., Gladys L. Williams & W.H. Zeydel trans., 1964). Grotius stated:

C. DEFENSIVE MEASURES OF THE ENEMY

Indian and Pakistani inclinations to launch preemptive strikes may also be affected by the other's steps to guard against a preemptive strike. These measures include the attachment of "hair-trigger" launch mechanisms to nuclear weapon systems, and the adoption of "launch-on-warning" policies,²⁵ possibly coupled with pre-delegations of launch authority.²⁶ In addition, there is no doubt that both India and Pakistan will do everything possible to prevent protective measures from being installed by the other, because of the

[A]s Cicero explains, this justification for anticipatory self-defense exists whenever he who chooses to wait for formal declarations of war will be obliged to pay an unjust penalty before he can exact a just penalty; and, in a general sense, it exists whenever matters do not admit of delay. Thus, it is obvious that a just war can be waged in return, without recourse to judicial procedure, against an opponent who has begun an unjust war; nor will any declaration of that just war be required. For, as Aelian says, citing Plato as his authority, any war undertaken for the necessary repression of injury is proclaimed not by a crier nor by a herald but by the voice of Nature herself.

Id.

Lest anyone doubt the authoritativeness of such opinions as an appropriate source of contemporary international law, one need only recall the reference at Article 38 of the Statute of the International Court of Justice to "the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law." See Statute Of The International Court Of Justice, art. 38, 59 Stat. 1031 (1945).

25. See Michael C. Brower, *The Future of U.S. Nuclear Strategy*, in *NUCLEAR WEAPONS AFTER THE COLD WAR: GUIDELINES FOR U.S. POLICY* 72, 100-01 (Michèle A. Flournoy ed., 1993) (discussing the various strategic and technological options available as preemptive strike measures). Launch-on-warning ("LOW") describes a strategic doctrine that calls for the retaliatory launch of bombers and/or missiles on receipt of warning that a missile attack is underway. This doctrine, which requires a retaliatory strike before the attacking warheads reach their intended targets, is sometimes called "launch on positive or confirmed notification of attack" to distinguish between the possible and actual attack. In United States strategic doctrine, LOW is treated as one of two primary "prompt launch" options, the other option being launch-under-attack ("LUA"). Under LUA, the United States National Command Authority ("NCA") would wait until confirmation had been received of nuclear detonations on American soil before ordering retaliatory strikes. Under LOW, confirmed detection of missile launches from at least two types of sensors, ground-based radar and satellites, would be adequate.

26. See BERES, *APOCALYPSE*, *supra* note 7, at 86-92 (discussing various means by which the authority to launch preemptive nuclear strikes can be delegated amongst various military and elected officials).

expanded risks of accidental or unauthorized attacks against each state's own armaments and population centers.²⁷

D. RATIONALITY OF ENEMY LEADERS

Perhaps the single most important factor in both Indian and Pakistani judgments concerning preemption will be the assumed rationality of the other's decision-makers.²⁸ If leaders are expected to strike with nuclear forces irrespective of anticipated enemy counterstrikes, deterrence will not work. For both India and Pakistan, this means that enemy strikes would be expected even if each state's leaders understood that the other had "successfully" deployed its own nuclear weapons, that the prospective target state's own nuclear weapons were entirely capable of penetrating enemy active defenses, and that the prospective target state's own leaders were altogether willing to retaliate.

Faced with a potentially irrational enemy bent upon aggression, both India and Pakistan could calculate that there was no reasonable option but to abandon reliance on nuclear deterrence.²⁹ Here, a pre-

27. The great time constraints on decision-makers under prompt launch options, and each enemy state's obvious uncertainty about thresholds of attack above which the other's decision-makers would opt for prompt launch, create a number of risks. Moreover, even if well-defined thresholds were known to Indian and Pakistani leaders, they could be low enough to be seriously destabilizing.

