Environmental and Nuclear Networks in the Global South

For decades, expert bureaucrats have been moving regularly across borders, from their home institutions to international organizations, and forging collaborative networks with peers. Analyzing over twenty-five years of environmental and nuclear technology projects data for 150 countries, this book provides a comprehensive study of international cooperation among elite bureaucrats in developing states. An empirical study that will interest researchers, undergraduate, and graduate students of political and social sciences, this is the first book to explain the causes of transnational cooperation in the Global South and find a link between domestic level of skills and international cooperation. The author methodically illustrates how state experts with high skills can reap the benefits of international technical cooperation. In contrast, bureaucrats with low skills cannot forge stable collaborative ties with foreign peers and gain little from participating in these transgovernmental networks.

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How Skills Shape International Cooperation

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Preface

This book started long ago with the first interviews I conducted with nuclear experts, as part of my dissertation fieldwork. I began researching Nuclear Energy, Science, and Technology (NEST) in order to explain the radical turnaround in nonproliferation policy and strategic scale back adopted jointly by the new civilian governments of Argentina and Brazil in the mid- to late 1980s. After years of building up their nuclear programs and refusing to sign the 1970 Nonproliferation Treaty, these two historic regional rivals began collaborating in NEST. Initially, my assumption was that cooperation in the Southern Cone resulted from democratization: military dictatorships built up the nuclear sector in order to increase their geopolitical standing in the (Cold War) world; once they left power, democrats dismantled the sector. But while perhaps democratic change could explain why civilians in Argentina and Brazil sought greater control over their NEST programs separately, regime transition on its own could not explain why they decided to coordinate their nuclear foreign policy and cooperate in technology development.

In the course of those early interviews at the Argentine National Atomic Energy Commission (CNEA) and the Brazilian National Nuclear Energy Commission (CNEN), state experts on both sides of the border highlighted the close ties that existed between them. In many of these conversations (as well as in later ones with environmental experts), I was told that foreign counterparts often made better allies than their own government. Colleagues abroad experienced similar obstacles: budget cuts, hiring freezes, defunding of projects and programs – they said – and faced the same uphill battle in securing new funding from their political principals. The political leadership, on the other hand, operated within the

limits of the bottom line, which in the 1980s and 1990s trended toward losses.

Not surprisingly, nuclear bureaucrats told me time and again that they were able to anticipate when a new wave of spending cuts would be put in place. Sometimes, given a common history and a shared culture, they could even read the cues of an economic downturn in the neighboring country, which in all likelihood anticipated an eventual downturn at home. Unexpectedly, in these early interviews, they reported seeking alternatives outside of the budget. That is, in order to continue Research and Development activities and deepen existing programs, nuclear experts sought external options. These alternatives included increasing participation in international technical organizations, in particular the International Atomic Energy Agency (IAEA) and above all, cooperating with peers on common projects.

Thus, what came out of those first interviews in Argentina and Brazil was that cooperation in NEST was more of an economic story than a political one. Rather than security concerns separating bureaucrats along borders, with political principals bringing them together after democratization (as I had expected), it was shared economic uncertainties that brought state experts together. Indeed, collaboration between the two South American countries was done on the cheap. Most exchanges were paid in kind, whereby the CNEA would pick up the tab when hosting training exercises with CNEN experts, for example, and CNEN would do the same when hosting their Argentine colleagues. As Chapter 3 of this book reveals, projects were devised on a shared, tight budget and many, despite this, remained unfinished because of the lack of funding on both sides of the border.

In the course of my research I discovered a network of cooperation in NEST that expanded beyond the two advanced nuclear producers of South America. In fact, all three regions of the developing world had networks of state experts collaborating on technical projects in NEST, with some of the projects involving inter-regional cooperation. As it turned out, countries of the Global South had been working together in NEST since the late 1970s, in Asia; mid-1980s, in Latin America; and early 1990s, in Africa. Cross-national projects included applications in nuclear medicine and public health, the environment, and radiation safety. Since the 1970s, the IAEA sponsors these regional networks, but as the following chapters show, rather than funding technical projects, the international organization (IO) helps facilitate coordination among participants.

