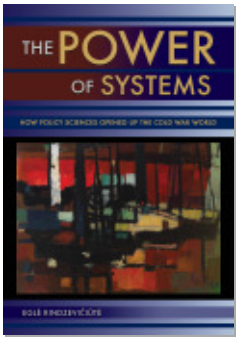
4. Shaping a Transnational Systems Community (2): Family versus War Room



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SHAPING A TRANSNATIONAL SYSTEMS COMMUNITY (2)

Family versus War Room

There is a particular iconography associated with Cold War governmental imagination, of which perhaps the best-known image is the war room from Stanley Kubrick's film satire *Dr. Strangelove, or How I Learned to Stop Worrying and Love the Bomb* (1964). A war room is presented in this film as a safe, enclosed space, a control center, where the US government interacts with the outside—both its own people and the Soviet Union—mainly through technologies of communication. This fictional center of command turned out to be so convincing that it not only led the newly elected Ronald Reagan to ask to see the war room at the White House, but it also inspired historians like Paul Edwards to extend this metaphor to the Cold War itself as a "closed world." Insulated in this war room, wrote Edwards, military and governmental commanders relied on technologically mediated representations of "reality," the effect of this technological mediation being an emotional distancing. For Edwards, a war room was thus a metaphor for cybernetic, computerized governance where, paradoxically, the rationalization of control through technologies enabling government action from a distance could potentially provoke risky, irrational behavior.[1]

The image of the control room as a central power site in the bipolar Cold War world, driven to madness by rationalization and technologization, recurred in the burgeoning popular and academic studies of the strategic centers of calculation and control. The most widely analyzed such center was the RAND Corporation, described as an organization inhabited by scientists cultivating a particular macho and paranoid culture, detached from "the real world."[2]

The centrality of RAND to Cold War governance was projected back from the opposing system, as the Soviets continuously sought to gain as much firsthand information on RAND as possible, with some success.[3] In this context IIASA emerges as a strange, nearly incomprehensible animal, for what possible function could "an international RAND" perform in the closed world of the Cold War? It is not surprising that IIASA turns up now and again in some marginal literature on Cold War conspiracies. But in this and following chapters I show that the Cold War world was not as closed as one might think, and IIASA is a proof of this. Whereas Nils Gilman suggests that the development of the scientific governmentality of the Cold War was an expression of "American life," I claim that this scientific governmentality was not limited to the United States or to liberal democratic countries, but, instead, featured in the authoritarian regime of the Soviet Union.[4]

In what follows, I examine the use of informal practices and new metaphoric language, created to counteract precisely this "war room" mentality, thus helping to form East-West scientific and policy communities, a phenomenon that questions the thesis of the closed, Cold War world.

This chapter is divided into two parts. First, I detail the role of sense-making and informal practices in performing IIASA's work during the founding stage. Then I discuss the evolution of IIASA, an organization which was first developed as a platform for the construction of systems community as a nonpolitical entity. But IIASA turned out to be not only a platform, but an actor on its own, something that became evident during the reversal of US policy toward IIASA and East-West relations following Reagan's ascension to power. Thus I conclude this chapter by discussing the mobilization of a systems community to defend the East-West coproduction of policy sciences in 1983–1985.

Family versus War Room

A symbol of the diplomacy underscoring links rather than confrontation between East and West, IIASA could not be simply reduced to a control center, closed and isolated from the external world. It was meant to be a new type of organization, an international East-West think tank—but what could this mean in practice? What kind of meanings could be mobilized to make sense of this new animal that did not fit into the Cold War rhetoric of hostility and competition? During my fieldwork I was struck by the efforts of the initiators of IIASA to find an appropriate terminology to describe this organization, both externally and internally. The external representation of IIASA drew heavily on the existing universalist vocabulary

widely used to describe the new population of international organizations. This vocabulary emphasized IIASA's role in establishing links across national borders and as a politically neutral space for the advancement of universal, scientific knowledge. But the internal representation of IIASA was more peculiar and was carried mainly by oral discourse, the narratives circulated inside the institute.

In my interviews with different actors involved in the creation and running of IIASA, I encountered a strongly established internal idiom, "the IIASA family," a phrase that recurred in virtually every interview, when the interviewees tried to explain the character of this organization. It is quite clear that the metaphor of a family connotes a rather different range of meanings than the metaphor of a war room, although some families may have strong militant and mobilizing role, for instance, in tribes and the organized mafia clans. The important difference here is that family and war room suggest different modes and locations of action, but also different mechanisms of discipline. If a metaphor of a war room refers to a space for sovereign governance, where the chain of command is clearly defined, family, too, connotes hierarchy, but also a particular mode of interdependency in which family members share their origin and obligations to each other. Both bureaucracies and families are fundamental disciplinary mechanisms in modern societies, but the key difference between the two is the link between the organizational role and personality: if bureaucracies rely on depersonalized rules, families are all about personalization. My interlocutors referred to the "IIASA family," emphasizing that the institute enabled close, informal ties among its fellows. In this chapter I suggest that the use of the metaphor of family to make sense of IIASA as an organization was part of both internal and external management, aspiring not only to integrate the ever-changing staff, but also to consolidate policy coalitions, mobilized to protect the interests of IIASA as an autonomous actor in the context of shifting foreign policy priorities.

It is difficult to overrate the importance of the internal legitimizing discourse in the everyday life of IIASA. The construction of an East-West meeting platform was not only a question of finding an appropriate organizational structure, but also a matter of creating conditions for communication and cohabitation, enabling the many differences between participating members to be bridged, IIASA was a medium-sized organization that grew from a staff of fifty in 1974 to a hundred in 1980; it also hosted a great many scholars from more than twenty countries passing through on short-term contracts.[5] The archive of the institute speaks volumes about its efforts to document administrative and research activities; in fact, I was told by the administrators that meticulous documentation was intentionally pursued, because this was understood as a vital strategy to manage risk in the volatile geopolitical context. Anticipating disagreements and even a falling out among members, in the 1970s–1980s IIASA was continuously preparing

to defend the rationale of its existence. To ensure this, not only detailed plans and reports were produced, but regular external audits were commissioned from independent firms. But all this formal monitoring was not the only and, perhaps, not the main resource that assured the life of IIASA: I was told that informal solutions which did not directly challenge the formal rules of participation were widely employed. Informality was used by the leaders of the institute and individual projects to get things done where the formal rules did not work. Albeit practical, this presence of nonbureaucratic informality also had to be justified; thus enters the metaphor of family, a way of making sense and legitimizing nonbureaucratic practices in the East-West Institute.

But one also needs to consider that modes of organizing and internal narratives of organizations do not emerge out of thin air. Indeed, the idea of organizing as an explicitly meaning-making activity was a relatively new phenomenon, contemporaneous with the establishment of IIASA. From the 1970s on, the idea of corporate or organizational culture gained currency in Western societies as a result of both a shift from industrial to intellectual labor, and the accumulation of findings from the new discipline of the era, management studies. Managers began to increasingly rely on an idea that organizational culture could be manipulated in order to benefit a company's performance.[6] Organization theorists claimed that a deeper, normative integration of workers with their company was typical of new, postindustrial organizations. In many organizations "family" became a popular figure of speech to designate precisely such a normative integration.[7] Although as it is often the case with colloquial expressions, it is difficult to establish with certainty when and for what reasons the family metaphor was introduced in IIASA's internal self-narrative, one can speculate that the first director, Howard Raiffa, an expert in policy science, was suitably positioned to encounter and translate recent organizational theories into reality, intentionally and carefully crafting a particular organizational culture, which led to the formation of a transnational community of systems analysts.

The founding stage in the making of IIASA's "systems family" took place during Howard Raiffa's directorship, 1972–1975. Archival documents reveal internal debates on the issue of academic quality, which was understood as being of the utmost importance, because IIASA sought to gain recognition as a real think tank; its creators wanted to avoid by any means the image of being just another decorative component of Cold War diplomacy. However, there were a number of issues pertaining to the everyday life, such as interpersonal and agenda disagreements in relation to Cold War polarization, and the very real risk of espionage that threatened to compromise the scientific reputation of the newly established institute. To counteract these risks, Raiffa introduced a set of measures intended to establish a highly informal and open culture. This was achieved, in the first

place, by removing all physical obstacles to any search for information by Soviet intelligence services. For instance, the director famously never locked his desk drawers and even chose individuals with known KGB credentials as his assistants, thus making it clear that he had nothing to hide.[8] Secret intelligence was not very secret either: several of my interlocutors recalled that many Russian secretaries were "very nice people, but also very obviously KGB," noting that regardless of their evident presence, the atmosphere in the institute was never tense.[9] The themes of research were also carefully adjusted. True, systems analysis, as I mentioned earlier, was in many ways linked with highly strategic technologies, which were embargoed by CoCom countries and which the Soviet Union desperately attempted to acquire. But in this case the threat of espionage was seen by the interviewed scientists as simply irrelevant, because the studies pursued at IIASA used only open data. This strategy of using open data was both an asset and an obstacle, because it did complicate cooperation with the Soviet Union, which tried to keep as much data as possible outside the public domain.

