



Introduction

Legacies of the Formation of IFIP Technical Committee 9

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Abstract. This chapter considers how the organizational structure of the International Federation for Information Processing (IFIP) influenced the format of the first Human Choice and Computers (HCC) conference. Almost 50 years ago, the first HCC conference demonstrated the efficacy of an international, interdisciplinary, multistakeholder process to study the mutual impact of computing technologies and society. This organizational structure has had a lasting impact on IFIP's Technical Committee 9, whose constituent groups are the backbone of the present volume.

Keywords: IFIP · Technical Committee 9 · Human Choice and Computers

The chapters in the present volume come from the working groups affiliated with Technical Committee 9 (TC 9) of the International Federation for Information Processing (IFIP). IFIP's organizational structure, and thus the structure of Technical Committee 9 (TC 9) and its working groups, is somewhat unusual to outsiders, especially the baffling alphanumeric soup of groups and committees. A brief overview of the formation of each will help the reader understand the groups that make up TC 9, as well as some of the details in the following chapters in this volume.

1 Prehistory of IFIP

IFIP was established in tandem with a 1959 computing conference, the International Conference on Information Processing. Under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO), 1,800 participants gathered in Paris. As part of the planning process, the organizers developed a proposal for an international organization built on the foundation of computing societies in various countries. Eighteen national entities offered support for the initial statutes that established the federation. When it was established in 1960, the name of the organization was International Federation of Information Processing Societies. This title reflects the notion that national organizations were the backbone of the organization. The organization changed its name in 1961 to its present designation.

UNESCO made a small outlay of funds and provided the first secretariat of the organization, but IFIP was successful enough to elect its own leadership and supply its own finances [1]. The formal sponsorship with the United Nations ceased, although IFIP has consultative status (one of 1000 nongovernmental organizations of the “roster” designation that might make “occasional and useful contributions” [2]). This tie to the UN is weaker in the present day, but many affinities to the organizational structure remain.

As Grier points out [3], the organizational structure of IFIP was less than obvious. A more likely setup would have been a “multi-national organization that shared information and promoted the peaceful uses of computing”: like other organizations, IFIP could have been organized as a professional association with international membership coming from individuals. Instead, IFIP chose – perhaps with the UN itself in mind – to be a federation of national computing societies. “This approach was the result of nearly 8 years of careful work, study and negotiations” [3, p. 177].

Although some [e.g., 1] have said that the impetus for the conference, and therefore IFIP, was the U.S.’s Joint Computer Conferences, this can be only partially true. It is the case that the founder of IFIP, U.S. researcher Isaac L. Auerbach, served on the organizing committee for the JCCs, but while attending these conferences he started to wonder what was happening outside of the U.S. and UK. With the dream of finding out what was happening elsewhere, in 1955 he lobbied representatives of UNESCO, which lent its support [3, p. 179–8]. As stated by Austrian Heinz Zemanek, who attended the 1959 conference and later became one of IFIP’s first presidents:

In a time period of American predominance in computer technology and in an era of “cold war,” I.L. Auerbach conceived and created an instrument of cooperation and mutual understanding (including the “enemy”) which was also a tool of peace: people who understand information technology know the importance of global cooperation and are workers for peace. [4]

For Zemanek, computing was a global activity. He points out that there were a few international conferences that inspired him. One was the 1955 GAMM/NTG Conference in Darmstadt, Germany (with presenters from Austria, Belgium, East and West Germany, England, the Netherlands, Sweden, Switzerland, the U.S., and the USSR; the audience also had representatives from Canada, Czechoslovak Socialist Republic, Denmark, Finland, France, Hungary, Italy, Norway, Poland, Spain, and Yugoslavia). Another was the 1958 Congreso Internacional de Automatica in Madrid. The international community was also intriguing to his employer, IBM; after he assumed the presidency, IBM allowed him to use his laboratory resources to support the association. In this way, his research and his professional outreach were always “interwoven” [5, pp. 41, 60–1]. Clearly, the desire for new perspectives from researchers working outside the U.S. was seen as a disruption more than a continuation.