28. India or Pakistan will expect the other to accept or reject a first-strike option by rationally comparing the costs and risks of each alternative. Where the expected costs of striking first exceed expected gains, deterrence should be successful. Where these expected costs are believed to be exceeded by expected gains, nuclear deterrence will fail. Either India or Pakistan will be faced with an attack from the other, whether as a "bolt from the blue" strike or as an outcome of crisis escalation. These scenarios assume a rational, unitary, and value-maximizing decision-maker with one set of specified goals, one set of perceived options, and a single estimate of the consequences that ensue from each alternative. Thus, the rational Indian and Pakistani decision-maker is assumed to evaluate alternatives in his strategic environment on the basis of his preferences among them, to operate according to a preference-ordering that is consistent and transitive, and to always choose the preferred alternative. An oft-ignored problem with rationality-based assumptions is that they are concerned only with preference-maximizing intentions. A state may indeed meet all of the requirements of rationality, but may still commit errors in calculation that undermine deterrence.

29. In the absence of perceived irrationality, there would be no need to abandon reliance upon nuclear deterrence. The credibility of either state's nuclear deterrent would depend not only upon secure nuclear weapons, but also upon secure com-

emptive strike could be labeled imperative. The only remaining questions would be tactical, oriented toward matters of timing, targeting, and configurations of ordinance.

II. POTENTIAL STRATEGIES OF INDIA AND PAKISTAN

Both nuclear and non-nuclear preemptive strikes³⁰ by India or by Pakistan could lead to nuclear exchanges. This would depend, in part, on the effectiveness and breadth of the preemptive strike, the surviving number of enemy nuclear weapons, and the willingness of enemy leaders to risk nuclear counter-retaliations. The likelihood of nuclear exchanges would be greatest where both states were allowed to deploy ever-greater numbers of nuclear weapons. Should this happen, both India and Pakistan might effectively forfeit the non-nuclear preemption option, and each could be forced to choose between a no-

mand/control/intelligence operations. To reduce the risks of "decapitation," both Indian and Pakistani military planners will have to consider the complex relationships between invulnerability and pre-delegations of launch authority. This means that an essential aspect of Indian and Pakistani nuclear deterrence could include expanding the number of authoritative decision-makers who would have the right to launch nuclear weapons under certain very carefully-defined residual contingencies. Yet, as in all other aspects of nuclear weapons and military planning, there would be negative factors to consider. Because the deterrence value of expanded decisional-authority to launch would require that prospective attackers to learn in advance that India/Pakistan had taken these decapitation-avoidance pre-delegations, these states might feel increasingly compelled to launch preemptive strikes. Such strikes could fuel new fears of an intentional first-strike, and/or an accidental, unauthorized, or unintentional nuclear strike. Aware of these probable enemy reactions to its pre-delegations of launch authority, which may be complemented by LOW measures, each enemy state could feel compelled to strike first itself.

30. See *The Future of Smart Weapons*, Proceedings from the AAAS Annual Meeting (Feb. 8, 1992). Following Operation Desert Storm, there was considerable sentiment within the U.S. military that conventional weapons may be capable of destroying virtually any hard target formerly assigned to nuclear weapons. At the same time, informed doubts existed concerning the prospect of successful non-nuclear attacks against enemy state nuclear assets. Discussions of Automatic Target Recognition ("ATR"), in the context of cruise missile guidance technology, suggest that prospects for a conventional counterforce capability against mobile systems are still problematic. In addition, weapons with the range and payload to attack hardened targets would have to be extremely large and have to penetrate the ground at very high speeds. Superhard silos and command centers, designed to withstand multimegaton near misses, will likely remain effectively invulnerable to conventional counterforce attacks.

longer-timely nuclear preemption and simply waiting to be struck first.

If nuclear weapons were introduced into actual conflict by India or Pakistan, nuclear conflict would likely ensue so long as first-strikes did not destroy the target's second-strike nuclear capability and retaliation did not destroy the first-striker's nuclear counter-retaliatory capability.³¹ Thus, to avoid nuclear war and to minimize risks of nuclear response, each side will seek to maximize its hard-target kill capability. Should India or Pakistan, or both, calculate that a first-strike attack would destroy the target state's second-strike nuclear capability, they could rationally decide to launch a preemptive strike. Moreover, should the target state calculate, after absorbing an enemy nuclear first-strike, that its retaliation would destroy the first-striker's nuclear counter-retaliatory capability, it could decide, rationally, to undertake such a reprisal. This second decision, of course, would be contingent upon the assumption that the expected security benefits of counterforce reprisal would exceed the expected security costs—i.e., that it would suffer graver harms by not retaliating.