If openness was used to deter espionage, informality turned out to be an irreplaceable instrument in navigating geopolitical waters. Dealing with the risk of espionage was an unavoidable part of a Cold War international organization, but it in the case of an East-West institute, it appears that it was not so much espionage as external, geopolitical tensions that required the most attention. The risk was that IIASA could become yet another dysfunctional international organization, torn by national or bloc interests. This was particularly evident in personnel recruitment from the Soviet Union, where multiple political logics intertwined, some internal to Soviet academia, and some rooted in geopolitical clashes. As I will show, the geopolitical dimension was always present on the leadership agenda and was carefully managed.

Informal culture was, however, coupled with, and probably made possible by, the fact that IIASA's directors enjoyed rather strong personal autonomy in matters of decisions over the staff. Archival documents reveal that the coupling of informality and strong directorship was consciously and strategically achieved at a very early stage in the life of the institute. The top staff were hired proactively (unlike in UN organizations, where member countries nominated their candidates) and often quite informally. Thus in 1973–1974 Raiffa looked for ways to concentrate academic excellence at IIASA, relying on insider knowledge of some of the finest minds in the field of decision theory. He was aware of the importance that the scientists invited should be genuinely willing to work together. High salaries and the location of the institute were important assets, but the mutual esteem of the scholars was equally vital. According to Raiffa, "Tjalling Koopmans accepted to come because George Dantzig promised to come, who was eager to work with Alan Manne, who would come if Koopmans

was there, but also Manne wanted to ski in Austrian Alps."[10] All three, Koopmans, Dantzig and Manne, experts in energy economics, joined intellectual forces to engage in a completely new area for them, namely Buzz Holling's ecology project, the aim of which was to create an innovative computer model of the spread of budworm pest in Canadian forests. This was one of the first successful IIASA projects, and one which revealed the possibilities of mathematically forecasting complex, interrelated systems.

Yet informality does not automatically result from merely disregarding formal rules or bureaucratic regulations. Informality is always a context-bound condition that revolves around an organization's specific rules and draws on the organization's knowledge. This became evident in the mediation of the differences between Eastern and Western organizational cultures: a particular version of informality had to be developed that would enable IIASA to serve as a bridge between East and West. Whereas Raiffa's in-depth knowledge of social relations and individual cultural habits was instrumental in bringing top US scholars to IIASA, neither he nor anyone else at that time had any detailed knowledge, or even intuition, about many of incoming Soviet scholars. Could an internal mechanism of evaluation be enforced to sort out productive scientists from less productive ones? This was not considered to be a solution. Retrospectively, Raiffa explained his staffing strategy, saying that the formal evaluation of scholarly output was irrelevant, because scholars were primarily self-motivated and competing against other scholars:

> There is little to gain and a lot, possibly, to lose in morale if we attempt to control the output of our scientists. Our most effective means of controlling the quantity, quality and suitability of our output is to select wisely the people who are supposed to produce this output.[11]

But was not this approach severely limited, given that the control over the inflow of Soviet scientists was so limited? Whereas Western scholars could be approached individually, contacts with Soviet scholars were funneled through the GKNT and the Academy of Sciences.[12] All official invitations to Soviet scientists had to trickle down through the complex bureaucratic system, a slow and painstaking process during which the lists of invitees were modified to accommodate competing interests within the Soviet research institutes and the GKNT. Archival documents disclose constant grievances from IIASA's directorate and project leaders about the Soviet Union sending poorly qualified scholars during first years of the institute's existence. Even in the early 1980s, IIASA's leadership complained that too many Soviet scientists were narrowly trained specialists, lacking the skills needed to fully participate in interdisciplinary projects, and many were not sufficiently fluent in English.[13]

What was to be done? Raiffa recalled that the best, in fact, the only way to ensure that IIASA would receive relevant Soviet scientists, was to use a personal, informal strategy of dropping their names to Gvishiani in conversation, for instance, during walks in the woods. According to Raiffa, Gvishiani would never personally either confirm or disapprove any of his suggestions, but eventually some of the mentioned scholars would appear on the official lists of invitees proposed by the Soviet Academy of Sciences.[14]

Similarly, Raiffa recalled that it was virtually impossible to reach any agreement on the research agenda in the official IIASA council meetings. Such issues were also resolved informally: the members of IIASA's council discussed all key points off the record beforehand. This practice itself was something of a public secret: the institute's administration was fully aware of the importance of the informal preliminary talks and did their best to facilitate this practice by inserting long breaks in the schedule of the council's meetings.[15] Informality, in this way, was enabled by the means of formal organization.

In a similar way, informal practices, discipline, and formal organizing were intertwined in the internal life of IIASA. All three qualities were encapsulated in the metaphor of family. The elitist culture of informal hiring was part and parcel of a rather stringent paternalist supervision of cultural habits of systems scholars. And indeed some of these scholars were rather unorthodox, especially those Americans who came from wealthy and privileged backgrounds. For instance, in his memoir Raiffa described—with some admiration at that—a doctoral student who not only drove a Porsche, but also rejected a lectureship at MIT because the position interfered with his vacation plans. It soon transpired that the nonbureaucratic, informal culture of IIASA's family, developed by Raiffa, was rather rigid as compared to the hippy lifestyles of younger Western scholars. That the culture of IIASA's family was clearly a disciplining device is evident in Raiffa story, where he recalled his efforts to make the casually attired US staff more acceptable to the presumably more formal Soviet scientists, insisting that his Porsche-driving doctoral student acquire a sports jacket and that his assistant, Alan McDonald, cut off his ponytail. A woman administrator was asked to wear less "sexy" clothes.[16]

These efforts to make the Americans look presentable suggest that the declared openness and informality was a product of a carefully controlled, everyday performance. The West performed for the East, but in a way that would not challenge the Eastern perception of an appropriate behavior. Indeed, the interviewed IIASA staff told me that the success of IIASA was largely due to its organizational culture, and this organizational culture was defined as Western. But there was more to the disciplinary mechanism than a superficial adjustment to dress codes: many other adjustments were made to accommodate the Soviet membership in this transnational community of systems analysis. The mobility of scholars was

one such sensitive question. Raiffa, for example, recalled teaching the Soviets by example that good science could be produced only by granting young scholars the opportunity to travel freely across national borders. However, Raiffa also admitted to being particularly careful not to let Soviet scientists overstay their term, seeing this as a necessary measure in preventing them from defecting to the West.[17]

In addition to these social and political concerns there was another, no less important factor that influenced the development of the informal culture of the IIASA family: the technical and spatial infrastructure. I mentioned earlier that the Soviets supported the East-West institute, hoping to use it as a channel to bypass the CoCom embargo on computer technology. Indeed, the role of computer technology was crucial not only during the formative stage of IIASA, but remained relevant over the next two decades of the Institute's existence, although not exactly in the way that was anticipated by the Soviets. First of all, IIASA was never equipped with state-of-the-art computer technology and this was a conscious decision by IIASA's council, part of its strategy to discourage Soviet espionage.[18] Older computers meant slower computers, and slow machines turned out to play a particularly important role in providing East-West scientists with a unique, almost private space for uninterrupted communication. As my interlocutor recalled, "we used to spend entire nights in the central computing facility. We used to wait for results to come from the computer with our six packs of beer as dawn was breaking. The slow technology had a very positive impact on personal interaction at that time."[19] Computer technology, in this way, provided IIASA's scientists with a special space and time for interaction that could be compared with the canonical image of a Central European café as a cosmopolitan meeting space, except that there was beer and not coffee to be consumed and a humming computer instead of live piano music. In addition to computer labs, sport provided yet another area where East-West scholars could interact informally. For example, scientists played a modified form of softball in the Laxenburg park every Friday in the 1980s; these sessions were continued in the *bierstube*.[20]

But the "IIASA family" was not merely a metaphor. There were actual families at IIASA: top scholars were attracted in part by a generous policy enabling them to bring their wives and children (and yes, the majority of IIASA scientists were male, Donella Meadows being a prominent exception). To provide for a good quality of life outside working hours, leisure facilities were built through a grant from the Ford Foundation, which funded construction of a special restaurant for the staff, tennis courts, and even an annex for the American International School to accommodate the children of IIASA fellows. Raiffa reported to Bundy that this grant was used to enhance the cultural life of the IIASA staff by bringing in lecturers, organizing concerts, buying outdoor furniture, and even hiring tax advisors.[21] Scholars' family activities led to further integration, especially

FIGURE 2. Schloss Laxenburg, 1962. Courtesy of IIASA.

through the Women's Club, a network that was sustained by many women even after their partners left IIASA. Furthermore, the role of the fellows' wives was central in forging personal links across the Iron Curtain, as they were often the ones providing for the "real" home environment. For instance, Raiffa personally endeavored to bring the staff together, as he and his wife often hosted administrative staff for dinner in their apartment on Operngasse in Vienna.[22] It may well be that the metaphor of "IIASA family" remained viable after the 1970s, thanks to these carefully crafted practices, linking professional membership in the institute and personal lives.

