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Cold War origins of the International Federation for Information Processing

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The International Federation for Information Processing (IFIP) was born as a nongovernmental federation with the main goal of bringing together computer professionals from countries in the East and West. This article examines the Cold War context of the IFIP's origins and the mechanisms its founders used to reconcile computing and politics and to construct computing as an international discipline.

''We are international cooperation,'' declared Heinz Zemanek, the Austrian computer pioneer who served as the International Federation for Information Processing (IFIP) president from 1971 to 1974.[1] (At the time, Zemanek was also the director of the IBM Vienna Laboratory.) Born in 1959, the IFIP was a nongovernmental organization with the main goal of bringing together computer professionals from countries in the East and West. But weren't computers first created as a military technology and didn't they become ''cold war machines'' reproducing ''closed spaces''?[2] What kind of cooperation was Zemanek talking about? The answer is scientific cooperation. According to William Aspray, in the first exploration of the international history of computing, the scientific mode of diffusion coexisted with the business mode from the early days of computer technology.[3] Yet, despite the rapid development of international and transnational computing history in recent years, little research has focused on the scientific mode compared to the business model of international diffusion.[4]

In fact, the IFIP was one of the first international forums; a meeting ground where Americans, Europeans, and Soviets discussed computing. In exploring the origins of IFIP (mainly on the basis of published materials),[5] this article attempts to answer several questions: How did the early computing experts come to set up an international community, contributing to the institutionalization and professionalization of their field in the world divided by the Iron Curtain? What does computing have to do, if anything, with other Cold War disciplines that went international in the mid-1950s—namely nuclear physics and the geosciences? And who were the people both willing and permitted to share knowledge charged with potential military applications?

Receptive to Thomas Misa's call for a new line in computing history, this article's goal is not only to uncover a forgotten page in the history of international cooperation in computing, but to build a connection between the history of computing and a larger discussion of the roles of science and technology in the dynamics of the Cold War.[6] John Krige's *American Hegemony and the Postwar Reconstruction of Science in Europe*[7] and the events and publications of the Tensions of Europe and Inventing Europe international projects have demonstrated the benefits of deconstructing the notion of the West using concepts of appropriation, resistance, and hybridization of American science and technology.[8] This history of the IFIP's origins is part of this new approach. Although conceived by an American entrepreneur at a time when the computer was an American object par excellence, the IFIP—created under the auspices of UNESCO—was generally regarded as a European organization.

The realities of the IFIP's international dimension extended even further to include Soviet Bloc representatives. As a result, the issue of the blocs' equilibrium permeated the IFIP's formal structure, but the success of the accommodations for the Soviet block participants requires an explanation. I argue that to explain the success of this international forum we

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need to shift the focus from the narrative of the hardware gap between American and Soviet antagonists toward a vision encompassing various aspects of computing, a broader range of communities, and the transnational networks of computer professionals.

I have structured this article around two major themes: tensions and negotiations. The first part discusses the American, European, and Soviet environments leading to the initiative to found an international organization. The second part analyzes the Cold War context of the IFIP's origins and the search for political equilibrium and internal professional consensus in constructing the organization ''truly international in spirit.'' The conclusion explores the degree to which the IFIP's story was typical.

Triple origins

The intersection between the geopolitical circumstances; the internal logic of developing a computing discipline; and the human agency of Americans, Europeans, and Soviets were crucial factors for the IFIP's founding as a working professional forum.

American conceived

In the decade following WWII, computer technology, although distributed across at least 15 countries, was a domain led by the US and Britain. From the Colossus built to break German codes, to the ENIAC built to compute ballistic tables for the US Army, the two nations pioneered the development of the digital electronic computer and were its main exporters.[9] By 1955, the industrial sector started to dominate the computing field in the US, adding more members to the growing community of computer professionals. This community was not a natural phenomenon, however, but a product of conscious efforts to bring together professionals with different backgrounds. The heterogeneous nature of the American community was the primary factor responsible for the absence of coordinated international policies. This absence of official policy created an opportunity for a young and enterprising electrical engineer, Isaac Auerbach, to conceptualize the idea of an international meeting for computer experts. In due course, Auerbach became the main architect and first president of the international federation for computing.

