In remembrance of Kristian Beckman

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Abstract: Kristian Beckman was my mentor – he got me into information security education in the early 1980's. These personal memoires and reflections will cover some of the background to our national and international intellectual ties including Kristian's visions for a – then - future TC11. The presentation will bring forth how IFIP and TC11 – especially through working groups and conferences - have stimulated truly international and fruitful forward- oriented interactions between intellectuals and academics as well as industrialists, to endeavor for sustainable future protection, security and privacy in information systems.

Keywords: information security education, Kristian Beckman

Introduction

Kristian Beckman was my mentor in information security – he inspired me to develop and teach an academic program in the early 1980's. In short, this program was as compared to most then existing academic programs in security; on undergraduate level (instead of graduate level), interdisciplinary organized (instead of specialized in one discipline), originated as a push from the outside world (instead of from research interests), oriented towards applications (instead of research), developed jointly by professionals and academics (instead of solely by academics), with a focus on educating generalists (instead of specialists), taught by regular staff and external specialists (instead of just by regular staff), taught in English (instead of mother tongue) with the main external interests for trade and industry (instead of military applications). Today there is a huge variety of information security programs all over the world, and it is probably more common nowadays that these programs are interdisciplinary rather than based in some special discipline. However, competition for funding and students within the universities seem to favor more specialized and fractionalized research as well as less focus on academic teaching. Universities currently face demands to adapt to modernizing their teaching towards the eSociety; knowledge and use of ICT, handheld and ubiquitous devices are spreading to all ages, young as well as old, educated as well as uneducated, developed as well as developing. The modern educational panorama calls for new approaches and applications. But I believe there are still knowledge and experiences to learn from the past. The TC11 working group 11.8 on Security education and its biannual WISE conferences follow these changes in order to further new ideas of security education for the eSociety.

By 1980 I was a university teacher and researcher in the department for Computer and Systems Sciences, a joint department between Stockholm University and the Royal Institute for Technology in Stockholm Sweden. As young researchers we were inspired by Börje Langefors, our main professor and creator of the 1966/67 scientifically unusual combination of technology and social sciences into the academic discipline "Administrative Data Processing". Börje with his industrial engineering background prior to becoming a university professor demanded scientific development of information systems to be conducted in interaction with 'the real world' focusing on relationships among computers, organizations and people. One useful Meta theory for integration of computers-organizations-people introduced to us was Applied Systems Theory. It was natural for us young scientists to interact with the surrounding world; contributing with theory and methodology on how to use computers in organizations and simultaneously learning about the fields of practice.

The importance of national and international interactions

The spirit of the times during 1960-70 being positive towards computerization of societal applications offered ample possibilities to realize Sweden's historically rooted values into building an effective welfare state – and we were partaking as scientists. In the department, apart from the theory-practice perspective, we were also urged to interact with international scientific fora – this is where IFIP entered my scene and I learnt to treasure the wealth of knowledge possible to gain through work specifically in the working groups. This is where you would always find someone with new ideas or to test your own ones towards in a curious, allowing, creative and open minded scientific environment without having to present a full project plan or finally worked out research deliverables; it was rather investigations of problems to be specified in order to further the development of the ICT field in focus. Professor Langefors was also instrumental in the future of ICT through his early IFIP participation in planning for IFIP in 1959, involvements in TC2 and in TC8 as its first ad-hoc chairman. His predecessor, professor Janis Bubenko jr offered me - being the only chartered teacher in the department - in the early 70'ies to take his place in WG 3.4 where international curricula development was on the program and where I learnt in practice how the international scientific establishment works and develops. In taking part in the Swedish delegation 1972 offering to organize the 1974 WCC in Stockholm I was also given the opportunity to meet some people on the IFIP management team (H. Zemanek, P. Bobillier, R. Tanaka, S. SemSandberg) and learn about their future outlooks on scientific ICT development – in particular Heinz Zemanek as the great humanist and mathematician understood that in the future also social aspects ought to be offered a space in the IFIP structure – TC9 was established in 1977 and I was given the opportunity to partake in meetings resulting in producing aims and scopes of TC9 and WG9.2. The international team, mentioned by professor Klaus Brunnstein, chairman of IFIP 2002-2007 and the 2009 KBA winner in his KBA lecture cited three involved future KBA winners: himself, Dick Sizer and /now/me together with Jaques Berleur as 'The first IFIP TC to deal with Data Protection, TC9 Social Responsibility 1980'. I believe it is also pertinent to mention that TC9's flagship