Integrating Soviets into the IIASA Family

If some US scholars were nudged to modify their hippy lifestyles to fit into this East-West family, how did Soviet scientists experience their stay at IIASA? Published sources and interviews reveal varying impressions. For example, a Russian

FIGURE 3. Schloss Laxenburg after reconstruction, 1978. Courtesy of IIASA.

mathematician I interviewed joined IIASA in the early 1980s to find, in his words, a social milieu very similar to the one at home, the prestigious Steklov Mathematical Institute in Moscow. According to this scholar, the elite Soviet mathematical communities espoused rather democratic principles and informal relationships between professors and junior scientists, in this respect being completely different from other, more hierarchical scholarly environments, such as those of economists.[23] Some other scholars from East Europe voiced similar opinions: a Polish scholar even recalled that the atmosphere was much friendlier during the Cold War than it was at the time I interviewed him, because earlier directors made a particular effort to make sure that everyone felt welcome.[24] Also, some Soviet scientists came from elite academic institutes, which were, as David Holloway notes, rare islands of freedom in Soviet society.[25] These scholars told me that they did not encounter a big cultural difference; for them the key benefit of IIASA was the opportunity to freely access its increasingly rich library and, importantly, unlimited use of its photocopier. According to one member of administration staff, one could always be certain to find a visiting Soviet scholar at the copying machine.[26]

Yet I was told different stories by other ex-Soviet IIASA fellows. A scientist from Akademgorodok, a purpose-built Soviet science town in Siberia, which was known for its substantial intellectual but also social autonomy, painted a less glossy

picture of his experience at IIASA in the 1980s, the period when, according to my other interlocutors, Soviet control was already more relaxed than in the 1970s. This Russian scholar, who embarked on a highly successful career after 1991, was exceptionally frank about how his experience at IIASA in the 1980s was weighed down by surveillance and financial constriction. He recalled often being followed when visiting his colleagues' homes in Vienna, and detailed his feeling of humiliation when he had to give about half his salary to the Soviet embassy every month, and in consequence struggled to keep up with the lifestyle of Western scholars. Another ex-Soviet scientist recalled receiving a salary of about USD 5,000 and giving about 70 percent to the Soviet embassy in the 1980s.[27] These stories were corroborated by my Western interlocutors, who recalled that Soviet scholars almost never joined them on skiing trips or outings to restaurants.[28] The obligation to return large part of their salary (the Polish Academy of Sciences also made their IIASA fellows return as much as 70 percent[29]) was an informal way of ameliorating the financial damage to the Soviet apparatus caused by the fact that IIASA was one of few international organizations where the Soviet Union fully matched the US financial contribution.

There might also have been some concerns about security that limited the integration of Soviet scientists into the IIASA family. One ex-Soviet scientist recalled feeling quite free to invite his foreign colleagues for dinner at his privately rented apartment in the prestigious Schönbrunn area of Vienna, but he became aware of possible eavesdropping when he moved to the specially built compound for Soviet citizens in 1985. Believing that his spacious apartment was bugged, this scholar resorted to the classic methods of using background noise to obscure his conversation with guests, by turning up the volume of the radio.[30] In this way, for many Soviet scholars taking part in the IIASA family meant overcoming a number of daily inconveniences pertaining to economic inequality and security control, something that clearly overshadowed the informal and liberal spirit of the institute.

Nevertheless, the interviews and memoirs reveal that financial and security issues were perceived as a minor inconvenience by the Soviet scientists, who regarded the fellowship as an opportunity to spend a longer period in Western Europe and to embark on more ambitious scholarly projects: an IIASA fellowship was considered to be a highly prestigious, selective appointment. Indeed, knowledge about IIASA inside the Soviet Union was limited to a narrow circle of select, elite scientific institutes, and the choice of fellows was equally obscure both for Raiffa and the Soviet scientists themselves. One ex-Soviet scientist told me that although he knew about IIASA's existence in the 1970s through its publications and conferences, he had never considered applying for a fellowship; instead, he was "summoned" by the GKNT to participate in IIASA's research program on the

environment.[31] Centralized cooptation of IIASA fellows was not limited to the Soviet Union: the participation of Dutch scholars was organized through centralized calls for particular experts in relevant areas, issued by the secretary of the Dutch member organization and disseminated among the institutes that were deemed to work at a suitable level.[32] The process in the Soviet Union, however, was much more opaque and much less predictable.

The Soviet fellows at IIASA ranged from well-established to young and promising scientists; they were also of unequal standing in the political hierarchy of the Soviet academia. For all of them IIASA served as a bridge to West, yet their individual abilities to use this bridge differed. There was a big difference between the top scientists and research administrators and ordinary, if highly esteemed scholars. Some Soviets traveled much more than others and did so in a very different style. Gvishiani visited the United States as early as the 1960s, whereas it was only in 1972 that the president of the Academy of Sciences, Mstislav Keldysh, crossed the Atlantic. Gvishiani and directors of Soviet institutes clearly had much more latitude for movement when in the West, not least financially, but all these visits stimulated comparisons of communist and capitalist standards of life. A verbatim account of Keldysh's report about his trip to the United States, presented at a meeting of the Council of the Academy of Sciences, included a transcript of the discussion that followed. The first question was posed to Keldysh by Petr Kapitsa, a prominent physicist, who cheekily inquired about the salaries of American professors and the cost of a good suit in the United States,[33] hinting that as long as a Soviet professor could not afford to buy a good suit, it made no sense to speak about catching up with American science. At IIASA the economic disparity was the elephant in the room that loomed over East-West cooperation. This, in combination with the earlier-mentioned obligation to hand over part of one's IIASA salary to the embassy, was a mundane aspect of everyday life, which undoubtedly dispirited Soviet scholars.

In this context, the elite Soviet scientists and research administrators enjoyed strikingly different lifestyles and freedom of movement. Upon their visit to Paris, Gvishiani and Kirillin stayed in the plush George V hotel, an experience which was surpassed by the hospitality of the president of France, who spontaneously offered the Soviet *éminences grises* a weekend trip to Corsica. The presidential private Caravelle jet whisked Gvishiani and Kirillin away for an overnight excursion to this Mediterranean island.[34] Other leading Soviet scientists also amused themselves with spontaneous trips when in the West. When visiting IIASA, Nikita Moiseev, the research director of the Soviet Academy of Sciences' Computer Center in Moscow, drove to Lichtenstein during the Christmas holidays. He crossed the Austrian Alps only to discover at the border that he did not have the necessary visa. The kindly border guards, however, allowed Moiseev to turn his car around

on Lichtenstein's territory, thus enabling him claim a visit to this state.[35] Although this story might strike the reader as a somewhat trivial misunderstanding, one should not underestimate the significance of such adventures for Soviet scholars. Used to passing through innumerable bureaucratic hurdles and formalities, they experienced these free, spontaneous travels not only as a gust of personal freedom, but also as confirmation of their special status within the tightly controlled system. It is also quite probable that these experiences reinforced their loyalty to the Soviet government, a stay in IIASA being a reward for loyal service at home.

As a bridge, IIASA did not merely enable one way, East-West traffic, but also facilitated the trips of Western scholars to the Soviet bloc. High-level conferences, such as, for instance, the UN meeting dedicated to the debate on global problems took place in Tallinn, Estonia, in 1979.[36] But no less important were many workshops and project planning meetings organized in the Soviet Union—predominantly in Moscow, but also in other Russian cities like Leningrad and Akademgorodok, where the leader of the IIASA energy study, Wolf Häfele, developed cooperation programs in the field of nuclear energy, and non-Russian republics, such as the Baltic states and Caucasus. The scientific utility of those workshops was often limited: one scientist who participated in such a jointly organized event in the Soviet Union recalled having to endure endless abstract presentations, containing no empirical or statistical data and badly delivered at that.[37] Nevertheless, according to other interviewed scientists, some of these visits strongly contributed to building trust among some individuals. Typically these were social components of trips to the Soviet Union that Western scientists recalled with a great deal of pleasure. For instance, a workshop organized by academician Vladimir Mikhalevich at the Institute of Cybernetics of the Ukrainian Academy of Sciences in Kyiv, began with a cognac session at 10 a.m. The drinks continued to flow as someone carelessly mentioned that it was Saint Patrick's Day in Ireland. As a result, some of Western participants had to be literally carried to the plane that was to take the East-West scientists to Leningrad, where another workshop was awaiting them.[38]

Both the organizational culture and social life at IIASA animated this unprecedented institute. But a well-running organizational machine was not a mere medium for the production of a new type of policy science, systems analysis. In the remaining part of this chapter I discuss the ways in which IIASA turned out to be instrumental in forging links between scientific knowledge, governance, and politics across the East-West divide, eventually assuming an increasingly strong identity as an actor in its own right and not just a bridge between the competing great powers. Inquiring into this process, I point to the emergence of a particular assemblage of theories, institutions, and practices that question the bipolar image of the Cold War world.

