

Copyright Notice

The following manuscript

EWD 387: Trip report IBM Seminar "Communication and Computers", Newcastle,
Sept. 1973

is held in copyright by Springer-Verlag New York.

The manuscript was published as pages 36–40 of

Edsger W. Dijkstra, *Selected Writings on Computing: A Personal Perspective*,
Springer-Verlag, 1982. ISBN 0-387-90652-5.

**Reproduced with permission from Springer-Verlag New York.
Any further reproduction is strictly prohibited.**

Trip report IBM Seminar "Communication and Computers", Newcastle, Sept. 1973

It was a very mixed affair and I have not yet succeeded in sorting out my feelings completely. Let me try.

There are two completely different views of programming: on the one hand we have the (academic) study about the nature of the intellectual challenge, on the other hand we have programming as it is done and can be done by the hundreds of thousands that are called "programmers" today. These are two completely different subjects and when two groups are talking about them as if it were one subject, unaware of the "twoness", endless confusions arise. I have now witnessed this confusion so many times that it does no more catch me unaware. During this seminar on "Communication and Computers" there was a similar confusion; being less familiar with that one, I only discovered it well after the Seminar had finished.

On the one hand there are the technical and logical problems connected with the organization of the cooperation between two or more computers, so far apart that by definition they are asynchronous. In this field there are enough intriguing and logically very difficult problems to justify a seminar to them. On the other hand the American scene presents us with a few large, powerful bodies: the giant IBM forcing a de facto standard upon the world of computing, "ma Bell" forcing in a very similar fashion a de facto standard upon the world of communication and finally as a third (politically very powerful) party the ARPA network, an achievement that, in spite of all its patent shortcomings, will be a model for many future efforts, if only because it has been such an expensive experiment.

Much of the discussion and the talks was really about the problem how to organize fruitful cooperation --how to organize some sort of merge-- between the now separate communication and computer industries, each with their different pasts and tremendous vested interests. But this was done in veiled terms, addressed to an audience of European academic computer scientists! Some misunderstanding --to put it mildly-- was only to be expected.

The academic computer scientists were not quite sure whether the problem really concerned them and their educational responsibilities, and I cannot blame them either. From the rostrum the problem was approached from an academic point of view as well, but....! L.Kleinrock of UCLA gave three excellent and inspiring tutorials on "analytical Techniques for Computer Communication Networks". A highly gifted teacher, so gifted that he made you forget that his dealing with the whole subject was very one-sided! He showed queuing theory at work, unavoidably suggesting that the contribution of mathematics should always have the form of "applying an existing mathematical technique for solving a specific class of problems". The result is not inspiring for mathematicians: on the one hand most of the results can be obtained with the aid of what Kleinrock characteristically described as "baby queuing theory" and that was not too much: quickly one had to turn to simulation! In another respect it was also misleading: his stress on the quantitative aspects of the game --what else can you expect from a queuing theorist?-- tended to make the audience believe that the logical problems were either solved or unimportant or non-existent. (The stress on the quantitative aspects is, of course, a very American attitude: this time it was vigorously enforced by the really gigantic size of the investments made at all sides. We don't really know what to do, but let us minimize our cost/performance ration nevertheless!) But he was a great lecturer and it was a pleasure to see him at work.

Sandy Fraser, now from Bell Labs, did an excellent job. He was very concerned about bringing communication and computing industries together. (Let the universities think too about sound protocols: now all nets are still "experimental" but what will happen in the next ten years will bind us for the next 200 years.) He was in many ways bound: the fact that Bell and IBM are engaged in a lawsuit of some gigantic proportions required all sorts of statements (from Ewen Page, when he was introduced and from himself when he started). As far as bringing his technical message was concerned, he was also very careful --alarmingly careful, one might say--: he made the impression of arguing that all technical considerations pointed in a direction opposite to the store-and-forward techniques chosen for the ARPA network, but clearly he wished to avoid making all ARPA fans his declared enemies. It is somewhat sickening that an undoubtedly gifted, honest and sensitive scientist like Sandy must so constantly be on his guard. He too is a gifted speaker, very different from Kleinrock, but also and always a pleasure to listen to. Kleinrock and Fraser were the only two speakers that received an applause at the end of their last lecture; and they fully deserved it.