The particular context in which this idea of an international meeting was first articulated is of crucial importance to understanding the elements in play. According to Auerbach, ''the flash of an idea for having an international meeting'' first occurred to him in November 1955 while chatting with colleagues in a lobby of the hotel hosting the East Joint Computer Conference in Boston.[10] At the time Auerbach's brain-child came into being, he was a 34-year-old engineer working as the director of the Defense and Special Products Division of the Burroughs Corporation. Known to his friends as ''Ike,'' he was originally from Philadelphia, where he received a BS in electrical engineering from Drexel University. After receiving his MS in applied physics from Harvard University, Auerbach worked as a research engineer with the Eckert Mauchly Corporation until 1949.[11]

Auerbach attended the Boston computer conference as a member of one of the professional organizations sponsoring Joint Conferences. ''Joint'' meant that this conference was run by the National Joint Computer Committee (NJCC), which consisted of four representatives from each of the three professional computing societies: the Professional Group on Electronic Computers of the Institute of Radio Engineers (IRE), the Committee on Computing Devices of the American Institute of Electrical Engineers (AIEE), and the Association for Computing Machinery (ACM).[12] The NJCC was the first institution that Auerbach had to convince with his idea in order to realize his vision.

Besides the NJCC's role in providing the institutional support, the experience of the heterogeneous Joint Conferences was a necessary element for organizing a successful international meeting. National and international professional forums are dependent on negotiation and compromise; the readiness to renounce self-interest for the survival and development of the profession determined the sustained viability of Cold War associations. The nature of the American Joint Conferences provided precisely such an experience to its participants. Unsurprisingly, builders and users, East- and West-coast schools of design, well-established technical professional societies, and the new academic-community-oriented ACM all held different opinions about the future of computing and advocated different definitions for computer professional. ''Two warring hardware groups and one poor moribund users group,'' commented the computer pundit Herb Grosch, ''all trying to work together in this JCC farce.''[13] Nevertheless, they achieved some state of internal consensus.

During the 1950s, the Joint Conferences enjoyed significant growth and the organizing committee rose in prestige. This did not lead to the formation of a united professional society, however. Busy with organizing increasingly profitable biannual conferences (beginning in 1953, East and West Joint Conferences were held every year) in tandem with industrial exhibitions, the NJCC had little interest beyond US borders and only limited power because its member societies pursued different international policies. Accordingly, with the growing role of the industrial sector in American computing, Auerbach had to stress the financial opportunities that an international meeting would provide. When presenting his idea for an international conference to the NJCC, he argued that it ''would certainly stimulate both the demand and development of computers internationally and would enhance the potential worldwide marketing opportunities for the vendors in the United States.''[14] Auerbach correctly envisioned the interest to export: IBM and Remington Rand both shipped their first computers to Europe in 1956.[15]

Despite the emphasis on ''marketing opportunities,'' the transformation of idea into action required several years. Following internal discussions, the NJCC formed a special committee to write an official proposal. The result of the committee's effort was the Proposal for an International Conference on Information Processing Systems (ICIP) submitted to Unesco in early 1958. This American proposal stipulated that to be ''truly international in spirit'' the international conference had to be held in Europe.[16]

Parisian born

On the one hand, the geopolitical tensions between the Soviet Union and the US had transformed Europe into the middle ground for the battle for global dominance. On the other, Europe was a relatively neutral zone comprised of a patchwork of ''Soviet friendly,'' neutral, and capitalist countries, thus making it the best ground for international encounters, with visa issues playing a considerable role.

Auerbach was certainly not the only person to have the enlightened idea of an international computing conference by 1955. European quarters accommodated two distinguished sets of efforts for international communication and collaboration in computing that have direct links with the future IFIP: the Darmstadt Conference and the International Computing Center in Rome (ICC).