Systems Approach: From Depoliticization to Aesopian Language

The link between politics and systems analysis was multifaceted and complicated: systems analysis, a science deemed to be most appropriate for apolitical cooperation across the Iron Curtain, found its first governmental applications in the United States in the area of weapon systems design and the development of what was supposed to be a rational foundation for US foreign policy of containing communism. This application of systems analysis, according to Beryl Radin, led to the emergence of what was called "policy analysis" in the State Department, where George Kennan was charged with the task of planning a long-term policy toward the Soviet Union in 1947. Kennan's task was later continued under the leadership of Walt Rostow during Johnson's presidency.[39]

Although this trajectory of the development of systems analysis was embedded in military applications, according to Radin, there was also a parallel development of civilian applications of systems analysis, where systems analysis was introduced into different US government departments through the method of program-planning-budgeting-system (PPBS), a method which originated in military OR. PPBS was spread through the Systems Analysis Unit, established by Robert McNamara at the Department of Defense in 1961. The very idea of PPBS was to bypass the bureaucratic circulation of information and decisions along the formal chain of command. This was achieved by establishing additional policy-analysis units that had direct access to all information and top decision makers.[40] In this way the introduction of civilian applications of systems analysis involved both intellectual and institutional reform, inserting new actors and practices into governmental process. Like in the United States, in the Soviet Union the link between military uses of systems analysis and its civilian applications eventually grew weaker. Moreover, like in the United States, in the Soviet Union the introduction of policy science also involved an institutional reform.

The development of systems analysis as a nonpolitical technology of governance, therefore, was bound to the contexts of its use. In this section I detail how the pioneers of the systems approach not only adjusted this technology to the institutional context, but also used the systems approach to redefine this very context. As I showed in chapters 2 and 3, in the 1960s systems analysis was posited to be a neutral instrument of governance, suitable to fulfilling Johnson's diplomatic program of bridge building, but also echoing the Soviet interest in high-technology transfer. But both the epistemology of systems analysis and its practice in organizations required deeper institutional transformation in both liberal democratic and authoritarian systems. Historians, such as Michael Latham, suggest that the ideas guiding Johnson's Great Society program, particularly the belief that scientific

expertise could resolve social and economic issues within US society, spilled over into US international relations.[41] Drawing on the Vietnam example, Patrick Cohrs suggests that by disseminating the US model of expert governance in developing countries, Johnson's administration hoped to combat more radical forms of politics by promoting moderate views.[42]

Cohr's observation may also apply to the East-West institute, but in this I would like to add that the modernization theory-driven cooperation clearly was expected to have a more substantial, subversive effect by at least pluralizing the sources and types of power in the communist regime. The case of IIASA is quite remarkable, because this is where the competing development theories—the US modernization theory and the Soviet theory of scientific-technical revolution—converged to legitimize an institutional innovation. It is this broader intellectual context, I argue, that made possible the construction of systems approach as an apparently apolitical, yet subversive technology of governance. Here depoliticization stemmed not only from US activities, but also from the formative context of East-West cooperation, particularly at IIASA. That East-West transfer of systems analysis drew on mutual efforts to depoliticize this governmental technique is particularly evident in the strategies pursued at IIASA, where different notions of the political were identified and neutralized by designing organizational structures and employing specific discourses. I want to emphasize that depoliticization is not a negative strategy, but a productive process, in which different meanings of "the political" are defined and used selectively in relation to the context. Let us look more closely at these pragmatic strategies of depoliticization.

Perhaps the most divisive notion of the political is captured by the controversial German philosopher Carl Schmitt, who reserved the meaning of the concept of the political to a friend-foe divide, leading to a military conflict.[43] It was precisely this notion of the political that Johnson's bridge-building policy sought to transcend. In practice, the friend-foe tension was neutralized by carefully selecting those scientific approaches, research objects, and applications of research findings that had the weakest possible links to the military, IIASA's research agenda explicitly excluded any areas of direct military application or closed research.

However, what constituted military research was not always evident and sometimes subject to negotiation. For instance, in 1975 Thomas Brown of Pan Heuristics, a subsidiary of the US defense company Science Applications Incorporated, approached IIASA's director with a proposal to establish a working group modeling Soviet-American strategic interaction. The rationale of this project was to advance econometric and military modeling by bringing insight into how experts from each side think. On this basis an "accurate forecasting tool," grounded in empirical and psychological reality, would be developed and equip each side with an instrument for mutual prediction.[44] In its intention to develop mutual predictabil-

ity, this proposal was completely in line with the tasks set out by Walt Rostow's unit for policy analysis, which I mentioned earlier. However, IIASA quickly signaled that its agenda differed from this systems research community: James Bigelow responded to the proposal by writing that this was "precisely the kind of idea, that regardless of its technical feasibility, IIASA would utterly refuse to work on."[45]

Another notion of the political refers to membership in a political party and adherence to certain ideological principles. Thus conceived, the political was neutralized at IIASA by positing a particular actorial identity of the systems analyst. Drawing on the long German tradition of the apolitical engineer, expert, and technician, a systems analyst was construed as an independent professional, loyal to the state, but free from party politics.[46] Obviously, this was still a problematic definition, because the idea of an apolitical expert disagreed with the communist definition of the engineer and manager as a committed builder of socialism.[47]

The situation was further complicated by the ongoing debates in the West, where, since the mid-1950s, the tension between political and scientific governance had been exacerbated by heated debates on the death of ideology, pursued by the theorists of the postindustrial society, such as Daniel Bell, Raymond Aron, and Edward Shils. In 1960 Bell published *The End of Ideology,* arguing that, in an affluent society, workers saw their condition hugely improved and consequently lost interest in political struggle mediated by ideology.[48]

The Soviets embraced the idea of a postindustrial society, but fiercely rejected the suggestion that ideological class struggle would wither away. But the depoliticization of governance in the post-Stalinist Soviet Union was already taking place, albeit incrementally. In the early 1960s institutional reform began with the systematic introduction of scientific experts into the governmental apparatus in response to the urgent need for efficiency and solutions for increasingly complex technical systems. The Soviets borrowed Bell's ideas selectively, welcoming the intellectualization of labor through the shift to automation of industrial production, but removing any hints about possible implications of this process for the power structure, such as a diminishing role for the Communist Party in policy making. In this context it turned out to be much easier to depoliticize the kind of expertise concerned with matters that transcended national political agendas.

Bell noted the shift in the US political discourse, locating the key concern not in the clash of ideologies, but in the achievement of common goals, both domestic and, later, international, attributing the origins of the discourse on common goals to John F. Kennedy's commencement address at Yale University in 1962.[49] From the mid-1960s this discourse of common goals, which could be achieved through the means of teleological governance, powered by systems analysis, was adopted in some Soviet policy circles, thus opening up a space for apolitical expertise that was not torn by the issues of loyalty to national interest.

In order to make this discourse of common goals work, a particular organizational structure had to be designed to soften the tensions arising from diverging national agendas. This was the foremost task at IIASA. First, academic organizations, and not governments, were nominated as member organizations of IIASA. This model of the neutralization of the political was widely used by many international organizations, including CERN, where independence from sovereign politics was expressed in the principle that any individual scientist could participate at CERN regardless of nationality, thus, as Dominique Pestre has put it, "escaping the burdens of the nationalism."[50] In the case of IIASA, to be sure, this neutralization was partial with regard to East European countries, where academic organizations were closely controlled by governments. Also, CERN's principle of universal, world science was applied by IIASA to only a limited extent, because participation in IIASA was restricted to scientists from its member countries.[51]

At IIASA, but also at CERN, the institutional reconciliation between the two, national and international dimensions, was normally addressed at the top level, the council meetings: several interviewees admitted that they had been aware of political rationales, that is, national interests, lurking behind research projects at IIASA. For instance, the choice of Canadian or Siberian forests as a research object was acknowledged, albeit silently, as a political concession to the respective national interests. The shaping of a research agenda beyond particular national interests was easier to achieve at CERN than at IIASA, because CERN was able to refer to the physical construction of a laboratory as powerful support for its universal orientation, while IIASA lacked a similar reference to a material tool, dealing instead with soft technologies of aiding in decision making.[52] But if CERN's mission was to put European science at the same level as US science, IIASA aimed even higher, aiming to forge a new type of global governance. And whereas there was a trend to form nationally homogeneous departments at CERN, as noted by Pestre, IIASA scholars genuinely mixed across research programs. Finally, while both CERN and IIASA hosted scholarly communities that shaped and advanced their own professional interests, which did not always agree with the interests of national member organizations, what was even more important was that these international platforms provided a new type of context where *new interests* emerged.

