

A letter on engineering and the financial aristocracy

4 April 2009

The following letter was sent by a WSWs reader in Texas, USA, in response to the article, "The collapse of the Cologne state archive building could have been prevented."

In the WSWs article of April 1, "The collapse of the Cologne state archive building could have been prevented," Sybille Fuchs makes the following statement:

"In his June 2008 academic paper on the topic of 'restructuring and cost-cutting pressures versus safety and accessibility,' the engineer Peter Jacobs documented how decisions in this area were influenced by party-political goals. The technical competence of the decision-makers, mostly lawyers or business people, was—especially at the board member or company director level—often just non-existent.' As a result, 'cost-cutting targets' played the leading role, with precise technical understanding taking a back seat."

Unfortunately, the situation so aptly described here is not unique to overt party politics, nor to the city of Cologne, as I'm sure we all know from the multiplicity of stories we read of collapsing buildings, dams, bridges, and levees, electrical system failures, aircraft crashes, train wrecks, barge and shipping accidents, etc. Most of the incidents showcase high-level incompetence and greed, immediately after which calls are made to rectify the situation. Inevitably, this is followed by a token low-level dismissal or two, and a new layer of mandatory annual staff training exercises is put on the rest of the employees.

As a degreed engineer in the United States, working first in the petroleum field, and for the last 20 years in aerospace, I have always prided myself, at considerable personal cost, on taking a rigorous and technically correct approach to my job. I have been described as "too slow" in my work, and have been criticized as "insensitive" to the task of "building shareholder value." I have resisted—consistently but fruitlessly—the ascendancy of bean counters throughout my career. I have had pay

raises suppressed or withheld altogether for fighting for the necessary budgets and schedules to do a job right, and for refusing to hand over incomplete work because it is not ready, not correct, or not properly documented. For the 30-odd years I've been working, the financial aristocracy's dominance over those with solid technical knowledge, training, and experience in the world has only increased.

I have become accustomed to working within many ongoing contradictions, but one in particular has always struck me as a particularly odious hypocrisy.

At the root of all engineering planning, there is the notion of an engineering project as a kind of three-legged stool. The first is the leg of cost, or budget; the second is the leg of schedule (the required dates of milestone reviews and final delivery); and the third is the leg of "performance" or "the Specification"—i.e., the design goals of performance and economy that the finished product, once it is built and delivered, is supposed to satisfy. If any of its three legs fails, the project has failed, supposedly.

This view of a project as a three-legged stool is undoubtedly useful. It implies very strongly that no leg is more important than the rest. Lose any one, and the stool falls over (and we hope no one is sitting on it).

In engineering school, 90 or more percent of class time is spent on leg 3, and learning the necessary mathematics, physics, and engineering practice required to get it right. The enthusiastic graduate gets his diploma and goes to work, eager to apply a body of knowledge to the design problems of the "real world."

But over the years, I (for one) began to notice an uncomfortable contrary fact: "Time (leg 2) is money (leg 1)." And leg 3? It's never mentioned—until it becomes a problem for legs 1 and 2.

As a result, there are always 20 or 30 cost and schedule police, right up to the very pinnacle of your organization, watching your every move, ready to write you up for

overspending time or money. They have the power to punish those who do not comply. But *never* is there a single policeman who can say, "This product is not right and it is not going out." That task is left to the isolated engineer—who is decidedly unequal to the managers and accountants, and who always risks his career if he blows the whistle.

At the same time, the managers' careers depend completely on pushing a product out the door on time and within budget, to the popping of flashbulbs and the fawning adulation of the local business press. Yes, they *do* have the power to deliver an inferior product, but they hope that won't be noticed until after they have updated their resumes with their latest stellar success and moved on to their next gig at a far higher salary, leaving their inferiors behind to take the heat when people begin to sicken and die. (I like to call these people "six-figureheads.")

Engineering managers have always sided with the accounting and schedule police against the engineers working for them. The situation is so bad I have come to the conclusion that it is not even possible for an engineer who prides him- or herself on correct technical methods to rise to the level of an engineering manager, the primary qualification for which is to empty the mind of any engineering training and swallow the bureaucracy's propaganda whole. If you are willing do this, then suddenly the laws of physics need no longer fetter your career.

Under such conditions, is it any wonder that, as the financial aristocracy has knocked down the whole economic house of cards on top of the rest of us for their personal enrichment, that the physical structure of our civilization sometimes comes down too, with lethal results?

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