At the end of October 1955, a conference on Electronic Digital Computers and Information Processing was held at the Technische Hochschule in Darmstadt, West Germany. The meeting was truly international: ''virtually all European machine developers presented papers''[17] and many Americans attended. For instance, Alston Housholder, who represented the ACM on Auerbach's committee for the international conference proposal, had participated in the Darmstadt conference and spread the content of the conference to the American community with an article in *Computers and Automation*.[18] Moreover, the Darmstadt conference proceedings lists several important Europeans involved in the early IFIP: Dutchman Aad van Wijngaarden, creator of the ARRA and ARMAC machines and future leader in the Algol community; Swiss A.P. Speiser, later the first head of the IBM Research Laboratory in Zurich and the IFIP's second president; and Austrian Heinz Zemanek, who built Mailuftern and later worked for the IBM research laboratory in Vienna and became the IFIP's fourth president.[19]

Despite the lively conference featuring European inventions, most of the work was done at universities or research institutions and resulted in a large number of one-of-a-kind computers. Tellingly, no initiative to establish an international professional society was issued from the Darmstadt encounter. The most well-known result of international interaction during the conference was the establishment of German-American networks that led to cooperation between groups developing the algorithmic language Algol. The Algol working group would later solicit the IFIP to be their umbrella organization and would influence the structure of the IFIP's internal constitution.[20]

The text of Auerbach's recollection transmits the impression of genuine appreciation of the degree of enthusiasm and interest in an international conference expressed by Unesco officials Pierre Auger, the director of the Natural Science Division of Unesco, and his associate Jean Mussard. Later, Auerbach learned the explanation for the positive reaction to his initiative: Auger had been trying since 1946 to create the ICC, and Jean Mussard was the executive secretary of the provisional organization. Auerbach's proposal was welcomed ''as a way of creating a greater interest for the Provisional ICC and helping

to bring it into existence.''[21] The center was first imagined as an international computer facility for hosting international and interdisciplinary projects of UNESCO member countries. American and European experts had been consulted and the decision to establish the center in Rome was taken.

The promising vision of international cooperation in line with mathematics was never realized, however; even before 1952, the year of the official foundation, one European country after another disengaged from the project, thus undermining its viability. The arrival of the relatively accessible industrially produced computers on the European market has usually been held responsible for the failure of the first European project to institutionalize international cooperation in computing.[22] However, the most recent studies suggest that the internal struggles of the main international protagonists should be blamed for the center's inability to acquire the equipment. ''I told you of the extraordinary ineptitude which was displayed by almost everyone concerned in these negotiations, which resulted in the project being more or less abandoned,'' wrote the manager of the British manufacturer Ferranti in 1953.[23]

Although Auerbach might not have known that Auger had cultivated the idea to create a European center for computing since the end of WWII, Auger's primacy in international scientific cooperation is well-known to historians of Cold War nuclear physics.[24] Auger was an instrumental figure in organizing international cooperation in nuclear research. In 1952, when the ICC was abortively founded, 11 European governments established the European Organization for Nuclear Research (CERN). This product of Auger's efforts was to see a brighter future. With America's blessing, CERN became the symbol of the postwar renaissance of European research in nuclear physics, and Auger gained a unique experience in reconciling scientific with political goals and maneuvering among actors with different agendas.[25] This experience would eventually serve the cause of international computing.

Unlike the ICC, which fell victim to the never-ending negotiations among its international founders, the 1959 ICIP held in UNESCO's quarters in Paris was a success: nearly 2,000 participants from 38 countries and 13 international organizations attended the conference, and 27 manufacturers from the US, France, Sweden, Belgium, Germany, Italy, Great Britain, and Japan contributed to its exhibition of commercial equipment.[26] Most importantly, a special commission met during the conference and decided to establish a permanent professional federation. Certainly, Auerbach's enterprising energy was central to the project's success, but he was a foreigner to the European cultural tradition and lacked the experience of collaboration with diverse European communities before submitting his project to UNESCO. Auger and Mussard should also be considered as the first architects of the IFIP; Auger first proposed the permanent organization and worked to ameliorate Auerbach's ignorance of European scientific networks, and Mussard provided secretarial support and information on other international federations and took on the responsibilities of the first draft of the federation's statutes.[27] Auerbach was to preside over the organization's provisional governing body, but the two vice president posts were held by the Dutch Aad van Wijngaarden and the Soviet A.A. Dorodnistyn.