Anchoring common goals in a concrete research agenda was another difficulty that IIASA's leaders tried to overcome. At all costs what was regarded as a futile ideological debate had to be avoided; thus the application of systems analysis to social issues was deemed unworkable. However, what exactly constituted social issues was a particularly murky zone, where consensus of East-West systems analysts had to be negotiated on a case-by-case basis. For instance, the subject of public health (which obviously involved multiple social issues), was approved and

included in IIASA's demographic and urban planning projects. However, although IIASA launched a project on international negotiations with an emphasis on complexity, multilateral participation, and the impacts of technology in 1986, it was not until 1989 that scholars began to call for widening IIASA's agenda to social science-based policy analysis. Up to that time there had been a general preference for what was seen as technical and natural scientific areas and "harder," quantitative approaches; according to Raiffa, "the languages of the Institute [were] English, Mathematics and Fortran."[53]

Yet speaking a common language and working toward articulating common goals was an important strategic orientation. Presenting a long-range strategy, Raiffa noted that the institute could not be too careful in considering and even hosting external events related to "highly political" subjects, such as world trade, catastrophe intervention, and the ongoing UN conference on the Law of the Sea.[54] The solution was found in a focus on what were defined as universal and global problems:

> Universal are those problems such as organizing the pick-up of solid waste refuse in all our cities. Every single city has the same problem—it's universal. By making a detailed study of what happens in New York City, or Leningrad, or Tokyo, we do not have in mind solving those problems for those cities—it would be nice if this were a by-product—but we want to understand the problem itself, because the methodology and philosophy of approach might be transferable on a universal basis. . . . Global problems are the problems which require a concerted effort by many nations to provide a solution. The Law of the Sea is an example of one. What we do about man's effect on climate, what we do in terms of international computer networks, or international river systems are examples of more global problems.[55]

Accordingly, during the first years of its existence IIASA focused its research agenda on universal problems, which, as is evident from the above quote, were understood to be suitable objects for international transfer. From late 1970s on, the interest was widened to embrace global problems and more active and direct involvement in globally concerted policy action.[56] It should not be forgotten that back then, as at the moment of writing in 2015, neutral platforms for studying transnational issues were in huge demand. Scientists and policy makers from industrialized countries looked for places where they could gather to conduct preparatory discussions for international legislation. As one interviewee recalled, US government officials supported IIASA because they thought it would provide for "a place in Europe where we can talk about common problems, such as insects in forests, perhaps, dirty water."[57] But this observation refers to a particular, in

fact, quite advanced stage of policy negotiation. In order to become common, problems had to be framed proactively and carefully so that they could become acceptable for different governments. This required active management of the context, making way for the introduction of what could be understood as controversial issues. My British interlocutor related to me his experience of introducing research on risk to the East-West agenda as he was advised by his Russian colleague at IIASA:

> [You should not] go to Moscow and start talking sociology of science, because they will throw you in the Moscow river. Instead, you should talk technocratically, to find a way to socialize technocracy. That was an interesting challenge, one I recognize in East European colleagues. You can talk about siting issues. Siting can be a technocratic problem of optimized localization, rather than a problem recognizing that there might be deeper influences of political and normative and ontological kind if we need that stuff anyway.[58]

Here this Russian scientist told my interlocutor that there was a way to debate issues associated with controversial subjects, such as hazardous waste in the Soviet Union, by using a proxy of an entirely technocratic discourse, consisting of both the language and institutional setting of expertise, associated with siting and optimal planning. This and other examples show that some Soviet technocratic discourses could be compared with the Soviet cultural discourses in that they carried hidden, what was called Aesopian, meanings.[59]

In this context of mutual adjustment through defining methods, selecting research objects, and choosing a particular language, a question arises as to whether and how the depoliticization of IIASA's organizational structure and research agenda related to the views of individual researchers. Perhaps this discursive maneuvering, quite necessary from the diplomatic point of view, was perceived as political censorship by researchers. The threat of censorship was explicitly recognized by the directorate, and close control of the work of individual researchers at IIASA was deemed to be inappropriate in principle. Again, it was Raiffa who suggested that resident scientists should be free to publish whatever they saw fit for their own scientific purpose under their own names, in whichever outlets they found suitable for their own individual goals. Institutional monitoring, in turn, would apply only to those materials that were published and promoted as IIASA studies. Even in this case, it was decided that the council would not act as a review board, thus ensuring that political diplomacy would not directly control scientific production.[60]

An overarching strategy of separating individual research and broad institutional agenda is one thing, but the actual behavior of individual scientists as po-

litical subjects must also be considered. Some of IIASA's scientists may have used technocratic language to subvert Soviet censorship, but what about the scientists' own attitudes to political events on both sides of the Iron Curtain? My interviews with IIASA scholars revealed rather reflexive and strategic self-censorship in their everyday interactions. This particularly applies to East European scholars, who acutely felt that political discussion was risky. A Polish scientist recalled that he avoided discussing the introduction of martial law in Poland in 1981–1983 with his colleagues at IIASA; his Russian colleagues even explicitly advised him against ever speaking out on this particular situation.[61]

But not only East Europeans fostered their internal censor. Even when heavy drinking was taking place at Russian scientists' homes, some Westerners feared that they might put their hosts in politically inconvenient situations and, accordingly, picked their conversation topics cautiously.[62] I have not, however, come across any single case of a Soviet scientist being reprimanded by Soviet authorities for taking too much liberty with his social life or views in Vienna. The only casualties, it seems, were Western scientists suffering from heavy hangovers after partying with their Soviet colleagues. The institute, in this way, appeared to be a privileged island of (carefully managed) freedom for the producers of scientific governance in the volatile Cold War world.

Finally, an important part of Cold War politics needs be considered, namely cultural diplomacy. Even those Western scientists who fostered a purely pragmatic interest in IIASA as a way to advance their individual scientific projects or gain access to literature, found themselves involved in the rituals of Cold War cultural diplomacy. An Austrian scientist who worked on the food program of 1976 recalled regarding his stay at IIASA as an exceptional opportunity to access data on world populations and food for the purposes of global modeling. Yet he could not help but become aware of the political aspect of the institute as his first day at work coincided with celebration of the October Revolution.[63] Not only Soviet, but also Western rituals were staged at IIASA: Canadian pancake breakfasts were organized regularly, and one of the greatest annual festivities was the July 4 celebration. During one such event a live elephant was brought to the gardens of the schloss as a symbol of the Republican Party. In this way IIASA combined the requirements of cultural diplomatic representation of the member nations with attempts to foster a research environment that transcended national and political boundaries.

I need to add, however, that there was more politics at IIASA than just the clash between communist and capitalist ideologies, complications related to military competition, or cultural symbolism. In spite of IIASA's declared interest in global and universal problems, there were telling lacunas in its research agenda, testifying to politically motivated selection. One such lacuna was nuclear security, a subject

FIGURE 4. Celebration at IIASA. Mr. Lukas, resident in Laxenburg, had bought the 2 old elephants from a circus and the animals were living in a shed in Laxenburg but were also often seen in the park and around the village. Courtesy of IIASA.

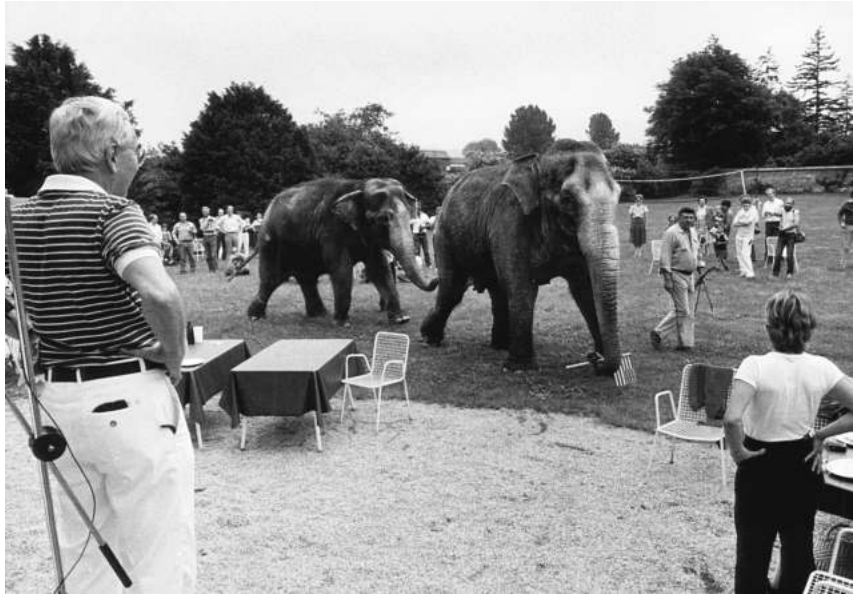

FIGURE 5. Elephants as symbols of the Republicans in the backyard of the Leopold Schloss's restaurant, the 4th of July celebration, Laxenburg, Austria. Courtesy of IIASA.

that was not addressed at IIASA until the Chernobyl catastrophe in 1986, although the Institute developed a pioneering study of world energy systems in close cooperation with the International Atomic Energy Agency (IAEA). Only after Chernobyl was a new research program dedicated to technological risk launched.

