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In Memory of Kristen Nygaard

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Abstract

Obituary of Kristen Nygaard. Summarizes career and achievements of Nygaard, with an emphasis on his contruibutions to the fields of information systems development, participatory design, action research and computers and democracy.

Key words:

participatory design, action research, object oriented programming

Kristen Nygaard died suddenly from a heart attack on August 10th, 2002. He was spending the weekend at his family's holiday home at Tjøme.

He was born on Aug. 27, 1926 in Oslo, Norway. His master's thesis (1956) in mathematics at the University of Oslo was on abstract probability theory and specifically on the theoretical aspects of Monte Carlo methods.

From 1948 to 1960, Kristen Nygaard worked at the Norwegian Defence Research Establishment in computing, programming and operational research.

In 1960 he was employed by the Norwegian Computing Centre (NCC), becoming its Director of Research in 1962, and responsible for transforming the NCC from a computing centre into a research institute.

Together with Ole-Johan Dahl he developed SIMULA I and SIMULA 67 – the first objected oriented programming languages. They introduced the major concepts upon which all later object-oriented programming languages are built: Objects, classes, inheritance, virtual quantities and multi-threaded program execution.

We remember Kristen was a visionary, generous, and most of all, passionate person. He also understood that science was not politically neutral, and that scientists are responsible for the social consequences of the technologies that emerge from their research.

When developing solutions for companies with SIMULA, he realized that while employers were benefiting from his research, the software developed with SIMULA might have negative consequences for the workers. In 1970 he was engaged by the Iron and Metal Workers' Union to lead a research project on computerization seen from the workers' point of view. This was the first research project in information systems carried out on behalf of a trade union.

Most research has development of new knowledge and scientific publications as their goals. Recognizing that research reports have a tendency to collect dust in bookshelves, the project realized that some other form of results was crucial: "*Results* are all actions from the Iron and Metal Workers' Union, central and local, which, with support from the project, aim to give the association and its members greater influence over information handling and control in the workplace" (Nygaard, 1975). The Iron and Metal research thus also came out as the first action research project in our area of study.

One example of the project was when a union received complaints that the amount of overtime during the weekends expected by the employer had risen, and that the workers would prefer overtime duties during the weekdays instead. No one seemed to know why the weekend overtime needs rose, until the project members discovered that the planning periods of the production control system ended on Mondays. Thus backlogs piling up during the weekdays had to be cleared off in the weekend. Since the system was imported without modification, no one had realized this effect. The union succeeded in changing the production deadline to Thursdays.

A radical consequence of the research was the first local data agreement ever between the employer and the union, stating the trade unions' rights to be informed and participate in the development and introduction of computer-based system impacting upon the working conditions of their members. This local agreement became the template for general agreements between the Norwegian Congress of Trade Unions and the Employers' Federation, and inspired the contemporary revision of the national legislation on working environment requirements (Arbeidsmiljølovens §12.3).

The Iron and Metal Workers' Union project focused on multidisciplinary construction of knowledge, and the need to work together to achieve change in social practices. The need to work multidisciplinary and collaboratively, with an understanding of the subject matter grounded in "the capability of multiperspective reflection" (Nygaard and Sørgaard, 1987) runs like a red thread through all of Kristen's life's work.

Following from the Iron and Metal Workers' Union project a series of research projects aiming to integrate the views into professional systems development emerged in the Scandinavian countries. Kristen initiated the Florence project in Oslo, aimed at developing techniques for participatory design in collaboration with nurses. The main principle in

participatory design is that the people that will use a computer-based system also should be involved in designing it. Kristen often emphasized that collaboration with future users means meeting people who think differently and take strange decisions – and real collaboration means you let them do that even if you disagree!

Kristen Nygaard was professor in Aarhus, Denmark (1975-1976) and then became professor in Oslo (1977-1996). One of his achievements as an educator was the integration of political and social aspects into the informatics curriculum and research programs.

Since 1976, Kristen has worked with Ole Lehrmann Madsen and a number of others on the development and implementation of the new object oriented language BETA. His latest project, which got funding just before his untimely demise, was COOL (Comprehensive Object-Oriented Learning), an international project to introduce object-oriented methods in education.

In June 1990 he was promoted to *Doctor Honoris Causa* at Lund University, Sweden, and in June 1991 he became the first *Doctor Honoris Causa* to be promoted at Aalborg University, Denmark. In October 1990 the American association Computer Professionals for Social Responsibility awarded him its *Norbert Wiener Prize* for responsibility in social and professional work. In June 2000 he was awarded an *Honorary Fellowship* by the Object Management Group, and in August 2000 he was by King Harald V of Norway made *Commander of the Order of Saint Olav*. He is a member of The Norwegian Academy of Science. In 2001 he was - together with Ole-Johan Dahl - awarded with the IEEE *John von Neumann Medal* and in 2002 they received the ACM *Turing Award*.

For Kristen, science and politics was always closely related. He was always political, in the sense that he was acutely aware of the conflicts inherent in social and organizational relations and their potency to making social and technical change happen. Early, he became involved in the alternative institution movement, and worked closely with socially outcast alcoholics to create shelters and recognition for the homeless. He was also one of the instigators of environmental movement in Norway. He was active in

the «No to EEC» group in 1972, and his greatest political achievement was when he as the leader (1990-1995) of Norway's «No to EU» movement landed the victory in the 1994 referendum.

The major chords of Kristen's life's work are solidarity and empowerment. In his work on computer languages, system development, and object-oriented education, as well as in his work for the homeless, the trade unions, the environment, and his participation in political and environmental movements, he took the side of the people against the forces of the market. He recognised that the means a person uses to structure his thinking about a phenomenon and his understanding of the world is not neutral. The doxa of information technology, he maintained, reflected by and large the worldview of the market in terms of values, power, and objectives. Kristen's life's work encompasses a critical re-examination of this, from the perspective of ordinary people, emphasising solidarity, democracy and decent working conditions. Not the least is this radical work manifest in the minds and hearts of those Kristen worked with in the many movements Kristen was an integral and indispensable part of.

As a colleague Kristen was generous and open. He was extremely good at initiating new efforts – not so good at finishing. He handed over research projects to younger colleagues, demonstrating his ability to share power and give away control. He loved to meet new people – especially young researchers, and he loved to talk and discuss. He impressed us with knowing the names of all his students after the first meeting (or lesson) – he had a genuine interest in people. He generously invited all to share his network and his home. To his colleagues he was a good listener, and a wise speaker, always caring for us as friends and colleagues.

Kristen Nygaard was still as active as ever when he passed away, writing his book about the EU-struggle, organizing the COOL project and at the same time being celebrated as a much sought-after speaker at venues all over the globe. He leaves behind his wife Johanna, three children and seven grandchildren.

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