Laudatio für Peter Wegner
Begegnung mit einem großen Informatiker!

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Gemeinsam mit der Fakultät für Informatik und der OCG lud das Wissenschafterinnenkolleg Internettechnologien (WIT) im letzten Herbst, am 19. Oktober 2006, zu einem WIT-Kolloquium zur Würdigung eines großen Informatikers: Professor Dr. Peter Wegner.

Peter Wegner, ein gebürtiger Österreicher, der das Land wegen der Nationalsozialisten als Kind verlassen musste, war wegen seiner wissenschaftlichen Leistungen bereits 1999 mit dem Großen Ehrenkreuz der Republik Österreich – der höchsten Auszeichnung für einen ausländischen Wissenschafter – geehrt worden. Die in Wien geplante Verleihung musste allerdings verschoben werden, da Professor Wegner bei seiner Anreise einen schweren Verkehrsunfall erlitten hatte. Sie wurde etwas später ohne sein Beisein durchgeführt.

Umso bemerkenswerter war es, dass Peter Wegner nun wieder ganz gesund beim WIT-Kolloquium auftreten konnte. Seine interessanten fachlichen Ausführungen zum Thema „Interactive Principles of Problem Solving" wurden mit großer Aufmerksamkeit verfolgt und als konstruktive Denkanstöße gewertet. Auch die im Anschluss gegebenen Kommentare und der historische Überblick zum Thema durch Dekan Professor Hermann Maurer (TU Graz) wurden vom Publikum positiv aufgenommen. Dem fachlichen Teil folgte jener Teil der Veranstaltung, in dem Peter Wegners Lebenswerk gewürdigt wurde. Sektionschef Frühauf (bmbwk), Vizerektor Professor Rammerstorfer und Dekan Prof. Steinhardt (TU Wien) sprachen Grußworte. Der Hauptteil des zweiten Teils war die inspirierende Laudatio von Professor Floyd, in der neben den fachlichen Leistungen Peter Wegners auch die leidvollen Phasen seiner Biografie angesprochen wurden. Niemand hätte diese schwierige Aufgabe besser zu meistern gewusst. Wie schon bei Professor Zemaneks Geburtstagsfeier im Jahr zuvor (siehe OCG Journal 5/2005 bzw. 1/2006) war die Laudatio von Professor Christiane Floyd ein ganz besonderes Ereignis. Doch am besten lesen Sie selbst:

Laudation for Peter Wegner

Ladies and gentlemen,

It is a great privilege for me to give the laudation for Professor Peter Wegner, one of the outstanding personalities in computer science in the software field. To be honest, I have volunteered for this honor on grounds of my friendship with Peter Wegner, whom I have come to know at the University of Oslo in 1994, where we were guests of our common friend Kristen Nygaard. We soon found out that we both originated from Vienna – a discovery, which led to a deep personal encounter. In 1996, Peter Wegner visited the University of Hamburg for a week of seminars and discussions focusing on object-orientation. This

Professor Peter Wegner bei seinem Vortrag

has been a great experience for my whole research group and has strengthened our friendship.

Since then I hoped that there would be a suitable way of honoring Peter Wegner in Vienna. When I heard that – due to an initiative of professors Maurer, Tjoa and Kappel – he was awarded the 'Große Ehrenkreuz 1. Klasse für Wissenschaft und Kunst' of the Austrian Republic in 1999 and that there would be a celebration on this occasion at the Vienna University of Technology, I was deeply gratified, although, at the time, I was not part of this initiative.

And then came a horrible shock, which hit me in Hamburg through an e-mail that was sent to Peter Wegner's friends and colleagues all over the world. In Vienna, everything had been prepared, and the ceremony actually took place – but not as a celebration. Professor Roland Mittermayr had written a splendid laudation – I will draw substantially on his text, which was a valuable source of information for me – however, he had to give his laudation in the absence of the person to be honored.