The other two speakers that gave three one-hour lectures, Dr. McKay from IBM, Yorktown Heights and Professor Engelbart, SRI, Menlo Park, were both terrible. McKay spoke undiluted IBMese for three full hours and I am not going to give any further comments; I only heard the first hour --like many participants-- and that was enough (too much). Because I had an urgent letter to write I missed Engelbart's first lecture --it was not really a lecture, he showed a movie-- but I attended his next two performances. He was not only terribly bad, he was dangerous as well, not so much on account of the product he was selling --a sophisticated on-line text-editor that could be quite useful-- as on account of the way in which he appealed to mankind's lower instincts while selling it. The undisguised appeal to anti-intellectualism and anti-individualism was frightening. He was talking about his "augmented knowledge workshop" and I was constantly reminded of Manny Lehman's vigorous complaint about the American educational system that is extremely "knowledge oriented", failing to do justice to the fact that one of the main objects of education is the insight that makes quite a lot of knowledge superfluous. (Sentences like "the half-life of a fresh university graduate is five years" are only correct if you have crammed the curriculum with volatile knowledge, erroneously presented as stuff worth knowing.) His anti-individualism surfaced when he recommended his gadget as a tool for easing the cooperation between persons and groups possibly miles apart, more or less suggesting that only then you are really "participating": no place for the solitary thinker. (Vide the sound track of the Monsanto movie showing some employees: "No geniuses here: just a bunch of average Americans, working together.!") The two talks I heard were absolutely insipid, he had handed out a paper "An augmented knowledge workshop": the syntactical ambiguity in the title is characteristic for the level of the rest of the article. As a result of his presentation I have told a few of the participants that I had found, thanks to this seminar, a new software project. "Because in the years to come there will be a crippling shortage of competent programmers, I shall develop a software package, called "The Instruction Interpreter", From the moment of its completion, users do no longer need to program, they just give their instructions to the system." (This is only an edited version of one of the paragraphs of the Engelbart article!) I would have liked to start a discussion with him but I knew that my lack of mastery of the understatement would have made me too rude for English ears if I had spoken. Finally --after a more than two-hour effort in the middle of the night in sorting out his muddle-- I decided that he was not worth the trouble. (One of the most offending conclusions I ever came to!)

elephant design had turned out to present problems that had stretched my mathematical gear, my notational techniques and my conceptual abilities to the limit. But perhaps it was a mistake to present a new intellectual challenge, even to an audience consisting almost exclusively of university professors. (When I showed it -- in strict confidence of course!-- earlier this year to Peter Naur, at the end of my presentation he looked silently to the blackboard for more than a minute and then exclaimed "Jezus!". My sad guess is that there were too few Peter Naurs in this audience....)

* That was the conference. Before it started we had "an evening" at the home of Ewen^o Page, a sherry party the next afternoon just before dinner, the next afternoon an excursion to Hadrian's wall --with a true archeologist explaining all about one of the excavations: he was an absolute delight!-- and the closing banquet on the next evening. So we were kept quite busy!

I wonder whether the seminar as a whole was a success. If you set "instruction" as your goal, then I gather that it was successful: the academic computer scientists have seen stuff from a closely related field that was largely new for them. The "but" of course is, what they are going to do with it. Mostly nothing, I am afraid. Besides that I observed a general "malaise": on the whole technical or scientific excitement was lacking --in spite of Kleinrock's superb lecturing technique!-- and the little bit there was was damped by the feeling that eventually political considerations would force the "wrong" decision anyhow. In that sense it was not only not exciting, it was even depressing. Is computing science nearing its completion? Is computing practice settling down in a way beyond recovery? Or are, as a result of current circumstances, university professors tired and discouraged?

12th September 1973

dr.Edsger W.Dijkstra