III. EXPECTED CONSEQUENCES OF A NUCLEAR ATTACK

Returning to a more specific discussion of nuclear war outcomes, analysts now need to identify broadly the expected consequences that would be common to each pertinent scenario. Medically, the most widespread and potentially problematic type of injury in any nuclear attack would be burns. One should consider that in the United States, at the Massachusetts General Hospital only fifteen beds are available at any one time for the acute care of burn victims. Just to keep one such patient alive taxes this exceptional facility to the limit. No amount of advanced preparation could provide the human and material resources required for the care of even a few such patients hospitalized simultaneously in any city in the United States, let alone In-

31. See Burns H. Weston, *Nuclear Weapons Versus International Law: Reassessment*, in *NUCLEAR WEAPONS AND LAW* 165, 167-179 (Arthur S. Miller & Martin Feinrider eds., 1984); Burns H. Weston, *Nuclear Weapons and the World Court: Ambiguity's Consensus*, 7 *TRANSNAT'L L. & CONTEMP. PROBS.* 371, 376-390 (1997) (discussing whether the introduction of nuclear weapons into a conflict would be consistent with customary norms of international law).

dia or Pakistan. Yet we must assume that tens, possibly hundreds, of thousands of such casualties would result in every Indian and Pakistani city hit by a nuclear weapon.

There can be no meaningful medical response to the overwhelming health problems that would follow a nuclear attack upon India or Pakistan. These problems would extend far beyond the uncontrollable consequences of prompt burn injuries. A burden of cancer and genetic defects would afflict survivors and future generations. Fall-out would make blast areas uninhabitable for many months. Most area water supplies, sanitation resources, transportation capacities, and industrial production would be destroyed. This raises the question: where would the survivors go?

A. LEARNING FROM THE PAST: HIROSHIMA AND NAGASAKI

To understand the magnitude of destruction, one must refer to the experiences of Hiroshima and Nagasaki. The Hiroshima bomb, a relatively small weapon with explosive power in the range of 20,000 tons of TNT, killed approximately 100,000 people out of a total population of 245,000. Twenty-five percent of the victims were directly burned by the bomb, twenty percent died from radiation effects, and fifty percent died of other injuries. The bomb also destroyed two-thirds of the 90,000 buildings within city limits.

Statistics, however, cannot fully capture the horror of nuclear war. First-hand accounts offer a much more graphic picture:

There were about 20 men . . . all in exactly the same nightmarish state: their faces were wholly burned, their eye sockets were hollow, the fluid from their melted eyes had run down their cheeks . . . their mouths were swollen, pus-covered wounds, which they could not bear to stretch enough to admit the spout of a teapot.³²

From what we already know about Hiroshima, it is evident that even the most limited nuclear exchange between India and Pakistan would spell utter catastrophe. The immediate effects of the explo-

32. JOHN HERSEY, *HIROSHIMA* 68 (1946) (recounting the aftermath of the atomic bombings of Hiroshima).

sions, including thermal radiation, nuclear radiation, and blast damage, would cause widespread death and destruction.”

In the aftermath, those few surviving medical facilities would be taxed beyond endurance. Water supplies would become unusable as a result of fallout contamination. Housing and shelter would become unavailable for hundreds of thousands, perhaps millions, of survivors. Transportation and communication would break down to the most rudimentary levels. Severe food shortages would be inevitable.³⁴

Additionally, India's and Pakistan's networks of interlocking and interdependent exchange systems would be shattered. Virtually everyone would be deprived of the basic means of livelihood. Emergency police and fire services would be decimated and stressed to wholly ineffectual levels. All systems dependent upon electrical power would cease to function.

The severe trauma associated with such destruction would occasion widespread disorientation and psychological disorders for which there would be no therapeutic services. At the time of their initial suffering, the survivors of Hiroshima and Nagasaki reacted to the otherworldly grotesqueness of their condition with what psychiatrists have called “death in life.” Witnessing the appearance of long lines of severely burned, literally melting, ghosts, the survivors found themselves, in Bruno Bettelheim's words, an “anonymous mass,” or in the Japanese term, *muga-muchu*, “without self, without a center.” This understanding is incorporated in the Japanese term for atomic

33. See TOM STONIER, *NUCLEAR DISASTER* 54 (1964) (describing the physical effects of an atomic blast). Victims would suffer flash and flame burns. Retinal burns could occur in the eyes of persons at distances as great as a hundred miles from the explosion. Some would be crushed by collapsing buildings and torn to shreds by flying glass, while others would fall victim to raging firestorms and conflagrations. Fallout injuries would include whole-body radiation injury, produced by penetrating, hard gamma radiation; superficial radiation burns produced by soft radiation; and injuries produced by deposits of radioactive substances within the body. See *id.*