As we now know, Peter Wegner was struggling for his life in the intensive care unit of a hospital after a severe accident in the streets of London. The fact that we have Peter Wegner with us today – active in scientific work, giving lectures, writing articles and editing books – comes close to a miracle. At the time, we had little reason for hoping that he would live to this day. Having witnessed what happened only from afar (through a mailing list where I was one of many recipients) my impression was that the slow recovery was not only a great medical accomplishment, but that the actual healing was due to the unfailing love and support from his wife and family, and to his own persevering courage. I understand that this process was considered so extraordinary that the Medical School of Brown University made a video about it, so as to help others who have to cope with a similar affliction.

When Peter Wegner eventually was well on the road to recovery, the award was bestowed to him by a member of the Austrian embassy in the United States. However, professor Kappel and others, including myself, felt that it would make a big difference to have a celebration here in Vienna as well. So, today we come together in order to celebrate healing.

This introduction already shows that I cannot give a routine laudation, just going through one date after the other in Peter Wegner's life. The second reason why this cannot be, is that most of us know that he is a native

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Austrian, born in 1932, and that his official biography starts with the dry statement: Emigration to England in 1939. We will look at the background of this short phrase later. For now, I invite you to follow the little boy, who has left behind turmoil and danger in Vienna to find a safe haven in England.

Peter Wegner spent his young years attending an English boarding school and attained a very British outlook on life. The center of our attention is his academic path, eventually leading him to the great achievements in computer science that he has been honored for. The first step on this path was a bachelor in mathematics from the Imperial College in London.

Peter Wegner got his introduction to computing, when he went to Cambridge to follow a master program in numerical analysis and automatic computing led by Maurice Wilkes. The outstanding achievement of this computer pioneer was to provide a milieu – unique at the time – where programming was possible. In the early years of computing there were many 'firsts' – in Germany, in the United States, and so on, even in Austria. England may claim to have been the first in programming: the EDSAC, the computer, which was developed and used at the Cambridge lab in the late 1940s, was the first machine in the world that was actually available as a problem solving tool. Programming then was primarily seen as a way of solving problems in the sciences. Understanding and relating all levels from problem formulation to machine code was required so as to enable an efficient and effective program execution. Several of the students who had the opportunity to work in this milieu around 1950 became leading computer scientists in Britain and other countries. They shared very broad and encompassing ideas of programming, which also shaped Peter Wegner's attitude. His master thesis was related to solving problems in physics.

As a first step in his scientific career, Peter Wegner joined the Weizmann Institute in Israel as a research fellow for a short time. Then he was a practicing mathematician in London. This is where he also got married in 1956. Soon afterwards, he went to Pennsylvania State University, where he took another master course, worked with George Dantzig on optimization problems in linear programming, and obtained an MA in Economics. He had a brief stage at the well-known research group at MIT, which invented time sharing systems, and then acted as assistant director of Harvard's statistical laboratory. All these were engagements of short duration, involving frequent changes. When he went back to England from 1961 to 1964 to become a senior research officer at the London School of Economics, his interest had moved on to statistics.

In 1964, Peter Wegner came to the US again, this time to stay. For a brief period he returned to Pennsylvania State, then moved on to Cornell University. And after all this back and forth, wandering around the world, he finally entered into a period of extended stability, when he joined the faculty of Brown University.

Considering that Peter Wegner strongly be-

Laudatorin Floyd im Gespräch mit Heinz Zemanek

lieves in interaction as a basic paradigm, it is fair to say that he has lived according to this paradigm in his early scientific life. He has immersed himself in a variety of research milieus, he has been interested in many different fields of work and, as a consequence, he was able to draw from highly diverse sources of ideas, which all became fruitful in his later research.

At the age of 36, just before he became a professor at Brown University, Peter Wegner obtained his PhD in London. He published his dissertation as a book, which became a best-seller and established his outstanding reputation in the field of programming languages. At the time when the thesis was written, several important programming languages were already in existence – including FORTRAN, COBOL, ALGOL 60, LISP, and SIMULA – and they were very different from one another. In the course of the development and use of these languages, basic ideas of programming methodology were emerging that provoked highly controversial discussion.