Parented by Soviets

The end of the Darmstadt conference was marked by the belated arrival of two Soviet computer designers, Sergei Lebedev (chief designer of the High-Speed Electronic Calculating Machine, or BESM) and Iuriy Bazilevskii (chief designer of Strela, or Arrow), who announced to the world the existence of Soviet computers, which were ironically still classified for the Soviet people.[28] Although western computer scientists knew little about Soviet developments, Soviet specialists were well aware of western successes and stressed to the authorities the danger of the Soviet Union lagging behind the West. In March 1955, the Institute of Precision Mechanics and Computer Technology (ITMVT)—also known as Lebedev's institute—submitted a report on the current state of Soviet computing to the Party Central Committee. The report stated,

> The tempos of development in this field can be compared only to the tempos of development of the jet aircraft and nuclear energy technologies. . . . The gap between the United States and the Soviet Union in the area of digital computers and control devices continues to grow. We are falling behind in the number of machines, as well as in their [technical] parameters. We are also falling behind in production technology and in the applications of computing devices, particularly, for military purposes.[29]

The author of the text was Dmitrii Panov, the ITMVT's deputy director and the same

person who represented the Soviet Union at the Committee of Experts and Organizing Committee for preparation of the ICIP in 1959. During the conference itself, the Soviet Union was represented by a new delegate, academician A.A. Dorodnitsyn, the head of the computing center of the Soviet Academy of Sciences. There was continuity despite this change, since both Panov and Dorodnitsyn represented the academia faction of the Soviet computing community.

Slava Gerovitch's book *From Newspeak to Cyberspeak* follows in line with the latest achievements in the studies of the Soviet science.[30] He analyzes the discursive strategies adapted by early computer experts in the environment shaped by the public anticybernetic campaign and the secret demand of calculating power by the atomic project. Faced with the danger of being accused of falling under the spell of cybernetics laden with alien ideology, mathematicians and computer specialists took as their slogan ''to catch and surpass.'' Gerovitch's account parts with the ''hardware gap'' problem traditionally addressed in the historiography and the connected question of the ''nativity'' or ''originality'' of early Soviet developments.[31] The Ministry of Machine and Instrument Construction backed by military and scientists from the Academy of Sciences constructed the notion of the ''hardware gap'' and the ''originality'' question to use as an ideological weapon in the internal competition for state resources.[32]

Another strategy employed by the competing communities was the policy of secrecy. For example, the ministry objected to disclosing the information on BESM to an Indian delegation, while scientists tried to prevent a publication about Strela.[33]

In Darmstadt, the rivals Lebedev and Bazilevskii were finally faced with the real West: Americans and Europeans presented western machines and expertise. One of the conclusions to draw from this encounter is that the evaluation of the performance of the Soviet machines depends on the vantage point. At Darmstadt, Lebedev's BESM was proclaimed to be the fastest computer in continental Europe. Meanwhile, the 1955 Soviet state commission reported that BESM was inferior to the IBM's Naval Ordinance Research Calculator (NORC).[34] By the end of the 1950s, the hardware gap with the US was wider; suffering from problems in the microelectronic industry, the mass production of Soviet computers developed slowly. Paradoxically, at this time Americans became more interested in Soviet computing than ever before and even publicly broadcasted some of the Soviet achievements.

Constructing an international discipline

To explain the American interest and the Soviets' ability to participate in an international conference and organization, I turn to the broader context and events. Having discussed the American, European, and Soviet contexts leading to the participation at the international conference held in Paris and the decision to establish permanent federation, I can now inscribe these efforts into a larger framework of the Cold War.

