Are "systems people" really necessary?

There is something strange going on that may be related to the sinking of the dollar (for to the business mind, a declining economy always suggests that first-class science is not what we need and more than we can afford). For Departments of Computer Science, this is recruiting time, and it is always instructive to see how the vacancies are described; the 1991 High Fashion is clear: "systems people" are in.

I cannot help considering the phenomenon strange. You see, it took me more than 30 years of involvement in computing before I was introduced —during a visit at MIT— to the term "systems people", and I still would not know how to translate the term into Dutch. (To which I should add that I have learned to be very suspicious of ideas I cannot express well in both Dutch and English: as nice as it is to have the union at one's disposal, it is wise to confine oneself to the intersection.)

At MIT, the term "systems people" was definitely pejorative. It was used to describe faculty that had stopped growing at least 15 years earlier, and their students. (A term of opprobrium was needed indeed; I overheard a technical discussion among three younger "systems people", and it was

as if a time machine had moved me into my distant past.)

Five years later, while I visited Stanford, the term "systems people" surfaced again, and again in a pejorative sense: hard to get, hard to keep, universally disgruntled, impossible to satisfy, scientifically of dubious quality, and probably not worth all the trouble they caused. No names were mentioned and I did not get any further information from seeing the Department in action —it was the Department's birthday party—, but I recorded the use of the term because, in the mean time, I had heard it used at UT and other places.

It is clear that, despite the 1991 High Fashion, the notion "systems people" still lacks respectability: in a recent e-mail broadcast —I don't participate in that, but get what is now known as "hard copy"— a colleague refers to them by the even more dubious term "system type people"! (This was not derogatory: it occurred in a message in their defence.) To which I should add that it could be argued that this lack of respectability is partly self-inflicted, because only too often industrial acceptance seems to be one of their more dominant quality criteria; one can also observe them arguing that "because they primarily build things" the more scholarly academic quality criteria are inappropriate for judging them and their work.

As a group, the "systems people" community suffers from a —sometimes loudly overcompensated— inferiority complex, which creates all the usual political problems and friction inside the departments. All this is not amazing, but what I do find amazing is that, over and over again, by themselves and by others, the "systems people" are treated as a mentally handicapped minority that needs special protection. What, the Hell, is going on?

<p style="text-align:center">* * *</p>

In the medieval guilds, shared knowledge and abilities were protected by secrecy, and the apprentice that joined a master had to learn, to absorb by osmosis. At the universities, it is the task of the professor to formulate knowledge and techniques as explicitly as possible, thereby bringing them into the public domain; furthermore, in view of the changing spectrum of possibilities and challenges, the professor is expected to keep his message up to date by designing new knowledge and by developing new techniques. Note that the two traditions of transmission to the next generation tend to be followed in different context: the teaching in the guilds is fully justified by the needs of the craft, the university curriculum is more constrained by the requirement of

teachability.

The distinction between the two styles of teaching is of potential relevance in this discussion. Firstly, when the importance of laboratories is stressed "to give the student hands-on experience", we see a tradition of the guilds. (I remember that, during a public curriculum discussion in my second year, I violently disagreed with our professor of experimental physics, C.J. Gorter, who wanted us to understand the working of various radio tubes; I told Gorter —with the wonderful conviction of a 19-year old — that I had come to Leyden to study nature, not artefacts.) Secondly, that when people — and "systems people" often do so — explain that they should not be judged by the little they have written but by the systems they have wrought, we again see a tradition of the guilds, for "bringing into the public domain by means of explicit formulation" is the core of the university professor's business. The special consideration with which "systems people" should be treated can be defended by pointing out that their craft is exceptionally difficult to teach; alternatively one can remark that they have chosen an area and a way of working in which the process of turning experience into a teachable discipline is very inefficient if not ludicrously expensive.

Remains the question why "systems people" is primarily an American problem. A minor explanation could be provided by a historical accident: American computing science emerged when America was rich, European computing science emerged when that continent still suffered from the damage of WWII (and a certain amount of poverty concentrates the mind wonderfully).

We can find a deeper explanation in "the American paradox of apparent scientific excellence and the overwhelming antitheoretical emphasis on applied technology" [Wyn Wachhorst, Thomas Alva Edison, an American myth, The MIT Press, 1981]. With the walls around the American campus as low as they are, one can only expect an academic community, more strongly infected by society's prejudices. And if it is society's perception that doers are more important than thinkers, you get on the faculty "systems people" (who feel themselves the backbone of computing) and "theorists" (who have acquiesced in a rôle of insignificance and are not ashamed of their inability to design a beautiful implementation).

Returning to the original question of whether "systems people" are really necessary, the answer seems to be "Not in a society with a healthy tradition of applied science.". (I mean, for instance,

countries in which "mathematical engineer" is a well-understood academic title that is not viewed as a contradiction in terms.) And if "systems people" are needed, this need can be interpreted as a symptom that the remaining faculty is too one-sided, too narrow; and also: nothing short of establishing a tradition of applied science will save the situation.

Finally, let me end with a quotation:

Dijkstra: I would like to comment on the distinction that has been made between practical and theoretical people. I must stress that I feel this distinction to be obsolete, worn out, inadequate and fruitless. It is just no good, if you want to do anything reasonable, to think that you can work with such simple notions. Its inadequacy, amongst other things, is shown by the fact that I absolutely refuse to regard myself as either impractical or not theoretical.

That this quotation dates from 1969 is a sobering thought.

<div align="right">Austin, 25 February 1991</div>

prof.dr. Edsger W. Dijkstra
Department of Computer Sciences
The University of Texas at Austin
Austin, TX 78712-1188
USA