Peter Wegner's work laid the foundation for treating programming languages systematically in an encompassing framework. Even the title 'Programming Languages, Information Structures and Machine Organisation' is quite profound, because it relates three dimensions. The first term 'programming languages' refers to the expressive power inherent in the language itself. 'Information structures' points to the potential of the language for modeling – at that time there was as yet little concern with types, modeling happened very much in terms of structures. And 'machine organization' shows the concern for the language's implications on implementation, centering around the question, how does the program formulated in the programming language actually control the machine. This spans the field of tension inherent in programming languages already then and to this day.

From the mid-sixties onwards, Peter Wegner showed a continued interest in programming languages. At first he was concerned with semantics, and as part of this interest, he sought an exchange with the Vienna group around Heinz Zemanek. The Vienna Definition Language developed by this group was a landmark in semantics at the time. It owes its international recognition to a considerable extent to Peter Wegner's mediation.

In the early 1980s Peter Wegner was one of the key researchers in the international movement that eventually led to the ADA language. He was among those asked to contribute to the request of proposals and later to the evaluation of the programming language, which was originally called DOD1, but became known as ADA. However, he was dissatisfied with ADA even before the language was defined, because he was already looking for what he later called 'real object-orientation'.

To many computer scientists – certainly to those in my environment – Peter Wegner has become a source of profound inspiration mainly through his work in object-orientation. Taking a close look at his work when preparing this laudation, I came to appreciate the diverse concerns and different roads to object-orientation which were all accommodated in his own encompassing view.

Peter Wegner's pre-occupation with object-orientation already shows in the treatment of Simula in his dissertation (this was also the

origin of his friendship with Kristen Nygaard who developed Simula together with Ole Johan Dahl). However, he later writes somewhat condescendingly about the European approach to object-orientation, which was just concerned with modeling and classification, but otherwise left programming as it was. This was certainly the case for Simula, a language that offered the innovative class concept, but embedded AL-GOL 60 otherwise.

A different road – one that we are all familiar with – is the human-computer interaction approach adopted in Xerox PARC, where objects were graphical icons that could be manipulated. And these two combined, eventually lead to Small-talk, the first 'real' object-oriented language, as Peter Wegner would call it, with objects being in the center of concern.

The third road to object-orientation (which by the way is the one adopted by our colleague Roland Mittermayr, who wrote the original laudation that I'm drawing on) comes from the wish to reuse software. This is of course very legitimate. It is a question of the capital invested in software development, an issue also pointed to by Peter Wegner.

But Peter Wegner himself was most interested in objects as computational entities that could exist in parallel and had the ability for interaction. This is where he saw the real potential and the fundamental innovation of object-orientation. His overriding concern was: how could programming languages be designed so as to exploit the potential of real object-orientation, allowing objects as computational units to fully unfold their dynamics, and at the same time provide clear concepts in order to master this dynamics and enable a semantic understanding of what these programs would do.

In the 1980s the work of Peter Wegner involved so many great and fundamental contributions that I will even refrain from recalling the titles of his seminal papers. He has published overall analyses, bringing out all dimensions of object-oriented language design in a comprehensive, understandable and yet highly innovative way, and is the (co-)author of several in-depth treatments of advanced topics, such as types in connection with object-orientation or the general concept underlying inheritance. These publications combine clear conceptualization and sophisticated elaboration of the concepts with a view to implementation. There is an amazing richness to be found in them.

Peter Wegner's outstanding contribution was to take into account the work of very many people, a large variety of highly diverse programming languages designed for different purposes, and to propose a systematic way of looking at them. Thus, he integrated many approaches in a convincing manner and brought about a new quality. So he is a highly original thinker and at the same time a great synthesizer of ideas, integrating them into an organic whole.

