nuclear age, and indicated some examples of how this has affected the Agency and its work, there is much more to learn about the changing role of technical assistance as an institutional lever. As noted, technical assistance has served as an incentive, reward, and negotiating instrument. However, it remains unclear how much was actually achieved by this program, and whether it may have had unintended consequences. Fertile areas for future research include the impact of the technical assistance programs in the field, and how changing understandings of proliferation risks have affected the kind of assistance offered by the Agency. Finding answers to these questions can shed new light on a crucial international organization, and inform a better understanding of the origins and evolution of the global nonproliferation regime.

Essay by Matthew Bunn, Harvard University

If the International Atomic Energy Agency (IAEA) had not been created sixty years ago, the world would be a poorer and more dangerous place. As suggested by its 2005 Nobel Peace Prize, the IAEA has become an essential pillar of the global nuclear order, strengthening international security, nuclear safety, and international cooperation on the peaceful uses of nuclear technologies.[15] The IAEA can never be the *only* forum for international action in these areas, but it is a central one.

Fashioned sixty years ago, the IAEA Statute, like the U.S. constitution, has proved to be a flexible instrument, providing underlying guidance and direction while allowing for adaptation and interpretation as the needs of the day evolve.[16] Some Statute provisions–such as the idea of the IAEA receiving and managing large stocks of special fissionable material for states to use, or inspectors having anywhere, anytime access–have never been used. But in other areas, the Statute's broad mandates, such as the authority to "perform any operation or service useful" to research, development, or the practical application of peaceful nuclear technologies; to "establish and administer" a safeguards system covering any "bilateral or multilateral arrangement" that states ask it to verify; and to "establish or adopt… standards of safety," give the IAEA broad latitude to play a range of critical roles. Consider, for example, the IAEA's changing or potential roles in nuclear safety and security, in nonproliferation verification, and in disarmament verification.

Safety and Security

The Statute clearly outlines an important IAEA role in nuclear safety, authorizing

it to establish safety standards and to ensure that they are followed in its own operations, in the use of material or facilities it provides or under its "supervision or control," and in any state or grouping of states that asks the IAEA to play this role. Nevertheless, the IAEA's safety programs were quite modest until the Chernobyl disaster provided the jolt that kicked the international community into action and led to the creation of much of the international safety regime we know today–the Convention on Nuclear Safety, the IAEA's safety review services, industry organizations such as the World Association of Nuclear Operators (WANO), and more.

The meltdowns at Fukushima Daiichi a quarter century later provoked a variety of steps to strengthen these international programs and institutions, but did not, unfortunately, lead to similar institutional innovation. Proposals for new agreements or to make compliance with IAEA safety standards mandatory for all member states went nowhere, and the IAEA gained no new authorities. Hence, today, despite the Statute language referring to inspectors verifying compliance with the IAEA's "health and safety" standards, there is no such obligation: the IAEA's safety role remains voluntary, limited to providing reviews and services when states ask it to do so.

In nuclear security, the IAEA's efforts were strengthened dramatically after the 9/11 attacks in the United States in 2001. Perhaps because those attacks did not target a nuclear facility, and many in the nuclear community downplayed the risks of nuclear terrorism and sabotage, the international nuclear security regime remained far weaker than the nuclear safety regime. Despite encouraging progress from the nuclear security summits initiative of U.S. President Barack Obama, the global nuclear security regime remains a patchwork that is clearly insufficient to the task of ensuring effective and lasting security for all nuclear weapons and nuclear and radioactive materials facilities worldwide–and the path that global nuclear security efforts will take with the end of the summit process remains uncertain.[17] The IAEA's nuclear security recommendations do not have the same status as its safety standards; the requirements of international conventions and voluntary commitments are weaker; and despite the important creation of the World Institute for Nuclear Security (WINS), there is no industry organization routinely conducting peer reviews of security performance around the world, as WANO does for nuclear safety. In the secrecy-shrouded world of nuclear security, even more than in nuclear safety, states have been reluctant to compromise on any aspect of their sovereign control, despite the overwhelming interest that all states have in making sure other states are protecting nuclear weapons and materials appropriately.

The Statute, written at a time when international terrorists did not yet pose a

major problem, does not even mention nuclear security, and initially, some states argued that security was outside the IAEA's mandate. But security is clearly important to the future of the peaceful applications of nuclear energy, and the Statute gives the IAEA a broad mandate to "perform any operation or service useful" in that cause. Today, the IAEA's nuclear security role is broadly accepted and growing, with both the ministerial statement of the 2013 IAEA nuclear security conference and repeated resolutions of the Board and the General Conference strongly supporting the IAEA's nuclear security activities.

For both safety and security, the Statute leaves a major gap in the IAEA's work that is not likely to be closed: the IAEA addresses only civilian materials and facilities. States are left to their own devices to ensure the safety and security of the nuclear materials and facilities used for defense purposes–even though some 85 percent, for example, of the world's separated plutonium and highly enriched uranium (HEU) is in stocks held for defense, rather than civilian, purposes.

Nonproliferation Verification

The IAEA Statute lays out verification as a central role for the agency, authorizing its inspectors to have "access at all times to all places and data and to any person" working with such materials and facilities. For better or for worse, the actual commitments to access embodied in safeguards agreements–even in Additional Protocols–are a good bit more constrained.