conferences HCC (Human Choice and Computers) 1 and 2 in 1974 respectively 1979 both dealt with privacy, security and ethics; many IFIP/TC11 members seem to have their origin in their interest for security and privacy in relation to the society. Willis Ware, KBA awardee in 1999 contributed to HCC1 with "Computers, Personal Privacy and Human Choice" and Klaus Brunnstein himself to HCC2 discussions on "Computers and social planning". The international debate on privacy was by then vigorous, and how to regulate it by law was in the pipeline. Sweden, the first national state to enact a law in 1973 proceeded by Hessen in Germany had many proponents for some law since large databases were operated by the nation state for the sake of running the welfare state. The liberal politician, MP and a trained scientist, Kerstin Anér, had in good academic tradition published a book "Computer power"(1975) where she minted the concept of a 'computer shadow' discussing issues such as privacy and ethics in the future ICT environment. She was also one of the early contributing authors in the TC9 newsletter which proceeded the very first WG 9.2 working conference in January 1985 – aiming originally for 1984 – titled ' Can information technology result in benevolent bureaucracies? '

Meeting Kristian Beckman

Having had the possibilities to partake in these breathtaking advancements was in those days seen by me as something rather ordinary and very much necessary for the future development of ICT. I don't think we looked back – only towards the future. The international activities were all conducted on a volunteer basis; at home we were busy with the practices, but also with similar volunteering work within the Swedish Computer Society with its SIGS, Special Interest Groups, focusing on system analysis, artificial intelligence, security and education as well as many other society-oriented activities such as writing the first text book on information security in Swedish - The Swedish Tiger, the Swedish Vulnerability board/committee, pre-work for the Swedish Privacy Act, etc. In the department I was doing research in elearning, by then called Computer Assisted Instructions within a project called Princess, the PRoject for Interactive Computerbased Education SystemS, and teaching a program in Informatics with Systems designed to target the specialists in charge of 'the informatisation of society'. Apart from attracting research librarians which were the original target group this program attracted also already well educated and experienced computer science people, such as programmers and systems analysts and designers with an urge to contribute to the future of ICT systems. These mature students welcomed and accepted Applied Systems Theory, General Systems Theory and Cybernetics as those Meta theories they were looking for within which they could understand, incorporate and apply earlier learnt and more detailed theories. A framework if you like.

It was together with these students in a course named 'Security and Integrity for Information Systems, Nets and Data' in the Langeforsian tradition to marry theory and practice through taking my students on field trips to reality I first met Kristian. My diary has two notes in 1982

on "SPADAB" meaning the Computer Center for the Swedish Saving Banks, April 2 and 22. Kristian was the security manager of SPADAB. The field trip sparked off an old fashioned mail conversation between us in which Kristian wrote on April 27, 1982:

"…It was nice to have visitors from your course, the discussions were stimulating and maybe unintentionally even of more interest to us…your suggestion for an academic program in security has left me restless and I enclose some thoughts for you to react to…I also imagine Allan Eriksson for the report of the Vulnerability Board may be interested, he has promised to include suggestions for education in security but no one has before us thought of it as an academic education…"

The rest is more or less history. Our communication included suggestions from Kristian to call this new breed of people "Security Analysts" acknowledging that applicants would be ex-something (militaries, policemen, system analysts, programmers) with as well, practical experiences as previous academic studies – the program would complement their existing knowledge. The first edition of the program was dated September 29, 1982, presented to an international audience at the IFIP/SEC'83 as "Education on Safety Systems and Security Analysis – suggestions for a One Year University Program".