Furthermore, one should not jump to a conclusion that politics at this East-West platform was merely a phenomenon to be purged and controlled. On the contrary, there were also other, activist politics emerging through IIASA's activities, which effectively undermined the ideological East-West divide. As I show in the subsequent chapters, IIASA was home to some of the most progressive and radical thinkers on environmental governance. Although IIASA visitors' lists always contained the names of leading economists who promoted rational choice theory, criticized as nondemocratic technocrats by civil movements and historians of governance alike, the institute also hosted pioneering climate scientists and advanced a global environmental agenda. In line with this, I suggest conceptualizing IIASA as a heterogeneous laboratory, where the Cold War world of the 1950s morphed into a new way of being and where the systems approach generated new forms of politics.

FIGURE 6. IIASA scientists' soccer game "USSR" versus "The rest of the world" refereed by Peter de Janosi, IIASA director (1990–1996) (fifth from left, standing), Laxenburg, 1978. Courtesy of IIASA.

FIGURE 7. IIASA scientists at work, probably the 1970s. Courtesy of IIASA.

Coproducing the World System beyond East-West

Given the significance of the geopolitical tensions described above, a striking feature of IIASA was that the institute served to produce a unique, albeit loose, transnational association of systems scholars, an association that forged a new way of thinking about governance in East and West alike, as I describe in the chapters that follow. In this section I discuss several cases of East-West cooperation that demonstrate IIASA was not just a place for performing rituals of Cold War diplomacy, but a platform where significant innovative contributions to policy science were developed through a genuine symbiosis of East-West expertise.

To begin with, IIASA enabled contacts among scholars who would otherwise struggle to meet. For instance, Herbert Simon espoused strongly anti-Soviet views and refused to visit the Soviet Union, although his work was available in Russian (e.g., *Administrative Behavior* was translated in 1974). Yet Soviet scholars could meet Simon at IIASA, where he gave talks on procedural rationality and ill-structured systems in April 1979.[64]

Perhaps the most salient example of such East-West symbiosis in advancing policy science was the combination of Western intellectual entrepreneurialism and the modeling skills of Russian mathematicians. One example is the influential theory of increasing returns and path dependence, developed by the American economist Brian Arthur during his fellowship at IIASA (1977–1982).[65] Arthur derived his idea in part from his observation that IIASA's staff tended to buy either VW or Fiat cars. Arthur formulated a hypothesis that personal imitation on a small scale might lead, practically by chance, to VW's domination of the car market. He questioned the neoclassical economists' idea of equilibrium, using the example of the standard typewriter keyboard to show that economies contain many apparently insignificant events that can have massive consequences in the future. In particular, Arthur focused on proving that competing technologies may lead to a lock-in effect. For example, the QWERTY keyboard, invented in 1873 and widely used in countries with the Roman alphabet, remained in use despite the invention of much more convenient, faster keyboard systems, such Dvorak and Maltron.[66] These examples led Arthur to formulate the insight that the fittest technologies do not always survive and that "small events" get amplified into trends through positive feedback. However, according to Arthur himself, none of his US colleagues could help him calculate the stochastic processes of the impact of micro decisions on further industrial development (he approached Joel Cohen and Samuel Karlin). The mathematical apparatus for proving Arthur's path dependency theory was developed by his officemates, Ukrainian mathematicians Iurii Ermolev and Iurii Kaniovskii, who used the so-called Kiyv methods of

stochastic gradient theory.[67] Arthur's case not only illustrates East-West transfer, but also shows that in some cases Soviet ideological determination to prove the inefficiency of the market system did not contradict, but in fact reinforced the advancement of a postpositivist, more complex understanding of economic dynamics.[68]

Furthermore, IIASA facilitated the dissemination of some lesser-known Russian economic theories in the West. One example was the case of Nikolai Kondrat'ev's theory of long-wave development cycles, originally developed in the 1920s and 1930s. According to Kondrat'ev, the development of the economy was not linear but cyclical, with overlapping cycles of different lengths: for instance, in addition to the widely recognized seven to eleven year business cycle he distinguished long term economic cycles of growth and decline measuring 50 years and more.[69] Using statistical time series analysis covering about 140 years, Kondrat'ev detected such long cycles in many areas, including the wholesale price level, the interest rate, foreign trade and workers' wages.[70] During the 1980s IIASA sponsored many research initiatives which probed the applicability of long-term cycles theory to different areas. While this type of research into long-term processes deserves a study of its own, I would like to point to just one prominent example where Kondrat'ev's ideas were used to construct a decision aid, illustrating the East-West travel of ideas, technologies and people.

During their stay at IIASA (1983–1984), the US pioneers in global modeling Dennis and Donella Meadows developed a resource simulation game, which drew on WORLD3 at IIASA. The WORLD3 model was produced to simulate global interaction among production, consumption, environment, and pollution, with a time horizon of 200 years, from 1900 to 2100, and its findings were presented in *The Limits to Growth*. At IIASA this model was simplified: the time horizon was shortened to represent ten cycles of decision making, each five years long, and the scale was adjusted to a national economy.[71] This game was commissioned by USAID, originally intended to be used by US government officials, but it later became a tool for training energy and environment managers in Latin America to give insight into sustainable development. It involved a thirty-year planning horizon, and officials of UNIDO's Vienna office were consulted in its development. Further assistance in developing the game came from MIT engineer John Sterman and a group of IIASA scientists; Dick Duke of Michigan University also consulted with Meadows, as he was visiting IIASA at that time.[72] Building on this experience, the Meadows created STRATEGEM-2 (Strategic Games for Educating Managers), a game that communicated Kondrat'ev's long-wave theory to managers.

Funded by a 500,000 USD grant from the Canadian government, STRATEGEM-2 was used by companies in the West, but also spread in the Soviet bloc,[73] where business games were becoming hugely popular in the 1980s, as managers

sought alternatives to fix the inefficient system. The transfer of business games, particularly those assisted with computer simulation, was anchored through the International Federation for Automatic Control (IFAC) and the Simulation and Gaming Association (ISAGA). ISAGA, in cooperation with the Institute of Control Sciences in Moscow, even organized an international workshop on simulation and gaming in Almaty, Kazakhstan, in June 1985, where Meadows presented his game.[74]

The goal of STRATEGEM-2 was to demonstrate how investment and production policies that were rational from individual companies' point of view interacted in the economy as a system, producing the long waves of under- and overexpansion of national economies.[75] The game simulated processes over fifty years; while playing it, managers would experience the overshoot and collapse of their industrial sector. More importantly, Meadows emphasized that his game had a moral message. By revealing the systemic outcomes of individual actions, STRATEGEM was meant to communicate to the players that "they were the only source of change," being "fully responsible for the behavior."[76] According to its authors, this game was a tool for awakening responsibility in the players, by showing that the long wave and collapse emerged not from random factors or incomplete information, but as "a consequence of bounded rationality." In turn, the long-term simulation compensated for the otherwise common loss of institutional memory of overshoot and collapse in investment, because in natural life many managers who experienced a downturn would not live to see the next long wave.[77]

In addition to the scientific tools and theories produced at IIASA as the synergetic effect of this East-West cooperation, a sociotechnical link between East and West was forged literally, IIASA provided the first computer link across the Iron Curtain. The institute was connected via a cable to Vienna Technical University's CYBER 74, and as early as 1973 had an input-output unit that gave scientists remote access to the CDC 6600 supercomputer located in Frankfurt.[78] Experimental connections with Moscow were also established in 1974, when IIASA established a data link to the Moscow Institute of Control Sciences. Moreover, this Soviet institute boasted a British machine, ICL 4/70, which made its way to the Soviet Union despite the embargo, thanks to British lobbying.[79]

It was also no accident that mathematical modelers at IIASA, VNIISI in Moscow, and the UN world economic agencies used the same type of computer, PDP-11, IIASA's machine, a 16-bit PDP-11/70, was not a powerful one, but the institute had time-sharing arrangements allowing it to use several large computers in other European countries. Most of the other computer equipment for IIASA was obtained from Control Data Corporation, a key partner of the institute and the operator of what was at that time the world's largest international time-sharing network, CYBERNET.[80]

All of these connections were a part of larger computer revolution that began in the second half of the 1960s. Construction of data networks started by linking national and branch organizations, which was followed, from the 1970s on, by international links. Whereas in the Soviet Union this computer network project was incorporated into OGAS, a gargantuan and unimplemented program led by Victor Glushkov (who was also active at IIASA), the Soviet Academy of Sciences created its own data network, Akademset', which was used exclusively for research purposes by 1981.[81]

Technical infrastructure was seen as crucial for integrating national efforts in order to conduct global studies, IIASA served as a computer data link, connecting, first, the national member organizations in Moscow, Bratislava, Budapest, and Pisa in 1974, and then actively exploring joining the European information network.[82] This led to the development of IIASANET: data links were established with INION and the Institute for Scientific and Technical Information (VINITI) in Moscow. Gvishiani's VNIISI was also linked with Sofia, Prague, and IIASA.[83]

Data links contributed strongly to the material coproduction of the world system beyond the East-West divide, but this process was not smooth. There were many conflicts, often rooted in scientists' differing understanding of the governmental system and the role of scientific expertise, which influenced the conceptual design of the models they intended to serve as aids in policy decisions. In an interview, a West German scholar recalled arguing with a Russian mathematician over optimal planning models. According to him, this Russian scientist had designed an overtly centralized model intended to serve one decision maker. The German scientist criticized it, arguing that in real life there were many different actors involved in a democratic system. "He looked at me and said that rational agents would choose this model anyway. I told him that research shows that people often are irrational, to which he responded that he did not model for fools."[84] What such anecdotal stories capture is that the development of even presumably technocratic models could lead to explication and clashes over underlying social assumptions.