Spinning on Sputnik and Atoms for Peace

The ICIP proposal submitted to UNESCO in early 1958 by the NJCC committee adopts several discursive strategies to convince UNESCO officials to support the endeavor. To the present-day reader, these strategies also demonstrate the influence of the Cold War context on the conceptualization and public representation of the international cooperation in computing. The Atoms for Peace initiative, which culminated in 1955 with the famous conference held in Geneva, and the intensive international cooperation in various branches of geosciences under the auspices of the International Geophysical Year (IGY), which took place in 1957 and 1958, demonstrated that scientific cooperation was *d'actualité* and supplied Auerbach and his committee with rhetorical models. To underline the high status of the new computing discipline, a comparison with the Atoms for Peace was the first choice. The ICIP proposal stated, ''It is sincerely believed that the application of information processing systems is equally as vital as the peaceful uses of atomic energy.''[35] The 1955 Atoms for Peace conference not only provided Auerbach and his committee with vocabulary to borrow but also the precedent of West–East scientific cooperation in a sensitive field. Soviet computer designers were able to travel to the conference in Darmstadt, in large part, because in 1955 the USSR reviewed its policies regarding scientific travel abroad and became an effective member of UNESCO.[36]

The Geneva conference was followed by preparations for the IGY. That was another important and widely publicized event, which no doubt stimulated the project for international organization in computing,

providing a model for East–West contacts and networking. Initially, the proposal suggested that the ICIP was held in 1958 to take advantage of the IGY program and funding. Among the international interests of the ICIP, the proposal lists the data reduction of IGY observations.[37] Yet the IGY had an additional and different type of impact on international cooperation in computing.

The launch of Sputnik during the IGY marked the beginning of the space race and demonstrated the disingenuousness of the public official pronouncements stressing the apolitical nature of science and technology. The ''Sputnik shock'' had various repercussions in different scientific communities. Jacob Hamblin sees the division within the community of western oceanographers and a growing distrust and reluctance to cooperate with Soviet peers.[38] In contrast, American physicists are known to have used the Sputnik effect to promote their own professional interests. According to David Kaiser, the Sputnik launch had limited or no ''automatic political valence,'' but was assigned one through physicists' determined lobbying. The construction of a notion of a ''manpower gap'' vis-à-vis Soviet scientists helped to drive an unprecedented explosion in physics enrollments in the US.[39]

It is not a coincidence that an exchange of short-term visits was finally organized between American and Soviet computer scientists following the invitation dating from Darmstadt in 1958. In the common-sense opinion of American scientists, the Soviets could not possibly publish Sputnik's daily coordinates without the availability of large-scale computer equipment. Although no separate study exists on the American community of computer experts' reception of or reaction to the news of the Sputnik launch, documents of the period demonstrate a certain affinity with physicists' strategies.[40] The text of the *Proceedings of Data Processing Seminar on Status of Digital Computer and Data Processing Developments in the Soviet Union* illustrates a similar preoccupation with a manpower gap and calls for action on the part of the American education system—there were 200 students taking courses in computer sciences and mathematics at just the Moscow State University, but there were ''not 200 graduate students, total in the United States.''[41] The Americans felt that the Soviet government decided to prioritize the area of cybernetics and computing machines and that ''it has built up a pretty heated momentum.''[42]

Americans explicitly drew upon a familiar parallel: the Manhattan Project.[43] They also pointed out a particular strength of Russians—namely, the area of classical numerical analysis—and called for intensifying the translation of Soviet mathematical journals.[44] Predictably, the four Americans who went to the Soviet Union in 1958 were not corporate engineers but academics interested in computer science: Alan J. Perlis, James Robertson, Norman R. Scott, and John W. Carr, III. At the time of their visit, all four were part of the ACM's governing body.[45] Although the ACM's representative on Auerbach's committee, Alston Housholder, was invited but unable to participate in the visit, he no doubt shared interest in Soviet numerical analysis. This explains why the text of the proposal, presumably written by Auerbach, requests holding the ICIP in August 1958 to enable the mathematicians coming to the international conference of mathematicians held in Edinburg to attend both events.[37]

Federation of what?