2 Formation of IFIP

The dream of connecting the world's computing researchers via their national affiliations was also based on the fact that there were already many national computing associations already in existence. The restriction on individuals becoming members of IFIP meant that there had to be a significant number of national organizations devoted to computing. In fact, IFIP encouraged countries without national organizations to form them so that their researchers could participate in its activities. The rapid growth in the number of participants after IFIP was formed speaks to this success: 3,000 people from 41 countries attended the 1962 meeting in Munich, which grew to 5,000 people from 50 countries at the 1965 meeting in New York City.

One way that IFIP continues to resemble the UN is that it establishes entities to carry out the work of the organization, known as technical committees (TCs), a name chosen to reflect the organization's overall focus on technology. IFIP's first TC was "Terminology and Symbols," tasked with developing a guide to keywords in computing and easing national differences in vocabulary. This committee was short-lived, but two other TCs were formed in 1962: one related to software and another to education. Each TC carries out its own activities in the form of conferences, and TCs also form working groups that can sponsor their own workshops. For example, the first Working Group of Technical Committee 2 is known as WG 2.1. The TCs and WGs are presumed not to be territorial, and there are several joint groups that show how themes overlap. TCs and WGs resemble *ad hoc* committees; they are created to meet current needs and sometimes dissolved when they fail to attract sufficient interest, creating a gap in the numbering. The first TC related to computer terminology was dissolved after it completed its task; today, a new group with the title of Foundations of Computer Science is designated as TC 1. TC 4, established in 1967 with the theme of Medical Information Processing, split away from IFIP to form the International Medical Informatics Association, which today leaves a gap in the TC sequence.

3 Formation of TC 9

The formation of our technical committee, TC 9, was similar to the formation of IFIP itself in the sense that it was preceded by a successful conference that demonstrated the need for, and potential of, the group. However, it is unlike the other TCs, given its broad focus on computing and society with a non-technical focus. That being said, concerns with humanity are not alien to the organization. From the start of IFIP, organizers noted that the technical and social aspects of computing should not be separated. Speaking from the perspective of UNESCO, Gagliotti [1] notes that reports about technical progress do not always consider negative impacts. The impact of computing on employment is one potential trouble area, but all varieties of the social aspects of computing are absent from the 1965 program. Another potential problem he notes is the fact that 90 percent of the participants come from the developed world. With every advance, Gagliotti notes, the gap from the developing world widens. "The only way to ease the problem is for you to reach back your hands and help the others" (p. 312). Finally, he notes that the guiding principle of UNESCO is peace, leading him to hope that any outcome

“will contribute to the progress and welfare of [humanity] through the development of a scientific and technological society,” which will be “the best guarantee of peace” (p. 312). This sentiment reflected a nascent but growing interest in the interdependencies between technology and society.

As IFIP got off the ground, a sea change was underway in the analysis of technology. Consider the contemporary studies that asserted engineering solutions were not independent from human society. The idea that engineering could be directed to serve important human needs – and that the social world could do better at this job of direction – was expressed in Jacques Ellul’s *The Technological Society* (1954 and translated into English in 1964) and Jane Jacobs’s *Death and Life of Great American Cities* (1961). Thomas Kuhn’s epochal *The Structure of Scientific Revolutions* (1962, with an expanded second edition in 1970) vividly demonstrated that what are assumed to be good engineering solutions and sound science depend on social norms. Soon, books like Jean Meynaud’s *Technocracy* (1964) and Lewis Mumford’s duology *The Myth of the Machine (Technics and Human Development, 1967, and The Pentagon of Power, 1970)* pointed out the ills of a technological society, if only to suggest that the direction of current development could be turned. Perhaps a culmination of this early stage of development was Bruno Latour and Steve Woolgar’s 1979 *Laboratory Life*, which showed how the social world permeates science even before the first experiments are done in an investigation.