Building computer infrastructure enabling data links across the East-West divide was an astonishing achievement for the early 1980s. However, this infrastructure did not solve the problem of secrecy, which was particularly pressing as far as Soviet data were concerned. The lack of Soviet statistical and other data was strongly felt in the IIASA study on world energy, led by Wolf Häfele. This project included the Soviet bloc through cooperation with the Siberian Power Institute of Irkutsk. The energy program was IIASA's flagship project, generously funded and ambitious in scope, and the first case in which Eastern data were used alongside Western data in a single model.[85] As remembered by a scientist involved in this study, a good deal of creativity was employed in the making of this study:

> In those days the Soviet Union was still not giving the data away, but although the data was secret, it was still possible to work together. One of our colleagues from East Germany and another one from Prague . . . would go to Russia to present their estimates, although we did these estimates with our colleagues from Russia. And they go to Moscow, the Soviet Academy of Sciences, the Energy ministry, and if the local experts say that our estimates are unrealistic, then we go back and rewrite the data until we get a better response. In this way the Soviets gave us not the data, but feedback. . . . After all we had some data on how much gas Russia had, Soviet plans for nuclear energy, coal reserves, all these were better known. It was not easy to work, but the biggest problem was not [the] East-West divide, but disciplinary barriers, IIASA was one of the first interdisciplinary institutes, yet these barriers were more difficult to overcome than political ones.[86]

This account clearly shows the importance of organizational and discursive staging scientific impartiality: although the estimates were coproduced with Russian colleagues, scholars from Western and Eastern Europe had to pretend they were "uninformed foreigners" in Moscow, thus creating a social space for informal, unsanctioned feedback. It also demonstrates that there was considerable room for maneuver in attempting to overcome politically motivated censorship. As my interlocutor claimed, IIASA drew on its international status (by sending non-Soviet scientists to the Soviet Union) to verify the data. Committed to international cooperation, Soviet institutes could not easily dismiss IIASA's scientists. But because IIASA scholars could not receive raw Soviet data, they relied instead on Soviet economists' informal loyalty to the universal mission of advancing science, using this loyalty to extract approximations of the data for the first study of the world energy system. In other cases the Soviets were more forthcoming in sharing their data, as in the study of large organizational systems comparing the Bratsk-Ilimsk Territorial Production Complex in the Soviet Union, the Shinkansen project in Japan, and the Tennessee Valley Authority in the United States.[87] Bridging the East-West divide was clearly an easier task when the goal of a study was a retrospective overview.

IIASA Repoliticized

When détente collapsed in the early 1980s, IIASA encountered a serious crisis. At the end of 1981, the US National Academy of Sciences (NAS) informed the IIASA council that it would discontinue payment of its membership dues starting in

1983. This was motivated by severe cuts in funding from the National Science Foundation (US membership cost 2.3 million USD per year and IIASA's annual operating budget was around 10 million USD). For IIASA's council, however, it was clear that this unexpected announcement was not merely about financial hardship. The withdrawal of NAS was part of the hardening of US foreign policy toward the Soviet Union, and IIASA, despite its carefully construed nonpolitical and nongovernmental status, found itself in the eye of the geopolitical storm. Security concerns about IIASA's reputation were voiced in the media: in 1981 a Soviet member of IIASA staff was caught trying to obtain confidential data about North Sea Gas in Norway. The spy was immediately sent home, but this incident gave the United States an excuse to reconsider its membership.[88] Other countries followed suit: in 1982, the British member organization, the Royal Society, declared it was withdrawing its membership on the grounds of complications regarding US membership, but also stating that the Department of Environment, the UK funder of IIASA, was disappointed with the institute's scientific outcomes. In turn, from the very beginning of its membership, the Royal Society considered IIASA's agenda too oriented toward social science.[89]

This changing geopolitical climate led to a rapid formation of a strategic coalition to defend IIASA, involving both former and present IIASA leaders and associates, such as Bundy and McNamara. The representatives of the national member organizations and Austrian chancellor Bruno Kreisky wrote letters to Reagan, stating their support to IIASA.[90] Having just recovered from pneumonia, Gvishiani rushed to the council's meeting in the Vienna Woods to assure IIASA's director that the Soviet Union would continue paying its dues and to confirm that the Soviets would be open to funding IIASA from private sources.[91] Understanding that Reagan's position was motivated by the Soviet Union's military involvement in Afghanistan and intervention in Poland, the strategic coalition sought to remind the US government that IIASA was, after all, not a bilateral but a multilateral organization, and that it provided one of few platforms for "informal, off-the-record" discussions about such sensitive issues as East-West transfer and arms control. They invoked the importance of East-West transfer time and again, arguing that the data on Soviet energy resources was available almost exclusively through IIASA's energy program.[92]

In addition to Gvishiani, Raiffa, and Bundy, who had more than fifteen years' experience of direct and indirect participation in the steering of IIASA, the strategic coalition for saving IIASA gathered representatives of a particular school of policy sciences, such as McNamara; it also included scientists and policy makers previously involved in Johnson's Great Society program, as well as liberal democratic American scientists and policy activists. A prominent role was played by former diplomat Chester Cooper, then a consultant at Resources for the Future,

which ensured that the American Association for Advancement of Science (AAAS) would take over the role of the member organization NAS. Raiffa joined as the representative of AAAS and began to rally supporters and potential funders, as AAAS could not pay the membership bill. This lobbying effort was successful: US membership was maintained, with money coming from various government and private sources, although the US financial contribution to IIASA was significantly reduced.

In Britain the situation was much more complicated due to the greater centralization of government science funding. When the Department of the Environment discontinued funding for the Royal Society's membership at IIASA in 1982, the UK Fellowship of Engineering expressed the wish to become a British member organization replacing the Royal Society, but struggled to foot the hefty bill for membership.[93] To raise funds, some rather unorthodox solutions were attempted: in 1983 a UK Committee for IIASA was established and funded by Hermann Bondi, an influential British science administrator who had earlier headed the European Space Research Organization and helped to develop the European Space Agency, and Robert Maxwell, the media magnate. However, having failed to raise the required funding, this committee disbanded in November 1984.[94] Uncertainty over the future continued to shake IIASA during the 1980s: Italy declared it would withdraw its membership "mainly for budgetary reasons" in 1986 and France left in 1988.[95]

In this precarious situation IIASA's leadership was forced to employ all its entrepreneurial skills and look beyond governmental sources for income. In 1984–1985 Raiffa developed the brave idea of establishing what he called "regional IIASAs," extending to third world countries, and even obtained the support of the prominent French OR scientist and one of the forefathers of *la prospective* studies, Jacques Lesourne. The old networks were mobilized, such as the International Federation of Operational Research Society. However, the idea of regional IIASAs did not come to fruition.[96]

In 1985 IIASA turned to the corporate sector, although it realized that private funding posed a significant risk of reducing IIASA's credibility as a scientifically impartial organization. Just as in the case of the depoliticization of systems analysis, described earlier in this and the previous chapter, establishing links with the corporate sector involved careful boundary management. After all, IIASA was already doing some research on corporate governance. This orientation was in fact strongly encouraged by the Soviets, who had a longstanding interest in corporate management. For instance, in 1978 Gvishiani and Boris Mil'ner, the prominent economist and organization scholar and vice-director of VNIISI, participated in a workshop on corporate planning, which was chaired by Giscard d'Estaing and arranged in partnership with the European Institute of Business Administration

(INSEAD) in Fontainebleau, France. Speakers included the US management theorist Igor Ansoff, top managers from the Soviet Elektrosila (at that time one of the world's largest electric motor enterprises), Metalexport of Poland, the Latvian Gosplan, General Electric, the French Commissariat du Plan, Hewlett-Packard Europe, Shell, FIAT, Daimler-Benz, and the vice president of Coca-Cola, who all agreed that despite advances in policy sciences, concrete applications of management science, particularly the systems approach, were insufficiently used in their organizations. However, this should not diminish the significance of the fact that application of the same methods at L. M. Eriksson, Électricité de France, and the system of state socialist planning were discussed in this workshop. This suggests that a parallel between late Soviet and corporate governance was not just a metaphor, but a consistently pursued activity.[97]

The intertwining of systems analysis with state and corporate governance in both blocs was also evident at IIASA, where, for instance, a project to gather several hundred corporate executives in a series of "Global Future" conferences was presented to the IIASA council in 1985. This envisioned network of experts and executives was to involve a consulting company, Business International, and elite business schools, such as INSEAD, Harvard Business School, and the MIT Sloan School of Management. The idea of IIASA corporate associates was proposed by Chester Cooper, then special advisor to the director, and Robert Schneider of Xerox Corporation,[98] while the idea of the business school network was proposed by the Soviets, clearly in hope of opening a path for more transfer of know-how to aid the failing Soviet economy.[99]

Another example of the efforts to link Soviet management and policy elites with Western corporate circles was the first joint workshop on systems analysis organized by MIT and VNIISI in Boston, Massachusetts, in 1985.[100] In addition to high ministry officials, the workshop's program involved the research institutes hosting *perestroika* economists such as TsEMI, its spinoff, the Institute of Technical and Economic Forecasting, VNIISI, VNIIPU, the GKNT, and IMEMO. Finally, the culmination of this exchange was the launch of joint East-West ventures, which drew on IIASA's networks at the end of the 1980s. The first such East-West joint venture, Baltic Amadeus, was established in Vilnius, then Soviet Lithuania, to import Western office equipment and computers.