In fact, the scientific and economic promises of computing are equally prominent in the proposal's text. At the time of submission to UNESCO, Auerbach, its main author, was on the verge of leaving the post of the director of the Defense and Special Products Division at Burroughs to start his own business, the Auerbach Corporation for Science and Technology.[46] An ambitious entrepreneur, Auerbach had a wide vision for computer applications and general development of the field as his main starting point. The language of the proposal demonstrates a mentality similar to that of the ''pan-computing'' professionals described by Thomas Haigh. According to Haigh, this mentality was expressed through the ''attempts by a relatively small group of influential people to construct a new, overarching professional identity to encompass data processing, scientific computing, computer science and all other computer-related work.''[47] The text presented computers as revolutionizing machines, which would improve production efficiency, managerial decision making, medicine, banking, insurance, and air-traffic control. It stressed the strength and financial success of the American computer industry throughout, only to conclude, ''monetary success is not a measure of scientific progress, but a by-product . . .''[48]

The ICIP that resulted from this proposal and eventually became the model for all

IFIP conferences reflected the pan-computing ideas to some degree; it was a dual event featuring a theoretically oriented conference coupled with an industrial exposition. However, the conference's dual nature could also be considered a compromise with European interests. While the American agenda entailed a professional society transcending the different applications of computing in order to spread computerization and expand potential markets, the European computer specialists had a different, mainly academically oriented program.

For roughly 20 years, the IFIP was generally perceived as a European organization, not only because of the official location of its headquarters, but also because the theoretical program in European style dominated the conferences. The first evidence of the scientific orientation of European interests was the invitation of Howard Aiken to hold the post of Honorary Chairman for the Parisian Conference.[49] According to Auerbach, Aiken refused to support Housholder and Auerbach's idea of organizing an international conference when they were at the proposal stage.[50] However, when it became clear that the European members wanted Aiken as ICIP's honorary chair—a far-from-obvious choice for Americans with a pan-computing mentality to export—Aiken came. In an interview, Auerbach explains that many European founders of IFIP were close to Aiken as a mathematician and had spent time visiting him in the US, so "if you were in Europe, the big name in the United States in the late '50s was Howard Aiken, and that was their choice."[51]

The difference between pan-computing and scientific interests entailed a conflicting vision of the nature of international organization. According to the *Recollections,* it took more than a year to convince "some of the academics on the organizational Committee" that the organization should be a permanent body, rather than the proposed 10 years, and that it should include other activities besides conferences. Auerbach's vision that the "computer . . . was a universal tool, whose impact on society would be boundless" clashed with the view that "the subject matter was not on-going, like astronomy or geology . . . where international cooperation is essential" and that "the computer [was] a means to an end, not a field of study unto itself." The British representative, Maurice Wilkes, was one of the promoters of this position, and he did not change his opinion until March 1959.[52]

The nature of the international society was to be reflected in its name. Indeed, a sensitive English speaker might find the IFIP's full title grammatically troublesome. A "federation" is a uniting of several entities. Thus, what kind of bodies formed IFIP? The Soviet participation in the IFIP brought up an additional twist to the tension between pan-computing versus scientific instruments visions. At first, the IFIP was officially registered as IFIPS, where "S" stood for "societies." That name did not stick as politics trumped over English grammar. The by-laws had to be modified to accommodate the participation of the Soviet and Eastern European Academies of Sciences, and the name was officially changed to IFIP in October 1961.[53] This issue of the nature of the composing bodies for the federation is the most evident demonstration of "Americanization" and "Sovietization" processes occurring in IFIP. Auerbach seemed satisfied by the turn of events; the Scandinavian countries, the Netherlands, Japan, and Italy that had no national professional society for computing decided to organize one for representation in the new federation, "even though these countries had National Academies."[54]

To keep the voting balanced and controlled, IFIP adopted the policy of one national technical society per country member. This policy had a major significance in the context of Cold War geopolitics: first for East Germany (admitted only in the mid-1970s), and later in the China-versus-Taiwan controversy.