The interviews I conducted with South American experts uncovered clear preferences for transgovernmental cooperation. Bureaucrats preferred to cooperate with peers in agencies that were equal or superior in resources. For example, Argentines sought to join cross-national projects where Brazilians were participants, and vice versa. Projects in human health proposed by the Cuban state agency in NEST (the Agency of Nuclear Energy and Advanced Technologies or AENTA) with a well-known niche expertise in nuclear medicine were more likely to be adopted as many Latin American experts would sign on. My interviews with African nuclear professionals revealed similar preferences. Projects based in the state laboratories of Northern African states were more likely to be chosen than those proposed by less developed agencies in the region.

The cooperation preferences of NEST bureaucrats across the developing world revealed in turn a shared preoccupation in accessing resources abroad, particularly skills. This led me to the literature on the political economy of skills, discussed at length in the following two chapters. While most of the focus of this scholarship is on the effect of skills on international economic competition, many of its key findings proved of great interest to my research project on domestic skills and international cooperation. The fact that employers and states tend to privilege a certain type of worker (e.g., young, employed, and skilled) when offering training opportunities resonated strongly with what state experts in NEST had discussed in their interviews with me. In particular, the IAEA officers that help coordinate cross-national projects, whom I interviewed at the Vienna, Austria, headquarters of the IO, identified the level of program development as a major determinant when asked about transgovernmental cooperation. If skilled workers are more likely to access training in the private sector, is there a similar advantage in the public sector? In other words, is there a demonstrable advantage for expert bureaucrats when it comes to training opportunities?

Thus, this is how the theory of the expert bureaucrat and the book's main hypotheses came to be. First, my research sought to explain cooperation between bureaucrats from two advanced nuclear energy producers. Collaboration between CNEA and CNEN resulted from experts' compensatory strategy to make up for lost resources during the Lost Eighties Decade. This led to the question of whether international inter-agency cooperation was just a bilateral strategy between two close neighbors, or was it a standard strategy for economic survival in policy areas with high and sustained demands for resources? Is cooperation with foreign peers

a common strategy of bureaucrats from developing countries or rather a scheme between high-skilled neighbors? To answer these questions and to begin testing my theory of "cooperation for skills" across all of the Global South, I ask whether there is an empirical relationship between government spending and international inter-agency cooperation. That is, does government spending shape cooperation?

Second, both the nuclear and environment state experts I interviewed emphasized the importance of working with foreign partners at a certain level of skills – either equal or superior to them. When partners lack resources and technical expertise, they stated, projects are more likely to take longer or even fail, and more importantly, they get less out of the collaboration. This preference for partner selection challenges common practice by international organizations that sponsor cross-national technical cooperation among developing countries. Typically, IOs attempt to match less-developed agencies with more advanced ones, precisely to transfer know-how and technology from the latter to the former. When I spoke to program officers from the IAEA, the Global Environment Facility (GEF), and the United Nations Environment Programme (UNEP), they stressed the importance of cross-national projects as a way to distribute more effectively scarce resources from better to poorer endowed programs within a region. This seeming contradiction led to my second research question: how do differing levels of skills among potential project participants affect partner selection in international inter-agency cooperation?

The high premium placed on access to new skills by expert bureaucrats, evident from a number of face-to-face interviews, led to the rich literature on the political economy of skills. As I discuss in the following chapters, this scholarship mainly focuses on the connection between level of skills and international competition and how different state models of investment in training and industrial apprenticeship shape the relationship. Within the literature, Becker's Theorem of Human Capital was revealing in particular, as he directly takes on the problem of who pays for the costs of training. In his seminal 1968 book, Becker argues that employers face different incentives to invest in the training of their workforce, depending on whether the skills are specific or general, with the latter ones being more transferable than the former. When employers do not pay for skills, the argument goes, workers will put up with training costs themselves.