34. See ROBERT JAY LIFTON, *DEATH IN LIFE: SURVIVORS OF HIROSHIMA* 6-7 (1967) (arguing that the total disruption of individual and social order, of one's customary personal and community supports produced consequences that went far beyond immediate physical and emotional suffering).

bomb survivors, *hibakusha*, which delineates four categories of victims.³⁵ According to Dr. Lifton, these categories include:

[T]hose who at the time of the bomb were within the city limits of Hiroshima as then defined; those who came into the city within fourteen days and entered a designated area extending to about two thousand meters from the hypocenter; those who came into physical contact with bomb victims, through various forms of aid or disposal of bodies; and those who were *in utero* at the time, and whose mothers fit into any of the first three groups.³⁶

The effects of Hiroshima were not confined to the immediate or even long-term experiences of those who bore witness, but extended as well to their rescuers, to their progeny, and even to the progeny of their rescuers. Perhaps it is not unreasonable to expand the category of *hibakusha* to include the children of Japanese mothers who do not fit into one of the three above-mentioned groups, post-World War II generations of Americans who share the historic burden, or even humankind as a whole.

B. PREDICTING THE FUTURE: INDIA AND PAKISTAN

Following a nuclear war between India and Pakistan, normal society would cease to function and would remain chaotic for many years to come. The pestilence of unrestrained murder and banditry would augment the pestilence of plague and epidemics. With the passage of time, many of the survivors could expect an increased incidence of degenerative diseases, various kinds of cancer, premature death, impairment of vision, and increased sterility. Among the survivors of Hiroshima, for example, an increased incidence of leukemia and cancer of the lung, stomach, breast, ovary, and cervix has been widely documented.³⁷

Many of the most delicately balanced relationships in nature would also be upset by the extensive fallout. In this regard, Indians and Pakistanis who survive a nuclear exchange would likely have to

35. See *id.* at 7 (stating that this feeling of anonymity is incorporated into the Japanese term for atomic survivors, *hibakusha*).

36. *Id.* at 6-7.

37. See STONIER, *supra* note 33, at 112.

deal with enlarged and voracious insect populations. According to biologist Tom Stonier:

Mushrooming insect populations are likely to spread from the radiation-damaged areas in which they arose, and, like the locusts of biblical times, wreak havoc in previously undamaged areas. Accompanying the insect plagues would be the plant diseases transmitted by insects, particularly those diseases which attack plants that have been injured or weakened by insect or radiation damage. The combined assault of radiation, insects, disease, and fire could temporarily strip off the plant cover of vast areas. If the attack is sufficiently widespread, it is conceivable that a few years later almost all the forests would have been destroyed, and most of the countryside would have become converted into marginal grasslands, if not actually stripped, leaving a naked earth to be ravaged by the ever-present forces of erosion.³⁸

It is also certain that the biological and ecological effects of a nuclear war would be felt by other states in the region. Radioactive fallout does not respect political boundaries. For yields in the low-kiloton range, the fallout cloud would remain in the lower atmosphere, and its effects would likely remain local. That is, these effects would not extend beyond the boundaries of the combatant states. But for yields exceeding thirty kilotons, parts of the clouds of radioactive debris would “punch” into the stratosphere, affecting non-combatant states as well.³⁹

Moreover, throughout the South Asian region, tens of thousands of rotting, unburied corpses would create an enormous health threat. In

38. *Id.* at 135. See also Herbert Abrams & William E. Von Kaenel, *Potential for Spread of Epidemic Disease in the Aftermath of Nuclear Conflict*, 305 NEW ENG. J. MED. 1226, 1228 (1981) (presenting a stark and sobering assessment of the potential for an explosive growth of insect populations following a nuclear exchange). The authors assert:

The fact that insects are generally more resistant to radiation than humans, along with the prevalence of corpses, waste, and untreated sewage, the depletion of birds, and the destruction of insecticide stocks and production, will engender a huge increase in insect growth. Mosquitoes would multiply rapidly after an attack. The fly population would explode. Most domestic animals and wild creatures would be killed. Trillions of flies would breed in the dead bodies. Uncontrolled growth in the insect population may sharply limit the capacity to control such diseases as typhus, malaria, dengue fever and encephalitis.