Propaganda versus information collection

Auerbach admitted in an interview that the "state" informed him that certain things were "verboten"—that is, "the United States did not recognize East Germany; therefore East Germany was not to be a part of this. The Soviet Union was fine."[55] On the Soviet side, some archival evidence exists tracing Dorodnitsyn's demarches to secure the Soviet participation in IFIP. It is almost impossible to overstate the role of Dorodnitsyn, who served as the Soviet representative for more than 30 years, from the ICIP conference until the early 1990s. His laconic "Justification of the USSR Academy of Sciences' need to join IFIP" is a masterpiece of Soviet-speak. The argument occupies fewer than two pages and develops as follows:

1. Soviet developments are important but lagging behind the West. Thus,

participation in the IFIP will bring more contacts and more useful information.
2. Low participation in international conferences in the computing field makes western scientists doubt Soviet intentions and willingness to cooperate. (At the ICIP in Paris, the US delegation had more than 400 members, while the Soviet one had only 15.)
3. This imbalance is to the advantage of the US; Americans influence the development of the field even in Socialist countries, such as Poland, and promote the opinion that Soviet computing technology is lagging.[56]

Auerbach's archives contain documents demonstrating that the Soviets were not alone in having a political agenda with regard to the question of participation in an international organization for computing. Yet, there was a major difference between Soviet and American computer specialists talking to the authorities in order to promote their international activities. The issue of propaganda was the Americans' main focus:

> There is no question in my mind and that of others in this field that the United States has not taken full advantage, from the propaganda point of view, of its outstanding superiority in the use of these new scientific techniques [computing] and their importance in improving our economy, technology and in many instances, the lot of the common man . . . it appears that we [IFIP] can be of assistance to your agency in making the world more aware of American scientific contributions and eminence . . . We explored the feasibility of moving certain American exhibits at the '62 Congress into some of the Iron Curtain countries with the hope that this would be of some benefit, from the propaganda point of view, by highlighting US eminence in this field.[57]

It is easy to imagine Auerbach adopting the language of propaganda to convince the US State Department to sponsor the participation of several American computer specialists at a faraway congress, knowing that all the participants had to secure their own funding. However, in addition to showing Auerbach's apparent ability to adopt his language and argumentation depending on his interlocutor, the letter also provides some grounds to speculate about the sincere belief in the positive implications of American propaganda by someone who had participated in the design of the overtly military SAGE system and of an ICBM guidance computer.[58]

Meanings of "apolitical"

The official discourse of IFIP leaders over its half-century lifespan emphasizes that the organization's successes were due to its apolitical nature. However, as we have seen, the IFIP was political to its core: divergent national interests and various professional visions of the field's future competed for control of the IFIP from its inception. How did the founding fathers of the IFIP reconcile these contradictions? The main solution promoted by the founding fathers could be formulated as follows: "IFIP needs policies to avoid politics."[1] The intergovernmental structure was considered too politicized, and negative sentiments among IFIP founding members regarding the organization's general body becoming an "another multinational UN type" rapidly prevailed. Despite foreseen difficulties with securing consistent sources of funding, the decision was made to establish a nongovernmental structure. Likewise, Richard Tanaka, the IFIP's president from 1974 to 1977, admitted that the system of voting on politically sensitive resolutions was rarely public so that "any delegate could go home and claim that he was among those opposed to some IFIP action that might prove objectionable to his sources at home."[59]

The IFIP's official policies were complemented by a set of informal rules. According to Auerbach, the secret of the organization's collegiality was the personal attitude of each representative.[60] When IFIP leaders and participants claimed the international and apolitical spirit to be the basis of IFIP successes, they actually meant "there has never been a major outburst or rift due to national or political differences."[61] Numerous tensions were handled in the corridors; Auerbach quickly learned "the tremendous value of a coffee break to enable people with different viewpoints to discuss them informally rather than debate them in an open forum."[62]

In oral testimonies and written memoirs, the "truly" friendly spirit at the IFIP meetings and their value for networking dominates. Tanaka summarized the essential experiences of individual participants in the early IFIP particularly well:

> The most memorable experiences for me are not the technical events or the exchange of

views on technology, but simply the year-by-year ability of delegates from throughout the world to meet and cooperate in an environment that was as close to open and ideal as human differences could make possible. IFIP delegates came and went, sometimes with a minimum of interaction. But, in many cases, long lasting friendships also grew, based upon respect, common interests and shared experiences, with divisive issues set aside.[59]

To decipherer what apolitical meant for the IFIP leaders is to understand how the atmosphere of the individual investment in trust was created. A child of Cold War geopolitics, the early IFIP provided international space and an ideological umbrella under which computing—a new field producing new types of professionals—could define its substance and try to expand its boundaries.