Peter Wegner's conviction that fundamental ideas in computing should be understandable to many people led to an important part of his scientific work: not only to publish his own papers, but to contribute to journals as an editor. His outstanding service for the computing community was recognized by the Association of Computing Machinery (ACM) and honored by two awards that he received from this lead-

Peter Wegner mit Gastgeberin Gerti Kappel

ing professional organization. In 1995, he was given the ACM Fellows Award. This is a quote from the citation: "For 27 years, professor Wegner has been an initiating leader in ACM's educational and publication efforts, while inspiring several generations of computer scientists." And in the year 2000, he received the ACM Distinguished Service Award „for many years of generous service to ACM and the computing community, including outstanding and inspiring leadership in publication and in charting research directions for computer science."

As a scientific personality, Peter Wegner exhibits a lucid and visionary mind, sensing where the way to the future is going, and at the same time exemplifies the willingness to serve the community in an outstanding way with long lasting effects. This special, unique role of Peter Wegner has been demonstrated again and again at international conferences on object-orientation, in particular at the OOPSLA conference series.

Thus, programming languages and, more particularly, object-orientation are the overriding concern of the whole middle period of Pe-

ter Wegner's scientific work. I have not been able to retrace how his interest shifted from object-orientation to what he now calls interaction machines. My conjecture is that he considered objects as computational units in their own right, endowed with enhanced computational ability through interaction. This seems like a natural bridge.

Since about 1991, the focus of Peter Wegner's attention is on the interactive paradigm for computing, which he sets in contrast to the established, algorithmic paradigm.

Could this paradigm change be meaningful for people in general? Should we stop calling our laptops 'computers'? Should we rather refer to them as 'interaction machines'? Perhaps this would be more appropriate, considering what we do with computers today. It might be easier to explain this idea to novices. The actual 'computing' recedes more and more into the background. What we experience is basically interaction – between us and the machine, between humans through the machine, and also the interaction between machines.

Peter Wegner focuses on interaction in this last sense: the interaction between computers – more precisely, between programs as computational units. He does not suggest to change the name 'computer', but rather to expand the notion of 'computation' in an unprecedented manner so as to cover interaction as well. In doing so, he challenges the very foundations of computer science and devotes the evening of his scientific life to promoting a change in scientific paradigms. This process is a tremendous upheaval that we are witnesses of. Senior scientists who can draw on the wealth of experience of their whole life's work have the responsibility to put the basic concepts and paradigms of a discipline in perspective, making it clear that these paradigms were taken up at some point in time and maybe will be shown as too limited at some other point of time. And then they will be superseded, not given up altogether, but enriched by something to come.

The theoretical foundation underlying what Peter Wegner calls the algorithmic paradigm is the Turing machine. He does not challenge the Turing machine itself – as a mathematical model for describing all computable functions it is timeless and will always remain valid. But in computer science as we know it the Turing machine serves as a model to show what can and what cannot be computed by

machine and thus to mark the boundary of computer science.

My German colleague Wilfried Brauer once answered the question 'what is computer science' by simply saying: well, it is all you can get out of Turing machines, bit patterns and human-computer equivalence. I did not appreciate this at first, but in retrospect I find it a poignant description of computer science as it has been framed and implemented several decades ago. More recently, the boundaries inherent in this idea of computer science have been challenged and are expanding in different directions – but the original view has not been given up.

This situation is typical for an impending paradigm shift, which Thomas Kuhn calls a revolution. A revolution comes with bloodshed and there is strong resistance. Some of the resistance comes from attachment to familiar habits of thought. Also, the proponents of the paradigm shift need time to elaborate their novel ideas into clear concepts. But, perhaps most importantly, there is a power struggle – in the case of computer science it pertains to the question how traditional formal approaches relate to the rest of the discipline. To me, as a working person in the field of computer science, this controversy has practical implications.