Kristian, as mentioned was the security manager for the bank. That which caught his eye for me were the understanding these mature students had of security matters – something Kristian did not meet with his bank directors. He had involved himself in the development within Sweden, with the technical as well as the organizational, legal and ethical parts and was in charge of educational matters in the Vulnerability Board. As a mathematician and technologist – he was also a humanist and musician - he was looking for some holistically oriented knowledge which would unite the technical parts with the non-technical ones based on some sound theory. My presentation of Applied Systems Theory as a framework was to him one possible way. The Swedish Vulnerability Board was in those days a novelty in its approach towards society's infrastructures; trade and industry, banks, academics, ministries and militaries worked openly together. Possibly a heritage from Sweden's historical development also seen in the Scandinavian school of systems development underlining the principle of participatory design – and now practiced within security. And possibly also within a nation that had not been at war for two centuries - to together carefully protect the fabrics of the modern computerized society and in that also willing to take an international lead. Sweden is a small country, rather unhierarchically organized which supports easy cross fertilizations between different sectors and people; in those days it was a natural thing to approach security holistically together.

Kristian in relation to TC11 and IFIP activities

Notably there were also future oriented international players in security; some of these were gathered under the umbrella of the Swedish Society for Information Processing (today the Swedish Computer Society) to organize the first IFIP/Sec'83 and to propose a new

Technical Committee to be formed "for EDP security" with initially two working groups: Security Management and Security in Office Information Systems. From the foreword of the conference proceedings it is evident that Kristian in addition to many other international and national experts made Sec'83 the important door-step to officially form TC11; in the closing session it was agreed amongst the 150 participants (the conference as such had 325 participants from over 20 countries) about the aims and scope for TC11. A special address was given to Kristian Beckman as the chairman of the organizing committee: "Kristian had been very dedicated to his task, and successful in getting things going." The program was organized into the following sessions: Security Management, EDP-Security a public concern, Access Control, Office Information Systems, Facility Protection, Education, Risk Management and Quality Assurance, Auditing – A Security Resource, Cryptography and its use, Contingency Planning, Computers and the Law, Speakers' Corner and Future Action. In counting presenters, there were 23 non-Swedes and 21 Swedes. Amongst presenters were four KBA awardees to be: 1993 (Harold Joseph Highland), 1995 (Per Hoving), 2013 (Dorothy Denning) and 2014 (Louise Yngström).

As we know, Kristian died in 1984 right after the SEC'84 in Toronto, September 10-12, when TC11 was formally established; Per Hoving, Sweden took on the chairmanship. Kristian lived to know through phone contacts with Toronto about all the details of the newly formed TC11 and he was pleased in having reached this goal. His visions for TC11 were that it would be a truly international forum for the exchange of new ways – even controversial ones - of dealing with security. He was also satisfied that one world-wide novelty had been possible to be presented in Toronto; the foreword of the Preprints edition of proceedings reads "…critical and controversial issues will be addressed…."; indicated by an * in the page reference was a paper by Fred Cohen, titled 'Algorithmic Authentication' which had not been reached in time to be included in the Preprints edition and this way passed the red-tape procedures.

For some years after the initial start of TC11, the Swedish conference participants would honor Kristian by contributing to special 'Swedish days' sharing national practical developments and future plans; in 1986 about the holistic approach of the vulnerability board, in 1995 about planned adaptations to 'the information highways' and in 1996 about approaches to the Secured Electronic Information in Society.

Likewise TC9 continued to investigate how to regulate security in society; a working conference on 'Security and control of information technology in society' was held in 1993 on board a ship between Stockholm, Sweden and St Petersburg, Russia where parts of the scientific program was conducted in St Petersburg, and parts on board the ship. In 1998 an IFIP Joint WG9.6/11.7 Seminar and WG meeting on 'IT misuse and the Law' was held in Stockholm, and adjacent to the first WISE conference in Stockholm 1999 another joint working conference between IFIP WG8.5 and WG9.6 with a security related theme 'User identification and Privacy Protection – applications in public administration and electronic

commerce' was held. Richard Sizer, the 1998 KBA awardee was the main chairman for the first two mentioned TC9 conferences with co chairs Simone Fischer Hubner, me and Henrik Kaspersen, The Netherlands while Simone and I chaired respectively co-chaired WISE and the joint WG8.5/9.6 working conference together with G. Quirchmayr, Austria.