Since the discovery of Iraq's extensive secret nuclear weapons program after the 1991 Gulf war, the IAEA has been struggling to meet the challenge of detecting secret, undeclared nuclear activities (or building confidence in their absence). To that end, the IAEA has been looking for information wherever it can get it–from scientific journal articles, commercial satellite imagery, intelligence provided by member states, and other sources–to try to pull together a comprehensive understanding of each state's nuclear programs, looking for telltale inconsistencies and ambiguities. This has provoked considerable controversy, as some non-nuclear-weapon states–prominently backed by Russia–worry that the approach would be an excuse for political targeting of safeguards on states which were out of favor with the United States and other major powers. Though this dispute has gone to a simmer from a rolling boil, it is clear that the Secretariat will have to continue to demonstrate that its approach is driven by objective considerations.

There is still a great deal more to be done to strengthen safeguards–both in inspecting declared sites and keeping an eye open for undeclared ones. As the text of comprehensive safeguards agreements (based on INFCIRC/153) make clear, in non-nuclear-weapon states the IAEA has a right and an obligation to

ensure that *all* civilian nuclear material is under safeguards, whether declared or undeclared; and given the limits of the IAEA's authorities and capacities, this will remain a challenge.[18] Former IAEA Director General Hans Blix used to say that inspectors could provide confidence in compliance if they were given access to three things—sites, information, and the Security Council. Those three elements–going to see what is happening on the ground, getting as much information as possible to analyze, and having political support from the Security Council—will remain central to the challenges of the future. The heavy reliance on the IAEA to verify the undertakings in the Joint Comprehensive Plan of Action reconfirms the IAEA's central role even in those nuclear issues in which the world's powerful states are most involved–and nonproliferation advocates should seek to encourage more states to accept some of the measures included in that accord, such as the commitment not to pursue certain weaponization-related activities, or the agreement to provide information and access on stocks of centrifuge components. For states found to be in noncompliance, in particular, there is much to be said for former IAEA Deputy Director General for Safeguards Pierre Goldschmidt's proposal for a Security Council resolution automatically giving the IAEA access comparable to that described in the Statute for any state found to be in noncompliance.[19]

Disarmament Verification

Beyond instructing the IAEA to do its business in conformity with UN policies "furthering the establishment of safeguarded worldwide disarmament," the Statute does not explicitly give the IAEA a role in nuclear disarmament. Some complained about former IAEA Director General Mohammed ElBaradei's strong disarmament advocacy, arguing that this was none of the IAEA's business. But the Statute clearly envisions that the IAEA can be asked by states to verify "any bilateral or multilateral arrangement" they enter into–presumably including arms reduction agreements. In the 1990s, under the Trilateral Initiative, Russia, the United States, and the IAEA worked together to demonstrate technologies and procedures (and negotiate the relevant legal agreement) to make it possible for the IAEA to monitor material from dismantled nuclear weapons even if it remained for the moment in classified forms to which international inspectors could not be given direct access. It is past time for the United States and Russia to begin placing their vast stocks of plutonium and HEU under IAEA monitoring, confirming that these stocks will never again be returned to nuclear weapons.[20]

Looking to the Future

Of course, both the Statute and the IAEA itself have flaws and limitations. In a world in which states continue to jealously guard their sovereignty–despite the overwhelming international interest in safe, secure, and proliferation-resistant

management of nuclear technologies–there is only so much the IAEA can do.

Perhaps the most important step that could be taken to ensure a strong future for the IAEA would be to rebuild the political cooperation that characterized the negotiation of the Statute and the IAEA's early years. Surely the political cooperation once hailed as the "spirit of Vienna" can be more than a pleasant memory. In particular, the United States and Russia worked closely together to establish and strengthen the IAEA: if they can find ways to overcome their disagreements and work together again–along with other member states large and small–the prospects for another successful six decades for the IAEA and its Statute will be strong.

Essay by Trevor Findlay, University of Melbourne

The IAEA's Organizational Culture: Realities and Myths

In his classic work *Organizational Culture and Leadership*, Edgar Schein, the guru of organizational culture studies, identifies three levels of culture, "from the very tangible overt manifestations that one can see and feel to the deeply embedded, unconscious, basic assumptions."[21] He designates these as artifacts, espoused values, and underlying assumptions. Artifacts are an organization's visible structure, processes, and symbols. Espoused values are those that an organization publicly proclaims. Underlying assumptions are those unlikely to be articulated publicly, but taken for granted as 'the way we do things around here.'

One of the key cultural artifacts of the International Atomic Energy Agency (IAEA) is its official self-description as: "An independent, intergovernmental, science and technology-based organization in the United Nations system that serves as the global focal point for nuclear cooperation."[22] This slogan reflects several espoused values that the Agency holds dear. Probing deeper reveals that these do not completely accord either with the reality of the IAEA's situation or the underlying assumptions of its organizational culture.

The first element of the Agency's self-description, its declaration of 'independence,' does not mean independence from its member states (although this is sometimes hinted at), but from other parts of the wider United Nations system. This dates to negotiations on the IAEA Statute, during which the United States and its allies pressed for the Agency to be master of its own destiny or, more cynically, one controlled by a Western-dominated Board. They clearly