This is not Peter Wegner's line of interest. Instead he expands his ideas from the computing realm into a comparison of epistemological schools of thought and even into human, political and social life. He associates the algorithmic paradigm with rationalism and the interaction paradigm with empiricism, to which he gives strong preference. To him, rationalism promotes an attitude where thinking relies on a person's predefined concepts only – taking no account of experience and other peoples' views. Since the empiricist school of thought is prevalent in England and has had a deep influence on American thought, while rationalism originates in France and has permeated much of continental Europe, he associates political beliefs and ways of life in different countries with these philosophical ideas. While he sees empiricism as fundamental to democracy, he diagnoses a decline in European thought as a consequence of rationalism and associates even the dictators that have plagued the world in the twentieth century

with this school of thought. Admittedly, to me this sounds rather like a caricature of rationalism. I cannot follow Peter Wegner there.

However, I strongly share Peter Wegner's concern that we need to reflect on how our ways of thinking are related to how we deal with human affairs. Throughout his life, in his scientific work, but also in his dealing with the world, Peter Wegner has shown himself to be a humanist and has sought mutual understanding between people, between different groups of people – building bridges and contributing to creating conditions for everyone to live in peace.

This brings me back to Peter Wegner's own experience in life. I will now explain why it is important to have this celebration in Vienna, which was his home as a child.

Dekan Maurer und Peter Wegner

When Peter Wegner started school in 1938 in the second district of this city, he lived in the Praterstraße with his grandmother. He had lost his father some years before. His mother had to leave the country right after the Anschluss, which incorporated Austria into Hitler's Reich, because she was in double danger for her political views and for being Jewish. The school – where he had to go, because it was the only school reserved for Jewish children – was burned down on November 9, 1938 in the so–called Reichskristallnacht.

In April 1939, when he was not yet seven years old, he was one of 300 Jewish children from Vienna, who were taken to England in what was called a Kindertransport. This was a coordinated effort of the Jewish community in cooperation with the Red Cross, based on the clear insight (already before the war!) that in the situation of extreme danger at hand, even breaking up Jewish families was called for, so

that at least the children could be saved. On their way to start a new life, the children were cared for by the Red Cross. A special train took them on, was sealed before it left Vienna and went all the way through the Reich to Hoek van Holland. There, the children embarked for England, where families – some Jewish, some non-Jewish – had offered to give them a home. In Peter Wegner's case this meant seeing his mother again, who had fled to England a year before, but lived in such modest circumstances that he had to grow up with a foster family. In Vienna, he had to leave behind his grandmother and other family members, never to see them again.

The human greatness that I would like to bring out is Peter Wegner's attitude to Austria after the war. He came back to Vienna for the first time in 1949. In spite of his own experience, of what his family had endured, and the full horror of what had come in the open after the war, Peter Wegner was willing to regain some trust in Austria. He even sought cooperation with Austrians around 1970. Through his involvement in the research effort of Heinz Zemanek's group, he actually made an important contribution to Austrian Computer Science as well. Eventually he established friendships with some people here. This is the really deep level of healing that we are celebrating, and I want to make it very clear that we owe it to Peter Wegner that we can celebrate this. It was he, who has taken the first steps. We – Austrians from all generations – may be grateful and happy, and respond to his attitude in kind.

Having said all this, I nevertheless want to end my laudation on a somewhat lighter tone.

Peter Wegner has now been in Vienna for almost a week and I have had the opportunity to spend quite a bit of time with him. So I had the chance to learn that, no matter how sad were the circumstances that made him leave this city, no matter how long he has lived in other parts of the world, he is nevertheless, in some ways, very Viennese.

I first found this out in the opera, by his love for

Die Nachlese der Veranstaltung mit Fotos und Vortragsvideos aller ReferentInnen findet sich auf der WIT-Homepage unter:
http://wit.tuwien.ac.at/events/wegner

the music. As we know, it is very Viennese to love the opera. Peter Wegner does not only love the opera, he also knows a lot about music and corrected me several times, accusing me mildly of being a rationalist, when I made a slight mistake. This was the first indication.

Another, more problematic aspect of Peter Wegner's Viennese character is his love for Schlagobers (whipped cream). He read to me an e-mail from his concerned wife, from which I inferred that this is a controversial issue in the family. Too much Schlagobers may not be recommendable, however, this predilection is clearly very Viennese – sweet dishes are the pride of this city.

