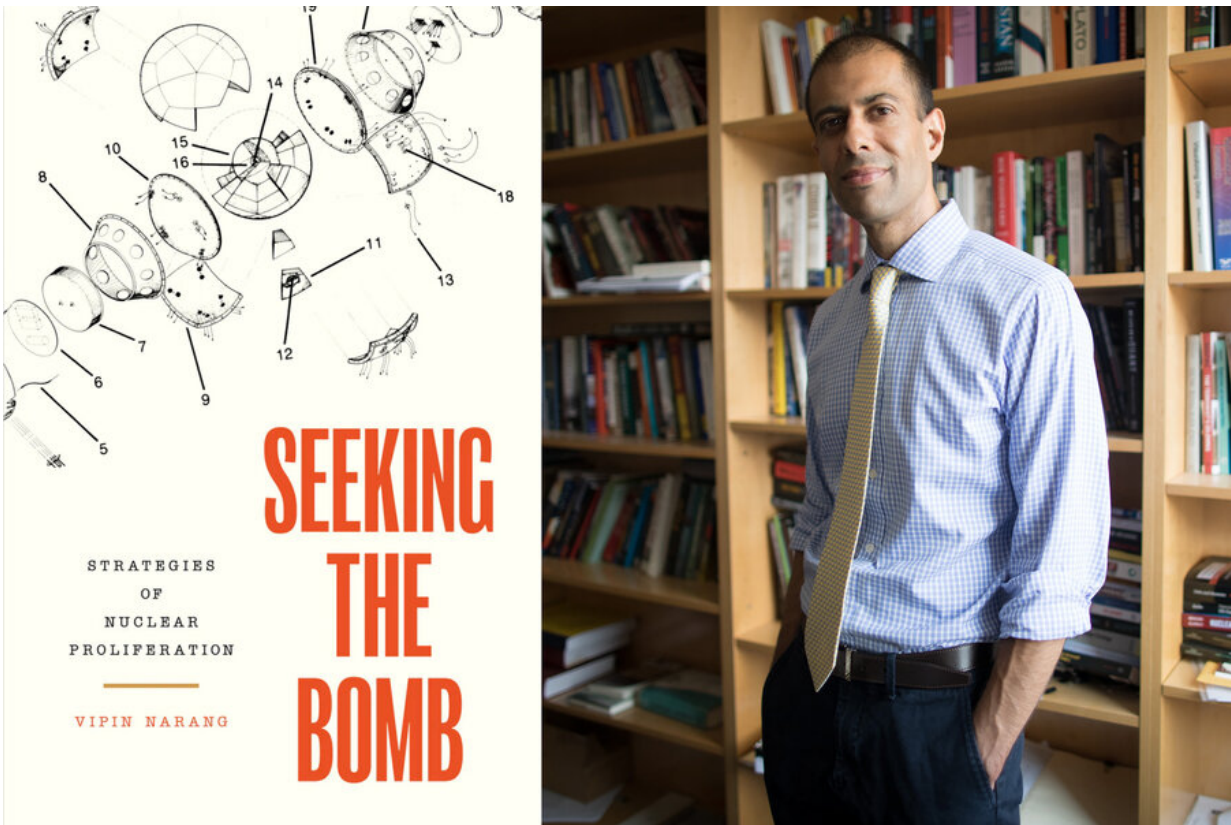


# A look at how countries go nuclear, and why some do not

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Caption: In his new book, “Seeking the Bomb,” Vipin Narang looks at the variety of tactics countries use as they attempt to acquire nuclear weapons. Credit: Bryce Vickmark

In 1993, South Africa announced to a largely surprised world that it had

built nuclear weapons in the 1980s, before dismantling its arsenal. For the first time, a country outside of the elite world powers had obtained nuclear capabilities while keeping matters a secret from almost everyone else.