These perspectives suggest that a technology is a way of doing things, in the sense that it is a cultural activity; technological devices are not created in a vacuum but are constructed in a way that reflect human culture. Even if a mainstream view was that progress in science and engineering were independent of human society, computing practitioners involved in IFIP seem to have been aware of the mutual interdependency of technology and society.

4 The First Human Choice and Computers Conference

These sentiments about technology and society were simmering for IFIP’s first decade, leading to the first conference that considered the interactions between technical development and the social world at a 1974 conference they called Human Choice and Computers (HCC), held in Vienna. The conference was organized by Zemanek who, after his storied technical career, took an interest in the social aspects of computing.

When Zemanek assumed the office of president in 1971, one of his goals was to “foster the human aspect” of computing. He tried unsuccessfully to organize a conference about humans and computers in 1972 and sought to establish a “non technical TC” the following year. In 1974, Zemanek finally found success with the first HCC conference, which helped to convince the general assembly of the value of a new TC [6, p. 395]. As pointed out by Sackman, the initial goals of IFIP – such as international cooperation, human communication, and education – spoke to an interest in what would become the purview of TC 9.

The first HCC conference followed a collaborative and consultative process that is typical of other Internet governance bodies [e.g., 7]. As such, the conference had a backbone of four plenary papers. In response to these, participants divided into eight breakout groups with about 16 members each. These groups met for six, two-hour

seminars where participants discussed their responses to the plenary papers in order to prepare a report for the proceedings. Participants also presented their own papers about computing, which fell into themes regarding management, trade unions, democracy, and the social world. This consultative process, which resulted in recommendations that could be reported back to the IFIP General Assembly, resembled the multistakeholder, deliberative process of the UN.

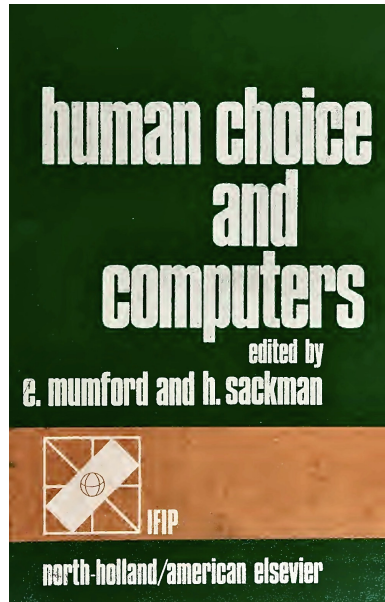


Fig. 1. Cover of the proceedings volume for the first HCC conference in 1974.

In the proceedings volume (Fig. 1), the organizers of HCC state clearly that the conference and the proceedings volume were deliberately aimed at a “broad, international audience” that included “all levels of society” in order to “decide what [society] wants to do with computers for the benefits of everyone.” They continue:

Society should deliberately lead and direct the application of computers in the image of its most cherished values and ideals rather than be the unwitting victim of the vagaries of technology and the fluctuations of the market-place. Toward this end, the issue is *deliberate human choice* and *continuing social accountability* in determining the role of computers in social affairs. [8, p. v]

The organizers for this “first major international conference on the human aspects of computer systems” intentionally brought together “trade unionists, computer technologists and social scientists” so that they could “enter into meaningful discussion with each other” [8, p. 325]. This discussion did not come easily, though. The organizers note how the three groups surprised each other with their assumptions about the others. The computing professionals were surprised to hear that others saw their innovations as anything

but neutral; the trade unionists were focused on large social issues with little interest in improving workplaces that used computers; the sociologists' theoretical approaches designed to understand how computers could be used seemed like covert attacks by management. Each breakout group intentionally included members from each of the three groups, and the final recommendations reflect a consensus. The closing paragraph of the HCC recommendations reports a motion that IFIP establish a committee to guide the implementation of these goals, passed by consent of the people present. As noted by [6], it would take some more politicking before TC 9 was approved by the IFIP general assembly, but in 1976, the committee was approved. The TC was approved with two initial WGs: one focused on work and the other on social accountability. (As seen in Table 1, WG 9.1 is currently dormant but 9.2 has contributed a chapter to this volume.)