Id.

39. See UNITED STATES ARMS AND DISARMAMENT AGENCY, *supra* note 9, at 7.

many areas, radiation levels would be so high that corpses could remain untouched for weeks or even months. With transportation destroyed, survivors weakened, and myriad post-war reconstruction tasks to be performed, corpse disposal would be difficult, if not impossible. In order to bury the dead, areas even larger than India's and Pakistan's now destroyed cities could be required for the cemetery.

CONCLUSION

Fear and reality go together naturally. Unless both Indian and Pakistani decision-makers come to acknowledge the mutually intolerable consequences of a nuclear war in South Asia, they may begin to think of nuclear weapons not as instruments of deterrence, but as "ordinary" implements of warfighting.⁴⁰ With such an erroneous view, reinforced by underlying commitments to *Realpolitik*⁴¹ and nationalistic fervor,⁴² they might even begin to take steps toward the atomic brink from which retreat would no longer be possible.

"In a dark time," says the poet Theodore Roethke, "the eye begins to see."⁴³ Embedded in this ironic observation is an important mes-

40. In considering the operation of deterrence in the South Asian theatre, it is important to note that such deterrence may determine the adequacy of pertinent international law. The adequacy of international law in preventing an India-Pakistan nuclear war will depend in large part upon the success or failure of pertinent country strategies in the region. Thus, these strategies must be considered an essential component of international law.

41. The presumed obligation to rely upon armed force in a world of international anarchy—the Westphalian System—forms the central argument of *Realpolitik*. From the *Melian Dialogues* of Thucydides, to Cicero, to Machiavelli, to Locke, to Spykman, to Kissinger, this obligation is taken as uncontestable and irrevocable: "For what can be done against force without force?" asks Cicero, in one of his *Letters*. E.G. SIHLER, *CICERO OF ARPINUM* (1969). Later, in our own century, Nicholas Spykman replies: "In a world of international anarchy, foreign policy must aim above all at the improvement or at least the preservation of the relative power position of the state." NICHOLAS JOHN SPYKMAN, *AMERICA'S STRATEGY IN WORLD POLITICS* 41 (1942).

42. Large numbers of both Indians and Pakistanis appear to favor these steps. Television news cameras in each capital, following the respective announcements of successful nuclear tests, recorded decidedly impassioned expressions of nationalist pride. Perhaps the reason for such belligerent chauvinism is that "[i]ndividual man sees in his country the realization of his earthly immortality." HEINRICH VON TREITSCHKE, *LECTURES ON POLITICS* 205 (Blanche Dugdale & Torben de Bille trans., 1916).

43. ROBERT JAY LIFTON, *THE NAZI DOCTORS* 466 (1986) (quoting Theodore

sage for India and Pakistan. Look closely at the expected consequences of a nuclear war. Look closely at the available "arsenal" of international legal measures, at available treaties, customs, and general principles.⁴⁴ Do not be lulled into complacency by anesthetized and sanitized accounts of nuclear warfighting. Acknowledge the mutually beneficial expectations of world order.⁴⁵

On the Indian subcontinent, nuclear war would inevitably be an incurable disease. The only hope for such a terminal illness lies in prevention, perhaps through the creation of a South Asian security regime.⁴⁶ For both India and Pakistan, there can be absolutely no meaningful idea of "victory" associated with nuclear war. The idea that the concept of "victory" has no place in a nuclear war is as old as the Atomic Age. Long before the Atomic Age, certain philoso-

Roethke); see also THEODORE ROETHKE, *In a Dark Time*, in COLLECTED POEMS 239 (1966).