This resonated with the situation described by state professionals in my interviews. Often, political principals were unable or unwilling to

pay for skill formation and upgrading within the bureaucracy, other than offering limited training for routine tasks. Cuts to training based on Research and Development (R&D) tend to follow more general spending cuts within states. Consequently, I expect bureaucrats to face similar incentives to take skill investment in their own hands as workers in the private sector. As the book shows, I tested this corollary to my theory of the expert bureaucrat by analyzing the type of project by skill content. If bureaucrats are after skills to advance professionally, as I argue in the following chapters, they should be more likely to join projects that provide more general, rather than specific, training.

Finally, an important finding from the literature on the political economy of skills and varieties of capitalism is that there are structural biases regarding the type of worker who is offered training opportunities. Typically, younger and better trained employees are the ones with greater access to skill upgrading. This finding also resonated with my interviews. Both state experts in NEST and environmental protection stressed the importance of a starting threshold of expertise in order to participate in cross-national projects. Furthermore, international program managers from IAEA, GEF, and UNEP, tasked with coordinating these projects, also reported on the challenges of inter-agency cooperation when state professionals have a low level of skills. This led to the central question of the book: how do skills shape international cooperation? To answer, I test all of the above hypotheses across the Global South in the two skill-driven areas of Nuclear Energy, Science, and Technology and Environmental Protection.

The Corollary to "Skills Matter" Is that the State Matters Too

This book is ultimately about the state in the Global South and how its bureaucratic agents develop strategies to weather the ups and downs of its resources. It is as much about the revealed practices and strategies of bureaucrats as it is about the fickleness and unreliability of the state. In the interviews and field research I conducted, this became clear. Bureaucrats developed their strategies and ordered their preferences based on the economic health of the state. In periods of "fat cows," they expanded programs and increased hiring; in periods of "lean cows," they went into survival mode at home but expanded abroad through project participation. The centrality of the state in the development of energy, science, R&D, innovation, and technology across the Global South is clear. Yet, for many genuine reasons (e.g., the rise of non-state actors in domestic and

international affairs and the widespread adoption of neoliberal reforms that have reduced and weakened the public sector), recent scholarship in political science has overlooked this centrality.

The book is in no way an apology for the lack of state funding, even though it examines the compensatory strategies bureaucrats pursue when government spending drops. Precisely, the main finding presented here – that prior level of skills determines state agencies access to international technical cooperation – unmistakably indicates how without prior investment there can be no surplus in know-how and technology. If the state does not invest first in human capital, there is not much that IOs and international donors can do to compensate. At the high end of the technological spectrum, skilled bureaucrats benefit overwhelmingly of cooperation opportunities with equal peers and IOs. On the low end, bureaucrats in a low-human capital state are limited in what they can achieve with the compensatory strategies described in this book.

There are many reasons why bureaucrats with initial low level of skills will find it hard – if not impossible – to substitute the lack of funding they face at home with resources pooled across expert networks. While the actual mechanism of this skill handicap is beyond the scope of the book, the field research I conducted revealed some possible causes. Both state experts and program officers from IOs pointed to practical reasons (like the lack of language proficiency, typically English) and deeper ones (such as the lack of basic technical proficiency needed to carry out the basics of a complex project). All of these inhibit the participation of bureaucrats from lesser developed programs in NEST and environmental cross-national projects.

Finally, when it comes to the centrality of the state, even well-trained bureaucrats cannot get around it. As discussed at length in the following chapters, because of the dizzying pace of technological change in the information age, workers (whether in the state or in the private sector) can no longer carry out key tasks without periodic skill upgrades. This in turn requires a constant investment in workers' training (like the "learning by doing model"), which adds costs to the employer's bottom line. Yet as the book shows, until the 2000 commodity boom that enriched the coffers of many developing countries, the state in the Global South historically has been too impoverished or politically unstable to maintain sound investment policies in bureaucratic expertise. Thus, especially for those bureaucrats who acquired high skills at some point in time, transgovernmental cooperation with equal peers has been a viable strategy to keep abreast of technological changes and maintain their market value.

But the strategy is no replacement for state investment. As one Argentine nuclear bureaucrat put it to me, when it comes to substituting skills through regional pooling vis-à-vis state investment it is like "a drop of water in a bucket."

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