The conference recommendations still resonate today, so they are worth repeating in summary form [8, p. 341]:

1. Ensure computing professionals have competency in relevant disciplines in the humanities and management
2. Stimulate the development of technology to meet social, organizational, individual, and economic goals
3. Instill a duty for computing professionals to help outsiders understand their work, especially with respect to the impact on humanity
4. Review innovation with an eye thwarting potential problems of technology choice
5. Disseminate research about the human and organizational aspects of technology
6. Harmonize codes of practice for individuals and organizations. (As can be seen in the chapter in this volume from SIG 9.2.2, the standardization of codes of practice has been completed.)

Table 1. Current constituent groups of Technical Committee 9.

Group	Focus	Status
WG 9.1	Computers and Work	Dormant
WG 9.2	Social Accountability and Computing	Chapter 2
SIG 9.2.2	Framework on Ethics of Computing	Chapter 3
WG 9.3	Intelligent Communities	Dormant
WG 9.4	Social Implications of Computers in Developing Countries	Chapter 4
WG 9.5	Our Digital Lives	Chapter 5
WG 9.6	Information Technology: Misuse and the Law (joint with WG 11.7)	Active, not included
WG 9.7	History of Computing	Chapter 6
WG 9.8	Gender, Diversity and ICT	Chapter 7
WG 9.9	ICT and Sustainable Development	Chapter 8
WG 9.10	ICT Uses in Peace and War	Chapter 9

The first conference became known retroactively as HCC 1, even though it predated the formation of TC 9, following the precedent of IFIP's World Computing Conference. HCC 2, the first conference organized by the new TC 9, was held in 1979. As seen in Table 2, TC 9 has gone on to sponsor 14 additional HCC conferences, and the next HCC is scheduled for September 2024 with the theme "Humans, Technological Innovations and Artificial Intelligence: Opportunities and Consequences" [9].

TC 9's leaders meet every year, although recent meetings started to be held online to accommodate the group's wide geographic spread and, of course, due to travel restrictions during the COVID-19 pandemic. The last 10 HCC conferences have been held every other year, despite the pandemic, and the next instance will be held in the coming year. The focus of the HCC conferences and the activities of the working groups has evolved over the years. As shown in the corpus analysis by Kreps and Fletcher, the initial focus of HCC was on work, but in the 1980s, with the advent of home computing, HCC became "less focused on work and more concerned with the general human situation" [10, p. 373].

As will be seen in the following chapters, TC 9's groups are agile, changing their names and scope as interest in various topics wax and wane. The output of the groups is somewhat inconsistent, depending on the time and energy that individuals have to contribute. Chrisanthi Avgerou, one of TC 9's former chairs, pointed out the difficulties of maintaining consistent outcomes from a volunteer organization. Given that there are now so many other venues that accept work at the intersection of ICT and Society, one might wonder, what is TC 9's role? She concludes:

unlike the physical sciences which create knowledge more or less cumulatively, social studies need multiple perspectives and streams of thought, and TC9 makes valuable contributions to that end. It is worth all its members' effort to keep it going and striving for high research standards. [11, p. 145]

This is certainly true. In addition, as the foregoing analysis has shown, IFIP has an unusual organizational structure that encourages widespread participation that does not privilege one country over another. TC 9 inherits this structure; as can be seen from the contributors to this volume and the roster of participants at all TC 9 activities IFIP's truly international scope facilitates a rich diversity of nationalities. As well, TC 9 mirrors the process of creating and discussing recommendations through a process of consensus of participants, which is common enough among Internet standards bodies but is rarer in academic circles.

