Trip report E.W. Dijkstra, Marktoberdorf, 30 July - 12 Aug. 1984

Originally, Ria and I should go together by car as we did three years ago, the trip being planned as Ria's holiday. In a next stage we asked friend and colleague Martin Rem to join the ride, and he accepted. Finally Ria had to decide to stay home as her mother had suddenly been taken to hospital; so Martin and I made the trip together.

The outward journey we did at leisure, leaving Eindhoven on Sunday 30 July at 9:30 and arriving in Marktoberdorf the next day at 15:00. After we had passed the Ruhrgebiet, we left the Autobahn and took country roads instead. The country side and the mediaeval towns were beautiful, but we would have enjoyed them even more had not we selected for the journey the two warmest days of this summer. It was often too hot to be comfortable. Apart from that we had a most pleasant journey and the car performed remarkably well: 15.2 km per liter!

Upon arrival, I had the unpleasant surprise of hearing that Unkel Fritz (= Prof. Dr. F. L. Bauer) had had a heart attack and was in hospital. Fortunately, the remaining two directors (Tony Hoare and I) were ably assisted by Manfred Broy — now at the University of Passau —, but as all three of us were scheduled for 6 lectures as well, we had a busy time.

For the participants, Sunday was a day off, but Tony and I drove to Münich Airport to collect Andrei Ershov from Novosibirsk. (Andrei seemed quite moved when he discovered us both at the gate.) After lunch the three of us went to the hospital in Fürstenfeldbruck to say hello to Unkel Fritz. We were pleased to see that he was doing quite well, but a bit worried that he might be doing too well. At 17:00 we were back at the Summer School. [The strain was beginning to tell: in addition I had had a restless night, and Tony had to drive the last 10 km because I could no longer keep my eyes open.] It should be recorded that Herr Hans Kuss had given us excellent instructions, and armed -by him- with a map of the area + town maps of München and Fürstenfeldbruck, we reached all our destinations without any problems.

Our return trip was very different. We left Marktoberdorf at 6:45 and drove to the nearest Autobahn. After 4 hours driving we had an hour rest; after another 3 hours we were in Eindhoven. [During those 7 hours we had averaged 107 km/hour at 12.5 km per liter, which is not bad either. The engine was evidently in good condition.]

The organization of the Summer School was as smooth as smooth can be, a fact for which the local staff of the boarding school and the staff of the Technical University Munich share the

credit. They obviously had great experience – this was the 7th Marktoberdorf Summer School –, but we all know that experience alone is not enough.

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In retrospect I am not so happy with the theme "Control Flow and Data Flow: Concepts of Distributed Programming" since it invited very operational considerations, and we all know that these are rarely really convincing. Similarly, the term "distributed" invited distinctions I rarely care to make. (I was repeatedly reminded of a visit I once made to the University of Waterloo, where they proudly showed me their "Remote Job Entry System" – that had just taken six months to implement –. In my innocence I asked them how the "remoteness" had contributed so much to the complexity of the task, but I never got an answer.)

Krzysztov R. Apt (Paris) talked exclusively about CSP (= Communicating Sequential Processes, as published by C.A.R. Hoare in 1978), concentrating on termination and proof systems. In part of the distributed world, CSP has acquired a canonical status in the sense that the immediate reaction to a new suggestion is "Can you show how to implement it in CSP?". CSP, however, is not the last word about communicating processes (it is among the first ones). Apt's lectures suffered somewhat from this influence. The examples chosen

to illustrate his points were a bit elaborate, but his conscious efforts to be understood were highly appreciated.

Manfred Broy (Passau) gave a somewhat encyclopedic overview of "Programming Constructs for Communication and Concurrency". Operational semantics occupied a very central position at first. I found it difficult to understand why he had chosen denotational semantics as alternative because —as Broy knows full well— denotational semantics is still very operational. His visuals were quite readable, but he had too many of them.