To this day, South Africa remains the only country to have pulled off that exact trick. Other countries have gone nuclear in other ways. A half-dozen countries with more economic and political clout than South Africa have built weapons on their own timetables. Three other countries—Israel, Pakistan, and North Korea—have developed nuclear weapons while being supported by larger allies. And many wealthy countries, including Australia, Brazil, Germany, Japan, and South Korea, have chosen not to pursue weapons programs.

Recognizing these different paths to proliferation is an essential part of arms control: Grasping how one country is pursuing nuclear weapons can help other countries constrain that pursuit.

"There's meaningful variation in how states have thought about pursuing nuclear weapons," says Vipin Narang, an MIT political scientist and expert on nuclear strategy. "It changes how we think about stopping them. It changes how we think about managing them. It's an important question."

Narang believes that too often, we imagine that all countries pursue nuclear weapons the way the U.S. and Soviet Union did during and after World War II—a swift race culminating in the rapid buildup of arsenals, leaving little room for intervention. But that paradigm applies to almost no other country.

"We think of proliferators as a stylized Manhattan Project," says Narang, the Frank Stanton professor of Nuclear Security and Political Science at MIT. "But the U.S. and the Soviet Union are really the only ones who

had Manhattan projects, and the rest of the nuclear weapons powers look different."

Narang has detailed these differences in a new book, "Seeking the Bomb," published today by Princeton University Press. In it, he develops a comprehensive typology of nuclear programs around the world; examines why countries take different routes to nuclear development; and outlines the policy implications.

"There is a growing likelihood that the United States will have to confront proliferation attempts from not just foes but friends and frenemies as well," Narang writes in the book.

## **Sprinters and hedgers**

In recent decades, scholarship has usually focused on why countries acquire nuclear weapons—with the leading answers being security, prestige, and domestic political dynamics. But Narang's book centers the question of how, not why, countries seek to become nuclear-equipped.

"No one had asked how states pursue nuclear weapons, and examined the different ways they have to deal with nonproliferation [agreements], their own resource constraints, domestic politics, and states trying to stop them," Narang says.

At least 29 countries have made efforts to become nuclear; 19 have specifically tried to develop nuclear bombs, and 10 have succeeded. Narang's book puts all of them into four categories: countries he labels "sprinters," "hedgers," those benefitting from "sheltered pursuit," and "hidlers."

The "sprinters," the simplest category to understand, consist of the U.S., Soviet Union, Great Britain, France, China, and India—big countries

that could develop nuclear weapons independently, and did.

Then there are "hedgers," the countries that have potential to develop nuclear weapons but hold off doing so, because of geopolitical considerations or a lack of domestic political support. Germany, Japan, and South Korea are U.S. allies who are not eager to make themselves targets for nuclear-armed states, and instead work with the U.S. on defense matters. Should U.S. support waver, those countries might be more likely to pursue their own programs.

"Seeking the Bomb" actually details three subcategories of hedging. Japan and Germany are "insurance hedgers," wary of American abandonment. "Hard hedgers," such as Sweden or Switzerland, are not as close to the U.S. but still decided not to pursue weapons acquisition. And "technical hedgers," including Argentina and Brazil, have technological pieces in place for nuclear program but have not weaponized those capabilities.

"Hedging is very prominent across countries, including Japan, South Korea, Turkey, Saudi Arabia, and Iran," Narang says. "It's a really meaningful category that is written out of the proliferation literature because we all focus on states that get the bomb, and not the ones that don't know if they want it yet. They put the pieces in place to exercise the option quickly if they decide to."

By contrast, countries undertaking "sheltered pursuit" use their alliances with superpowers to develop nuclear weapons. Israel, for one, could finish building nuclear weapons in the 1960s partly because of tacit support from the U.S. By 2006, North Korea had built its own weapons with the partial support of China.

"North Korea wouldn't have been able to get nuclear weapons without China giving it shelter," Narang observes.

## Hide and seek

Very few countries find themselves in the situation where a powerful ally will tacitly endorse their nuclear program, however. And if a country wants nuclear weapons but cannot get help from a superpower, it is most likely to work in secret. These are the "hidiers," in Narang's typology.