44. Norms of customary international law bind all states regardless of whether a State has ratified the pertinent codifying instrument or treaty. International law compartmentalizes apparently identical rights and obligations arising both out of customary law and treaty law. See *Military and Paramilitary Activities (Nicar v. U.S.)*, 1986 I.C.J. 4, 95 (June 27) (discussing the co-existence of similar rights and obligations under international customary law). The court stated that "[e]ven if two norms belonging to two sources of international law appear identical in content, and even if the states in question are bound by these rules both on the level of treaty-law and that of customary international law, these norms retain a separate existence." *Id.*

45. See generally GRENVILLE CLARK & LOUIS SOHN, *WORLD PEACE THROUGH WORLD LAW* xi-xxxi (1966) (explaining the concept of "world order"). See also LOUIS RENÉ BERES & HARRY R. TARG, *CONSTRUCTING ALTERNATIVE WORLD FUTURES: REORDERING THE PLANET* (1977); Louis René Beres, *Reordering the Planet: The Four Phases of World Order Design*, in *PLANNING ALTERNATIVE WORLD FUTURES: VALUES, METHODS AND MODELS* 50, 50-59 (Louis René Beres & Harry R. Targ eds., 1975); LOUIS RENÉ BERES, *PEOPLE, STATES AND WORLD ORDER* (1981); LOUIS RENÉ BERES, *REASON AND REALPOLITIK: U.S. FOREIGN POLICY AND WORLD ORDER* (1984).

46. A security regime identifies "those principles, rules, and norms that permit nations to be restrained in their behavior in the belief that others will reciprocate. This concept implies not only norms and expectations that facilitate cooperation, but a form of cooperation that is more than the following of short-run self-interest." Jervis, *supra* note 18, at 173. It follows from this definition that an effective South Asian security regime will have to overcome the so-called "tragedy of the commons" between India and Pakistan. This is the problem of decision that arises among states when the benefits of cooperation are contingent upon the expectation of reciprocity. See Garret Hardin, *The Tragedy of the Commons*, 162 *SCI.* 1243-48 (1968) (popularizing this "tragedy"). See also Louis René Beres, *Bipolarity, Multipolarity and the Tragedy of the Commons*, 26 *W. POL. Q.* 649, 649-50 (1973).

phers and military strategists probed the idea of victory with reasoned sensitivity. Machiavelli, for example, recognized the principle of an "economy of violence" that distinguishes between creativity and destruction. Machiavelli understood the differences between violence and power.⁴⁷ Later, Hannah Arendt reflected on this distinction, elucidating a situation wherein the technical development of the implements of violence had outstripped any rational justifications for their use in armed conflict. Hence, said Arendt, war in the atomic age is no longer the final arbiter in world politics, but rather an apocalyptic chess game that can bear no resemblance to earlier games of power and hegemony. In such a game, if either wins, both lose.⁴⁸ Even Clausewitz understood, before the nuclear age, that war must always be undertaken with reference to postwar benefit, and that the principle of "utmost force" must always be qualified by reference to the "political object." Moreover, B.H. Liddell-Hart stated:

The object in war is to attain a better peace - even if only from your own point of view. Hence, it is essential to conduct war with constant regard to the peace you desire. This is the truth underlying Clausewitz's definition of war as 'a continuation of policy by other means' - the prolongation of that policy through war into the subsequent peace must always be borne in mind. A state which expends its strength to the point of exhaustion bankrupts its own policy and future.⁴⁹

Furthermore,

[v]ictory in the true sense implies that the state of peace, and of one's people, is better after the war than before. Victory in this sense is only possible if a quick result can be gained or if a long effort can be economically proportioned to the national resources. The end must be adjusted to the means. Failing a fair prospect of such a victory, wise statesmanship will miss no opportunity for negotiating peace. Peace through stalemate, based on a coincident recognition by each side of the opponent's strength,

47. See SHELDON S. WOLIN, *POLITICS AND VISION: CONTINUITY AND INNOVATION IN WESTERN POLITICAL THOUGHT* 195-238 (1960) (discussing Machiavelli's views regarding power and violence).

48. See HANNAH ARENDT, *ON VIOLENCE* 3 (1970).

49. B.H. LIDDELL-HART, *STRATEGY* 353 (1974)

is at least preferable to peace through common exhaustion - and has often provided a better foundation for lasting peace.⁵⁰

Finally, we may recall the words of Henry Kissinger: "In the nuclear age, victory has lost its traditional significance. The outbreak of war is increasingly considered the worst catastrophe. Henceforth, the adequacy of any military establishment will be tested by its ability to preserve the peace."⁵¹ The adequacy of the respective military establishments of both India and Pakistan can now be demonstrated only by their ability to preserve the peace.

50. *Id.* at 357.

51. HENRY KISSINGER, THE NECESSITY FOR CHOICE: PROSPECTS OF AMERICAN FOREIGN POLICY 12 (1962).