Conclusion

The peculiarities of the IFIP's structure and functioning are more apparent when compared to other examples of international cooperation. Although the current state of computing's historiography does not allow an extensive comparison with other disciplines, several manifest differences distinguish the IFIP from the two most-studied fields that transcended the Iron Curtain in the mid-1950s: nuclear physics and the geosciences.[63] Three major issues should be highlighted: the source of the initiative, the field's own stake in cooperation, and the establishment of trust or distrust among the experts.

The first key dissimilarity is that while both the Atoms for Peace initiative and the IGY were governmental initiatives, there is no evidence to contradict Auerbach's ''bottom up'' story of IFIP's origins. Both the Atoms for Peace and the IGY's widely publicized events provided paradigmatic examples of new possibilities of cooperation and a politically correct rhetoric. Yet, IFIP's founders willingly opted for a nongovernmental form of organization and were ready to pay the accordant price of financial instability and the absence of bureaucratic support.

Another feature that distinguished the field of computing was the very novelty of the discipline. Whereas the geosciences were international and transnational by virtue of the object of investigation, it was the IFIP's founders who constructed computing as an international discipline. Engineers, entrepreneurs, bureaucrats, mathematicians, and physicists were still striving to define the boundaries of the new field and determined to obtain the recognition of their professional affiliation with computing. For many representatives from the West and East alike, the success of the ''normal'' international professional organization was a valuable asset worthy of compromise.

The last major issue is the problem of trust. Recent studies have called into question the Mertonian ideal image of the natural belonging to an international community of scientific experts, emphasizing the complex interplay between ''local'' and ''universal'' dimensions in the functioning of international communities.[64] The personal trust and networks that it generates are no longer a given factor, but are a crucial element deserving investigation. In this light, the IFIP's success as a ''normal'' professional forum, where people gave talks, shared meals, and established professional friendships cannot be taken for granted, especially when compared to Atoms for Peace and the IGY. According to Krige's description of Atoms for Peace, the initiative was not much about networking, but a panopticon: ''international exchange is at once a window and a probe, an ideology of transparency, and, by virtue of that, an instrument of control, a viewpoint from which to look in and watch over.''[65]

Jacob Hamblin's monograph *Oceanographers and the Cold War* gives more agency to scientists themselves, thus making them responsible for failed attempts at cooperation. The notion and vocabulary of distrust dominates the language of several chapters describing western scientists' perceptions of their Soviet peers at international events. The two main reasons Hamblin proposed are ''western countries simply did not trust them'' and ''Soviet science did not seem to be on the cutting edge of research.''[66]

Contrary to this explanation of a failure, the success story of IFIP's origins demonstrates that the American and European founders of the IFIP had their own reasons for befriending and accommodating the Soviets. The well-known notion of the hardware gap applied for the US versus USSR, and the US versus Western Europe. Furthermore, although the Soviets actively promoted that notion and the need for information collection to secure their participation in the international organization (and to promote the status of their profession), Americans constructed the ''manpower

gap'' notion and stressed the value of propaganda for ultimately similar reasons. In the end, Soviets, Americans, and Europeans alike gained back at home from the networks established during IFIP events.

This article provides only a brief glance into the international cooperation in computing developed thanks to the IFIP's activities. The IFIP came into official existence on 1 January 1960 when 13 countries signed up to participate in the organization, and the number of country members continued to grow throughout the Cold War. I believe that an extensive study of the IFIP is a promising path for the history of computing and hope that the IFIP's upcoming 50th anniversary congress will stimulate more interest.[67] The IFIP was and is a ''truly'' international body, and therefore, writing its complete history without a ''truly'' collaborative effort is impossible.

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