In all, it seems that the turbulence following the withdrawal of the NAS from membership and the loss of a steady flow of funding from the US government not only led to a search for new strategies to ensure the survival of IIASA—now both a bridge between East and West, but also a home of the systems approach community—but also to the strengthening of the links among leading systems analysts, politicians, and corporations. Both impacted on the internal organization culture of IIASA: while the metaphor of family was still in use, the actual prac-

tices acquired an increasingly disciplinary character. There was a parallel between the end of détente and the transformation of Raiffa's carefully assembled internal culture of informality. The decrease in informality was also a sign of its time: by the mid-1980s, according to Gideon Kunda, the norm of a highly intensive, strong culture in a high-tech corporation was firmly established, and many managers sought to implement it in their organizations.[101]

The crisis directorship of IIASA was drawn from one of the largest US corporations, General Electric, Thomas Lee (1984–1987) and Robert Pry (1987–1990). Lee, a former head of strategy for General Electric and professor at MIT's Sloan School of Management, replaced the prominent environmental scientist Buzz Holling. Pry came from a similar background, with combined experience at General Electric and MIT. The new ways of running the family of systems analysts shocked and terrified some of the IIASA staff. Lee, for example, banned the use of alcoholic drinks on the premises, especially during working hours. He stood at the entrance gate to the institute, telling off staff members who came in late. The much-appreciated overnight sessions with six packs at the computer center were prohibited, for, according to Lee, overtime work was a sign of incompetence and lousy management, to the massive dismay of the computer scientists. In particular Russian scientists lamented not being able to offer their colleagues shots of vodka in their offices. The frustration of the staff can be seen in the defensive tone of letters sent to Lee, like one asking for permission to serve wine at a farewell party. The next director, Pry, was even more control-oriented, particularly with regards to finance. To enlighten his administration staff, Pry supplied them with hefty management handbooks. During my fieldwork I noticed one such massive copy, balanced on the top of a desktop computer. The book was very useful, I was told, for it stopped the PC box from vibrating.[102]

In the 1980s IIASA turned to the corporate sector for funding, and even began offering applications of systems expertise to private companies. Did this shift signal an emerging link between the systems analysis community and the emerging neoliberals? More research is needed before we can draw any conclusions. If anything, IIASA's transnational systems community was for more, not less, governance. They were ex-RAND, ex-Cowles Commission, and pro-OR, but also much more conscious of the limits of narrow rationalistic and economic methods than some of their contemporaries. Indeed, as I show in the subsequent chapters, this particular systems community championed a postpositivist, reflexive approach to policy sciences emphasizing the performative power of the scientific method.[103] The systems approach evolved from being a reductionist technique, applicable only to simple systems, to a more complex, critical venture that emphasized

meaning-making frameworks for the development of decision aids.[104] Narrow scientism was criticized by systems theorists themselves, as in Russell Ackoff's paper on the heart and science of systems analysis. By the mid-1980s the turn away from hard, laboratory-based studies predicting the future toward postpositivist, reflexive expertise plugged into policy making, was clear. Biosphere studies, carried out by such prominent scholars as William Clark, led the shift in approaches to scientific expertise, as did the work of Giandomenico Majone in cooperation with Mary Douglas, Jerome Ravetz, and, later, Brian Wynne.[105] IIASA managed to recruit some of the world's top scholars, motivated to search for solutions to global problems. At the nadir of IIASA's existence, when the institute faced huge financial uncertainty due to the withdrawal of the United States and Britain, the prominent demographer Nathan Keyfitz chose IIASA over Berkeley, even though this decision entailed a significant cut in pay.[106]

We also need to ask whether this East-West allegiance in the search for better governmental techniques is proof that the systems approach contributed to legitimization of an rather illiberal, antidemocratic project of elite technocrats. Did not the issue of human rights fall victim to the depoliticization of the systems approach? Similar arguments are often voiced in criticism of technocracy, of which the systems approach is habitually seen to be a part. And indeed, as I showed in this chapter, the transnational practice of systems analysis relied on a careful management, which excised potentially controversial areas from IIASA's agenda. Nevertheless, I also argued for the need of a more nuanced view, which takes into consideration the variety of ideas espoused by systems analysts and their role in the context of the Cold War. Certainly, East-West rapprochement with an aim to develop a universal science of governance was a result of an intense depoliticization of the systems approach. For East-West diplomacy, this so-called technocratic approach was to a large extent instrumental: the promise of optimization through linear planning, and of making command and control processes more effective, appealed to the Soviets, whereas US governmental elites hoped these techniques would have a subversive effect. But perhaps Mirowski was not entirely correct in claiming that the politics of decision sciences was all "centralized, hierarchical, and deeply fearful of loss of top-down control."[107] According to Mirowski, this desire for top-down control was illustrated by Arrow's impossibility theorem, which cast the system of democratic majority voting as a tool, inferior to the computer and unsuitable for making collective, rational decisions.[108] Arrow was then critically described as the main proponent of a technocratic system, one that is guided by a laboratory notion of rationality and that completely excludes public participation.[109] And yes, this is exactly what the Soviets hoped for, at least in the early 1970s.

But then, as most technical systems do, systems governmentality had unexpected effects. The systems approach offered new cognitive and digital tools of control, and the production and use of these tools required a sophisticated infrastructure, which served as a platform for innovative ideas that eventually deeply challenged Soviet authoritarianism. In the end, system governmentality led to the emergence of a new, different politics. Even if Arrow could be accused of a lack of political sophistication, there was more politics to systems analysis than the critics of rational choice had cared to notice. The systems approach led to a post-positivist, constructionist, and relational understanding of objects and subjects of governance. In its later, more sophisticated version, systems analysis also posited the importance of such principles as self-regulation, the free circulation of data, and openness. To ensure these, new algorithms had to be created, as well as new institutions, practices, and a culture enabling the production of such expertise.

The birth of IIASA was driven by diplomatic initiative. Yet IIASA researchers were not mere emissaries of their respective home organizations and/or governments. In the remaining part of this book, I argue that IIASA scholars, involved in forging the systems approach, were conscious makers of a new world, a world that cut across national boundaries. In so doing, however, they drew keenly on national authorities for legitimacy, power, and money, and in this way contributed to the perpetuation of these national structures. While East-West scholars used the emissary rhetoric at home to argue for the national importance of IIASA, inside IIASA they pursued a different strategy. At the level of everyday life at Laxenburg, the tension of being a governmentally funded nongovernmental organization was resolved by adopting an orientation to informal practices, internally legitimizing them through the idiom of the "IIASA family," coined to distinguish IIASA from national bureaucracies for academic research, and, at the same time, externally projecting the image of a modern, global organization, seeking to redefine governmental interests such that they would embrace the entire world.

The term "IIASA family" in practice served as a social glue for an emergent transnational community of systems analysts based in Laxenburg. Several of my interlocutors, who came from the United States and Western Europe and worked at IIASA from its beginning in 1972, emphasized that their key impression was that the people from the Soviet bloc were "just normal." In turn, systems analysis was also normalized through IIASA: it evolved from being a clandestine undertaking developed at the semisecret institutes of the military-industrial complex, into a basic decision science aiming to provide a knowledge platform for policy decisions in the civilian sector.

This was a complex process in which the professionalization of systems analysis went hand in hand with the socialization of Eastern and Western scientists, as

they mutually negotiated the fundamental features of this new policy science. In the IIASA family project, the US-Soviet competition was effectively replaced with IIASA's own project, namely, its organizational survival in a highly uncertain, politicized environment. This survival could only be guaranteed by fostering a particular science—systems analysis and social practices such as horizontal networks and informal relations. In the chapters that follow I will describe in more detail the development of a new mentality of scientific governance.