"If you don't have shelter, then your only option is to hide," Narang says. "And hiding is a very risky strategy, as most get caught along the way—Libya, Iraq, Syria."

In 2007, for instance, Israeli jets bombed a North Korea-designed nuclear reactor built in Syria, where President Bashar al-Assad had been pushing a nuclear program forward.

"No one thought Assad would try to hide a North Korean nuclear reactor above ground," Narang says. "He came within weeks of the finish line." Moreover, Narang adds of such leaders, "Often times the calculation is they'll lose the program but not the regime," Narang says. "Assad lost the reactor, but he's still in power." In other cases, such as Iraq and Libya, U.S. military action drove nuclear-minded leaders from power.

And yet, the case of South Africa indicates it is at least possible to push a covert nuclear program all the way through.

"South Africa is every hider's inspiration," Narang says.

At the time, the U.S. had suspected South Africa was engaged in a nuclear program, and then-South Africa President Pik Botha had told U.S. leaders in 1981 that the country had expanding nuclear "capacities." But the U.S. had little concrete information about what was really happening.

"South Africa's really the only hider that got out of the barn," Narang says. "Neither the U.S. nor the Soviet Union wanted South Africa to get nuclear weapons, but because it was in the Southern Hemisphere, we didn't have good eyes on the program, and [the country] was very good at hiding and obfuscating what its enrichment and plant capabilities were."

So on the one hand, the South African case remains an anomaly. Still, "hidiers" can be very dangerous to global stability.

"It's most likely they create the risk of a crisis when they're discovered and the great powers seek to end the program," Narang says. "And if they succeed, precisely the states you least want to have nuclear weapons, have nuclear weapons. Either way a hider is disruptive. ... It either ends poorly for them, or it ends poorly for us."

## **The future: Nuclear arms management**

"Seeking the Bomb" includes a model Narang built incorporating certain factors—technical capabilities, domestic politics, strategic considerations—that should lead countries into one category of weapons development or another. Narang found the model correctly predicts over 85 percent of the historical cases correctly. That could help policy experts and other analysts assess future nuclear threats.

"I think there are two categories that are going to be particularly prominent in coming decades," Narang says. "In the Middle East, you're going to have a contagion of hedgers." At the same time, he says, "Hidiers are getting smarter. ... I don't take it for granted that we'll be able to stop all hidiers indefinitely. These hedgers and hidiers are going to be the most prominent categories in the future."

Both "hedgers" and some "hidiers" can be dealt with diplomatically,



Narang observes, through means such as the 2015 Joint Comprehensive Plan of Action [JCPOA] that limited Iran's nuclear program but has now been dropped by the U.S.

"The JCPOA is rare because there are very few instruments and vehicles that have pushed states back from hiding to hard hedging," Narang says. "For it to be torpedoed over domestic politics is just a tragedy. There's no guarantee we're going to get back to it."

"Seeking the Bomb" has been praised by other political scientists. Caitlin Talmadge, an associate professor of security studies at Georgetown University, called it "an exceptional book, one of the most important to come out in the field in decades," adding: "It will become the definitive work on its subject matter and be widely read by academic, policy, and general audiences."

For his part, Narang emphasizes the fraught nature of today's nuclear landscape. After a few decades trending toward disarmament, nuclear stockpiles are growing, and nuclear proliferation is less a problem that can be ended than an issue that needs astute management.

"Everybody wants a solution to the nuclear problem," Narang says. "I think my conclusion, while pessimistic, is realistic. While nuclear technology exists, [nuclear weapons](#) are unlikely to go away. It's not a problem to be solved, it's a problem to be managed. I think for the next several decades we'll be dealing with these problems."

**More information:** Seeking the Bomb: Strategies of Nuclear Proliferation. [press.princeton.edu/books/pape ... 620/seeking-the-bomb](https://press.princeton.edu/books/paper/9780691162062/seeking-the-bomb)

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