

## Science and the War

**F**rom “Inspection Science” (28 February, p. 1281) this page has moved, in only 4 weeks, to “Science and the War.” The tide of affairs has brought the United States and the United Kingdom from the place they were a month ago—in a diplomatic struggle to find allies—to a go-it-almost-alone invasion. That change invites us to ponder what role science will play in the moving target the war now presents. Ignoring at some risk the likelihood that predictions will be trumped by changing events, here are some ways in which science may play a role as the campaign and its aftermath unfold.

First, there are the weapons of war. Few doubted at the outset that the superior military technology would yield reasonably swift victory for the coalition force. But the military and media gloss on the sophistication of these weapons raised expectations that may be difficult to meet. As the conflict stiffens, will smart bombs really be smart enough to be used over several weeks, yet avoid collateral civilian damage that will fulfill the worst fears of the French and Germans? In this first major war to be fought before a skeptical, deeply divided world audience, the test for intelligent ordnance could hardly be sterner.

We know that Iraq has had chemical and biological weapons in the past. That introduces new hazards for ground troops—hazards for which, we are assured, our military has prepared carefully. The science we will need in order to discover what goes wrong with the health of soldiers in time to treat it is explored on page 1966. The circumstances in this case raise the ante on “battlefield epidemiology.” The memory of the Gulf War and the illness that followed it in many coalition soldiers is strong, perhaps partly because the etiology has still not been adequately explained. This time around, we may expect new threats that may be equally difficult to diagnose, even with doctors trailing each battle group. Our systems of public health surveillance have not done very well in the context of domestic terrorism and seem unlikely to do better after being exported to a war zone.

Then there is the matter of the possible presence, on or beneath the turf we are capturing, of weapons of mass destruction (WMD). During the abbreviated United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) inspections, the items that turned up were somewhat ambiguous: tubes that might have been intended for enrichment centrifuges, or might have had some other use; missiles that might have flown a bit farther than allowed. The inspectors themselves are chagrined that their mission was cut off prematurely (see page 1967). President Bush has already charged the UN with failure—not only for not enforcing its declared will through a Security Council resolution, but also for an inspection process that could not uncover what he knew was there.

Surely this provides a political incentive to find something. It won’t take much science to diagnose canisters of weaponized anthrax or basement caches of nerve gas, especially if they are used. But what if the discoveries are, like those of UNMOVIC, not clearly in the WMD category? What kind of science and technology will be called on to decide, and what objective body will be charged with the task? The retroactive justification for this military action may well depend on what is found, by whom, and how those findings are described.

Finally, there is the task of reconstruction. France and Russia have already sent unfortunate signals that they won’t enlist for the peace either. Perhaps others will—but whatever nations and agencies join in, the work will need the full arsenal of science and technology: to repair infrastructure, to deliver aid to civilians, to protect the public health, and to start rebuilding a national economy. That will require coordination and leadership. Three weeks ago on this page, UN Secretary General Kofi Annan wrote of the scientific community and the UN as “indispensable partners.” Hope for a peaceful Iraq solution was still alive then. Now we must engage with the challenge of undoing the work of war—and for that task, science and technology will be vital. Whatever the US president thinks of the UN, it is hard to identify another institution that can serve as the “indispensable partner.”

**Donald Kennedy**  
*Editor-in-Chief*



**A Czech soldier retrieves information from a device that detects gases a few hours after the U.S.-led attack on Baghdad.**

# Science

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*Science* **299** (5615), 1945.

DOI: 10.1126/science.299.5615.1945

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