Jack B. Dennis (MIT) spoke on "Data Flow Models of Computation" and did precisely what we had hoped he would do: he gave a clear survey of the work done in that area (mostly at MIT). It had the engineering flavour that was to be expected; as a European computing scientist I was struck by the fact that -in 1984!- he still used FORTRAN programs for comparison. He kept the well-deserved attention of his audience until the very end. (He was surprised by the high quality of the audience, which was much higher than what he had expected or was used to; the discovery was obviously inspiring.)

I covered only a small part of the material I had handed in: I developed a termination detection algorithm, presented the Snapshot

Algorithm of Chandy and Lamport and showed how I used the predicate calculus without restricting myself to continuity. At my fourth lecture -after the excursion- I was too tired and made promptly a mess of it when I resorted to a picture. At the other lectures I did not suffer too much from having to use an overhead projector.

C.A.R. Hoare (Oxford) was the most polished lecturer. He too covered only a small portion of what he had handed in. Under the title "Communicating Sequential Processes" he talked about how much can be said when internal process states are largely ignored. (His vending machines did accept coins, but the receipts were not accumulated.) It was a pity that on his foils -which he had used before and will use again- he had used red and green as well: they are harder to read than black and blue. I was very pleased by his stress on the necessity of "many elegant algebraic properties".

Clyde P. Kruskal (Illinois) gave an overview of the parallel machines built or designed in the USA, gauging them with the time-complexity of three algorithms. He had not been told what audience to expect, was unprepared to meet it and ran out of material before his time was over. (Not surprisingly, Jack Schwartz at NYU

had not taught him how to give a decent lecture either.) He was a stand-in for Kuck, who should not have sent him.

Robin Milner (Edinburgh) talked about his CCS (= Calculus of Communicating Systems). This was the first time I heard him in a series of lectures and he struck me as a very sympathetic speaker, full of consideration for his audience. I was amazed to observe that, while his original goals must have been very similar to what Tony is currently pursuing, the two results are so different. I started wondering about his background and could not decide between mathematics and philosophy. (When asked, he told me he had "a major" in both.) Perhaps he concentrates more on what is than on what is (elegantly) thinkable.

Ugo G. Montanari (Pisa) spoke on "Distributed Systems, Partial Orderings of Events and Event Structures" and I must confess that I have failed to grasp his purpose and what he was talking about. My impression was that of an elaborate formalism to be used for descriptive purposes only. And his terminology was definitely confusing (he used, say, "process" by way of abbreviation for "initial state of a process").

Martin Rem (Eindhoven) talked about trace theory and its (possible) applications to VSLI

design. Having prepared a set of self-contained lectures he found himself in the beginning in the situation of making the impression of duplicating some of the material of Tony Hoare. (Traditionally, Marktoberdorf knows no coordination between the speakers in advance.) In the beginning he also suffered from having to use an overhead projector. But he found his rhythm and eventually his contribution was well-received. His visuals —modest in number!— had been prepared with great care, his examples were each time the simplest that made the point and for each of his design choices he gave a convincing justification.

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From the above it follows that at least this director was not entirely pleased with the program we offered. The participants did not seem to mind (with the exception, probably, of a number of experienced educators); they had anyhow plenty of opportunity to enjoy the exposure to each other.

It is fascinating to observe that the audience of the Marktoberdorf Summer School gets better each time. I can think of only two explanations. Firstly, as the Summer School gets more famous, the selection prior to application gets more effective. Secondly, with progressing internationalization —my apologies for that ugly word!—, fluency in

English has improved to the extent that I observed little of the language barriers I remember from the earlier Summer Schools: one heard, of course, all the marked accents, but this time even the French hardly clung together. The moral of the improving quality of the audience is clear: we have to be increasingly careful in the choice of our lecturers.

At the end we were shown an illuminating statistic: for each speaker the average number of foils he had used per lecture. The maximum was 26 (for Manfred Broy), the minimum was 3 (for me, and I was quite pleased).

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PS. The official address is a bit long. And I even did not include my Social Security Number.

EWD.