But Peter Wegner's truly Viennese nature became obvious to me in a little conversation with Ulli Pastner, who takes care of all scientific guests of this institute. She didn't just say that he was nice (anybody can be nice!) but added: "Mit dem kann ma Schmäh führn". Now, you see, only the Viennese can do that. This friendly way of making jokes is not at all superficial. It requires the discipline of seeing the light side in all situations. It allows you to say things that are too serious to be articulated in any other way. And it makes it easier to go even through severe hardships with grace. I can't be sure how far the art of 'Schmäh führen' extends into other parts of Austria – but it is certainly beyond the reach of my colleagues from Germany. In fact, my family complains that I have forgotten all about 'Schmäh führen', because I have lived in Germany for so long. Peter Wegner, on the other hand, has retained this art all his life, exhibiting an admirable lightness in spite of the dark times he has known. In this way he reveals himself as a model Viennese, belonging to this city in a basic manner.

With this recognition, I would like to end my laudation. ■

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Premiere:
OCG Web Accessibility Absolventen

CHRISTIAN SCHERL

Am 21. 6. 2007 wurden an der Fachhochschule Technikum Kärnten die österreichweit ersten OCG Web Accessibility Zertifikate vergeben. Zahlreiche Gäste kamen, um den Absolventen zu gratulieren. Der Trend beweist: Das Thema „Barrierefreiheit" im Internet nimmt an Aktualität zu.

Österreichs ersten OCG Web Accessibility Absolventen aus der Fachhochschule Kärnten

Ab 1. 1. 2008 wird sich im Internet einiges ändern. Die Neuregelung öffentlicher Webseiten sieht vor, dass absolute Gleichberechtigung für alle Personen gegeben ist. Das bedeutet: Websites müssen so gestaltet sein, dass sie auch problemlos von Menschen mit Sinnes- und körperlichen Beeinträchtigungen benutzt werden können. Das Zertifikat OCG Web Accessibility, das sechste Modul des OCG WebPublishers, bietet dem Webdesigner genau diese notwendigen Fähigkeiten, um den Neuregelungen zu entsprechen. „Die größte Gruppe der Internetuser ist bereits über 50 Jahre alt", berichtet Andreas Lämmerhirt von der OCG, der die österreichweit ersten OCG WebAccessibility Zertifikate überreichte. „Leider ist Barrierefreiheit im Internet noch immer meist nicht, in schlechter Qualität oder nicht entsprechend den Bedürfnissen der Zielgruppe gewährleistet. Barrierefreies Web bedeutet aber, Inhalte so aufzubereiten, dass sie neben sehbehinderten oder blinden Personen auch von gehörlosen und hörbehinderten Menschen, von mobilitätsbehinderten und kognitiv behinderten Menschen, Menschen mit Lernschwierigkeiten sowie auch von älteren Menschen genützt werden können."

Feierliche Stimmung

Die Zertifikatsverleihung fand im Rahmen der Abschlussveranstaltung des Kollegs für Kommunikation und Mediendesign am CHS Villach statt. An die 100 Gäste kamen in den Technologiepark Villach. Darunter auch Vertreter der Stadt Villach, wie etwa Stadträtin Hilde Schaumberger und Susanne Palermo. Organisiert wurde die Veranstaltung vom Test Center c4all.com unter Leitung von Reinhold Strobl in Kooperation mit dem Kolleg für Kommunikation und Mediendesign. Insgesamt wurden an diesem Tag 60 Zertifikate aus dem Bereich ECDL Advanced und OCG Webpublisher verliehen.

Kreative Studenten

Daniela Kronig, Nina Ryall, Thomas Mühl, Martina Sandrieser und Markus Schumann heißen Österreichs ersten OCG Web Accessibility Absolventen. Sie besuchen auf der Fachhochschule Kärnten den Studiengang Gesundheits- und Pflegemanagement. ■

Basisinfo OCG Web Accessibility

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