Looking back at the diverse activities by TC11 and its working groups I think TC11 is still working along Kristian's original intentions even though the technical – and following societal focus on security problems have changed with changing techniques and applications. The TC11 public statements, on crypto policies, on the need for standards concerning information security assessment and certification, on the need for proper education and certification for information technology security professionals including auditors, and (internally) promoting all activities of TC11 to help strengthen activities in developing countries are all in line with this. Also, as has been outlined above, TC11 has already partly catered for the current quests of dealing with security and privacy horizontally together with other TC's and WG's.

Incidentally, all these activities have followed me too into the academic world; to make my students meet and interact with reality, enroll in projects with aims to 'make the world a little more safe & secure' , to bridge – and to bring in the idea of promoting security from the very beginning when   building modern eInfrastructures in some of the developing countries.

WG 11.8 and WISE – educational aspects

Having said this I want to underline that the work within IFIP, its TC's and WG's is constantly fascinating, view broadening and opens up lots of possibilities – provided you want to take them. In the 1990's I was offered the possibilities to co chair the WG 11.8 on education with Harold Highland – later he passed on the chairmanship to me. Meanwhile and during the SEC's 95-98 a series of workshops –'Information Security Education – Current and Future Needs, Problems and Prospects' were run in parallel with the conferences; this way building a critical mass of active international WG members. Eventually these workshops turned into the biannual WISE conferences starting in Stockholm 1999. A short analysis of the international driving forces, apart from WG11.8, including the development of themes and focuses within security education was presented at the IFIP 18th WCC within TC11 19th International Information Security Workshops in Toulouse, France. "The analysis shows that the area has matured; the academic international education is converging towards consensus of core knowledge, and there are many detailed examples given courses, contents, extent and laboratory work. Driving forces seem to have been the ERASMUS/SOCRATES program in Europe and the National Colloquium for Information Systems Security Education in the US…."and then continues spelling out details. All these activities could of course only be conducted through hard work by many notably dedicated people. It's too long and boring for readers to see a list of these people; suffice it to highlight a few, however there are many more! I am strongly indebted to professor Simone Fisher

Hubner, now my predecessor as the TC11 Swedish rep 2013- , for being the secretary, co editor and organizer of many of the WG11.8 events in addition to all her other IFIP engagements. Helen Armstrong, Perth, Australia has also been my research and education buddy for many years helping fulfilling the 11.8 goals. As presented I stand on the shoulders of many others hoping to contribute in making the world somehow more understandable, safe and secure.

I want to finish with one more personal comment in relation to naming the WG 11.8 conference WISE. WISE is about to present, analyze and discuss what, how, and whom to teach about information systems' and information technologies' security. The acronym stands for World conference on Information Security Education, suggested by the late 11.8 member Peter Fillery, Australia after the 1996 workshop. My visions for the WISEs are that they will continue to be vehicles not only for best practices – even if that is extremely helpful for the international audience – but also for exhibiting and discussing specific research problems embedded within the teaching of and learning about IT security, information assurance and privacy.

Final words

Aiming at painting parts of theTC11 related history with rather a full brush I have tried to check details, dates, places, names etc with available sources. Most of these are in the bibliography. However, there are many more activities, themes, names and places that could have been mentioned – these were the memories I chose to convey as snap shots of an electrifying near past.

And finally – we all owe Kristian Beckman recognition and gratitude for his insights, unwavering dedication and ability to manifest an international community in ICT security!

Bibliography

Kerstin Anér: Datamakt (Computer Power), Gummessons Bokryckeri AB, Falköping, 1975, ISBN 917070421X

Klaus Brunnstein and Heinz Zemanek (Eds.) 50 years of IFIP. Developments and Visions, The International Federation for Information Processing 2011 ISBN 978-3-901882-43-2

James H Finch and E. Graham Dougall (Eds.) Computer Security: A Global Challenge, Proceedings of the Second IFIP International Conference on Computer Security, IFIP/Sec'84, Toronto, Ontario, Canada, 10-12 September, 1984, North-Holland, Amsterdam New York Oxford, participants Edition