As can be seen in the following chapters, the activities of TC 9 resemble other technical committees of IFIP. First of all, groups take their responsibility to consult and advise seriously. The multiyear effort of SIG 9.2.2 to develop a code of ethics is a cogent example of this duty. Like any scientific endeavor, the conclusion concerns future work. In all of the chapters, one can see how other groups advise their colleagues on the best practices for the future study of ICT and society. In addition, there is an absence of territoriality, which has been an important characteristic of other IFIP technical committees. For instance, many groups have expressed interest in artificial intelligence, which will be the theme of the next HCC conference in 2024. Sustainability takes three different flavors in the chapters by WGs 9.2, 9.4, and 9.9; three working groups address Anthropocene

studies: 9.2, 9.7, and 9.9. The core and periphery model of innovation is challenged by WGs 9.4 and 9.7. Feminism and diversity are addressed by WGs 9.7 and 9.8; WG 9.4, 9.5, and 9.8 analyze postcolonialism. Concerns about policy are addressed by both WG 9.2 and 9.10. These synergies are an important part of TC 9, and they provide for robust discussion and collaboration.

Table 2. Human Choice and Computing conferences.

No. (Year)	Location	Title	Proceedings editor(s)
1 (1974)	Vienna, Austria	Human Choice and Computers (precedes the formation of TC 9)	Mumford, E. & Sackman, H
2 (1979)	Baden, Austria	Human Choice and Computers 2	Mowshowitz, A
3 (1985)	Stockholm, Sweden	Comparative Worldwide National Computer Policies	Sackman, H
4 (1990)	Dublin, Ireland	Information Technology Assessment	Berleur, J. & Drumm, J
5 (1998)	Geneva, Switzerland	Computers and Networks in the Age of Globalization	Rasmussen, L., Beardon, C. and Munari, S
6 (2002)	Montreal, Canada	Issues of Choice and Quality of Life in the Information Society	Brunnstein, K. and Berleur, J
7 (2006)	Maribor, Slovenia	Social Informatics: An Information Society for All? In Remembrance of Rob Kling	Berleur, J., Nurminen, M., and Impagliazzo, J
8 (2008)	Pretoria, South Africa	Social Dimensions of Information and Communication Technology Policy	Avgerou, C., Smith, M. and van den Besselaar, P
9 (2010)	Brisbane, Australia	What Kind of Information Society? Governance, Virtuality, Surveillance, Sustainability, Resilience	Berleur, J. Hercheui, M.D. and Hilty, L. M
10 (2012)	Amsterdam, The Netherlands	ICT Critical Infrastructures and Society	Herscheui, M., Whitehouse, D., McIver, W., Phahlamohlaka, J
11 (2014)	Turku, Finland	ICT and Society	Kimppa, K., Whitehouse, D., Kuusela, T., Phahlamohlaka, J
12 (2016)	Salford, UK	Technology and Intimacy: Choice or Coercion	Kreps, D, Fletcher, G, and Griffiths, M
13 (2018)	Poznan, Poland	This Changes Everything - ICT and Climate Change: What Can We Do?	Kreps, D., Ess, C. Leenen, L., Kimppa, K

(continued)

Table 2. (continued)

No. (Year)	Location	Title	Proceedings editor(s)
14 (2020)	Tokyo, Japan (online due to COVID-19)	Human-Centric Computing in a Data-Driven Society	Kreps, D., Komukai, T., Gopal, T., Ishii, K
15 (2022)	Tokyo, Japan	Human Choice and Digital by Default: Autonomy vs Digital Determination	Kreps, D., Davison, R., Komukai, T and Ishii, K
16 (2024)	Phuket, Thailand (upcoming)	Technological Innovations and Artificial Intelligence: Opportunities and Consequences	Davison, R., Kromidha, E., Deesilatham, S., Kreps, D

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