



Modern science is necessarily international, and geographic borders play a dwindling role in defining issues scientists take on: poverty, climate change, shortages of food and water. Here, in the third installment of our Revolutionary Minds series, we profile eight revolutionary thinkers whose global research has the potential to effect worldwide change. They exemplify what it means to work without borders, defying not only geographic barriers but also far more profound ones—those that seem to limit access to vital resources in so many parts of the world.

They are doing so by refusing to be confined to the traditional territory of any one discipline. When we set out to find researchers tackling the problems of water scarcity, climate change, or conflict, what we discovered was that today's leading lights cannot be so easily categorized. They pursue peace by promoting conservation, conservation by improving human health, health by borrowing lessons from business. The most innovative minds we came across were consistently the most interdisciplinary ones. By expanding the boundaries and the reach of traditional scientific research, they are reimagining the world's future. —Emily Anthes





## Saleem Ali

The Siachen Glacier, in the Himalayas, is a frozen battleground. The 20,000-foot-high region of Kashmir has been the source of a longstanding ownership dispute between India and Pakistan, one that has cost the nations more than 15,000 casualties combined. In addition, the decades-long conflict has generated tons of human and military waste, contaminating a glacier that is home to numerous species of threatened flora and fauna and supplies freshwater to hundreds of millions of people.

Now, the **damage to the glacier may provide a way out of the military conflict.** Saleem Ali is lobbying to turn Siachen into a nonpolitical "peace park," a move that could not only preserve an important ecosystem but also provide a face-saving exit strategy for both nations. In this way, Ali says, the environment, so often a source of conflict, can be used to promote peace.

"Far too often, we consider environmental issues in terms of resource scarcity," says Ali, who grew up in Pakistan and is now an environmental studies professor at the University of Vermont. "That necessitates some kind of a conflict framework. Whenever you're trying to divide up the pie, you end up in a conflict." But, he says, "you can reframe the problem and make environmental quality an issue. Depleting the quality of the environment is going to be something that neither side would want, so you can cooperate over it."

In collaboration with other scientists, Ali has drawn up plans that call for cleaning up Siachen and turning the glacier into a conservation and research zone. The armed forces would not have to withdraw completely from the re-

gion, but could be trained as rangers responsible for maintaining the park. "We have tried to reach out to the armed forces directly," says Ali, who has already enlisted the support of former military officials in both India and Pakistan. "In order for this to work, you have to think of some strategic opportunities for the army."

The peace park proposal has been submitted to both governments, which are planning talks later this year, Ali says, but the road ahead won't be easy. For instance, when Ali helped organize a scientific meeting, funded by the National Science Foundation, about the proposal, the US delegation ended up having to shuttle back and forth between two different meetings—one in India, one in Pakistan—because neither government would approve visas for the other side's scientists. A truly bilateral meeting is planned for this fall in Nepal, relatively neutral territory.

As the wheels turn on the Siachen proposal, Ali will press on with other projects. His edited volume on peace parks will be published this fall, and he will continue his involvement with the Pakistani *madrassahs*, or Muslim schools, where he is establishing an environmental science curriculum. He has secured funding from the US Institute of Peace to work with the schools, which are often viewed as incubators of ethnic conflict and sectarian violence. Ali hopes, however, to illustrate the importance of harmony and accord by fostering an appreciation for science. "Science has a certain objective quality," he says. "In order to really get good science, you have to have some sort of cooperation." **1**

Photograph by Mark Mahaney