Simone Fischer-Hubner, Gerald Quirchmayr and Louise Yngström (Eds.) User Identification & Privacy Protection – Applications in Public Administration & Electronic Commerce, proceedings of the Joint IFIP WG 8.5 and WG 9.6 Working Conference, 14-15 June, 1999, Kista, Sweden ,Published by the Department of Computer and Systems Sciences, Stockholm University/Royal Institute of Technology, Sweden, on the behalf of International Federation for Information processing (IFIP), ISBN 91-7153-909-3

Viiveke Fåk (Ed) Security, IFIP/Sec'83, Proceedings of the First Security Conference, Stockholm, Sweden, 16-19 May, 1983, North-Holland Publishing Company, Amsterdam New York Oxford

Abbe Mowshowitz (Ed) Human Choice and Computers, 2 Proceedings of the Second IFIP Conference on Human Choice and Computers, Baden, Austria, 4-8 June 1979, North-Holland Publishing Company, Amsterdam New York Oxford

Enid Mumford and Harold Sackman (Eds.) Human Choice and Computers, Proceeding of the IFIP Conference on Human Choice and Computers, Vienna, April 1-5, 1974, North-Holland Publishing Company Amsterdam Oxford and American Elsevier Publishing Company, Inc. New York

Kai Rannenberg, Vijay Varadharajan and Christian Weber (Eds.) Security and Privacy – Silver Linings in the Cloud, 25th IFIP TC11 International Information Security Conference, SEC, 2010 Heald as part of WCC 2010 Brisbane, Australia, September 20-23, 2010, Proceedings, Springer; SEC 2010, IFIP AICT 330, 2010 copyright IFIP International Federation for Information Processing 2010

Sårbarhetsberedningen och Riksdataförbundet. En svensk tiger – introduktion till ADB-säkerhet och sårbarhet (A Swedish Tiger – introduktion to EDP security and vulnerability) Riksdataförbundet 1986, ISBN 91-86656-05-8

Security and Control of Information Technology in Society (A-43), R. Sizer, L. Yngström, H. Kaspersen & S. Fischer-Hübner, Eds., 1994, Elsevier, North-Holland, 235 pages, ISBN 0-444-81831-6

Louise Yngström and Simone Fischer-Hubner (Eds.) WISE 1 Proceedings of the IFIP WG 11.8 First World Conference on Information Security Education, 17-19 June, Kista, Sweden, Published by the Department of Computer and Systems Sciences, Stockholm University/Royal Institute of Technology, Sweden, on the behalf of International Federation for Information processing (IFIP), ISBN 91-7153-910-7

Louise Yngström (Ed) Information Security – the next decade. Security on the Electronic Highways in Sweden, Addendum to Proceedings of the IFIP Eleventh International Conference on Information Security, IFIP/Sec'95, South Africa, 2012 May 1995, Swedish Workshop, Thursday, 11 May 1995

Louise Yngström, Richard Sizer, Jaques Berleur and Romain Laufer (Eds.) Can Information Technology Result in Benevolent Bureaucracies?, Proceedings of the IFIP/WG9.2 Working Conference, Namur, Belgium, 3-6 January, 1985, North-Holland, Amsterdam New York Oxford

Louise Yngström An Holistic Approach to an International Doctoral Program in Yves Deswarte, Frédéric Cuppens, Sushil Jajodia and Lingyu Wang (Eds.) Information Security Management, Education and Privacy, IFIP 18th World Computer congress, TC11 19th International Information Security Workshops, 22-27 August 2004, Toulouse, France, Kluwer Academic Publishers, Boston Dordrecht London pp117-132

Louise Yngström Security Informatics in Retrospective, 1985 – 2006, in Janis Bubenko jr, Carl Gustaf Jansson, Anita Kollerbaur, Tomas Ohlin and Louise Yngström (Eds.) ICT for people. 40 years of Academic Development in Stockholm, Department for Computer and Systems Sciences (DSV) at Stockholm University and Royal Institute of Technology, ISBN 13: 978-91-631-9588-4 & ISBN 10: 91-631-9588-7, pp 207-217, 329-332, 362, 387

Louise Yngström A Systemic-Holistic Approach to Academic Programmes in IT Security, PhD thesis, Report series No 96-021, Department of Computer and Systems Sciences, Stockholm University/Royal Institute of Technology, October 1996