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Another man done gone (3/2/99)

I heard an obituary announcement the other day on NPR for Thomas McMahon: a celebrity among engineers, the subject of a number of pieces on public television for his work in biomechanics, designing running tracks, applying the principles of stress and strain to the growth of trees, etc.; also the author of several beautiful little novels, among which his Los Alamos fiction, *Principles Of American Nuclear Chemistry*, is my particular favorite.

Apparently he was fifty-five. I don't think he augered in (like Schramm); he must have fallen prey to one of the usual afflictions.

The way I met him was fairly typical, rather silly, really. My Eighties girlfriend (the dancer with whom I kept goats) came from Boston; after we'd been living together for a year or two her parents came out to visit and, after assessing the size of my vocabulary and watching me solve the Rubik cube a few times, decided the incongruity between my apparent intellectual abilities and my level of employment could only be remedied by vigorous intervention on their part. So they went back to Cambridge and started lobbying their Harvard friends to hire me, or something. This campaign progressed far enough that I was backed into providing a writing sample (thirty typed pages on physics and philosophy, very funny, of course) which circulated among parties unknown (apparently a few of them were sufficiently impressed that they thought I should write a book, but I have no idea who they were) with, obviously, no concrete result; save that when we in turn went back East a couple of months later I discovered I was expected to go down onto the campus and interview (or something) with whomever they could browbeat into talking to me. This turned out (first) to be an Engineering dean, some friend of the family, who regarded me with obvious embarrassment until I explained to him that I knew perfectly well that academic life was governed by different rules from, say, the

construction business, where one might reasonably expect that your uncle might get your son-in-law a job, and that I'd been maneuvered into his office mainly because I'd been trying not to be rude; after which we had a pleasant chat about the Oppenheimer biography then running on PBS. And then (taking Los Alamos as a segue) he passed me on to Tom McMahon. With whom I exchanged the same disclaimers, of course; but with whom, however, weird but true, I then had one of those experiences which is the intellectual equivalent of mutual love at first sight. We sat in his office talking about writing, teaching, biophysics, and the life of the amateur farmer for a couple of hours; I remember he asked me how I went about learning a new subject. "I mean, do you read, like, Schwinger's book on quantum mechanics, or what?" he asked. I replied that I usually found it most efficient to find something at the beginning graduate-student level (the Big Print And Pictures theory which I still espouse), and asked him what he did. "I think I have it figured out now," he said. "You write a book yourself." And produced the textbook on biophysics¹ he'd just finished writing with a couple of other guys; explaining that he still didn't think he understood anything about it, but at least now he knew that nobody else did either.

That I didn't carry off. But I did take copies of a few of his papers on the application of the principles of mechanical design to the growth of trees;² and, sighing mightily the while (for I knew this could not end well) set to work on them when I got home. Sure enough, without much difficulty I found a way to extend his work: there seemed to be three essential parameters that described the typical deciduous tree, a scaling factor (he had a lot to say about this), a branching ratio, and a branching angle, and he'd remarked an apparent correlation among them that he didn't have an explanation for. I made up a variational principle, something about trying to maximize the area in leaf, and got something that looked like the missing relationship out of it. — Went

¹ Presumably this was *Muscles, Reflex, and Locomotion* [Princeton University Press, 1984.]

² Cf., e.g., Thomas A. McMahon and Richard E. Kronauer, "Tree Structures: Deducing the Principle of Mechanical Design." *Journal of Theoretical Biology*, 59 (1976), 443-466.

out into the back yard and measured a bunch of plum trees; made a number of heinous calculations (having no computer) longhand; wrote out another thirty-page letter. — And, sighing even more mightily, mailed it off to him. — But from such desperate gestures we never prosper. I never heard from him again; or any of the rest of my unknown admirers, for that matter.

Which illustrates again the principle that you shouldn't drop everything you're doing to attempt to make an impression on someone just because you might get a job out of it somehow. Unfortunately, it often seems to me that I've done nothing else.

Ah well. A great man in his way, at any rate. His novels are still in print, I think; the most recent one I recall seeing was called *Loving Little Egypt*, and appeared in a Penguin paperback. If you haven't ever read them, look for them; you'll enjoy them.

Maine, incidentally, is the best place in the world to skip stones ...

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I found out later that McMahan died by dumb accident, some kind of complication during surgery. It is not a pleasant irony that he had remarked to me his work in biophysics had brought him in contact with a lot of people at the Harvard Medical School, and he had been appalled by their incompetence.

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I lost my copy of the original letter, and don't recall much of what I said in it. I know that I was not so naive by this time and took pains to be cryptic. I know I said something about Lawvere and Tierney and the logical interpretation of quantum mechanics, but out of all the faculty only Hilary Putnam could have understood enough to be intrigued, and it seemed a pretty slim chance he would ever see it.

As it turned out, the people I did talk to came from another intellectual planet entirely. But at least they weren't idiots or thieves.

I do remember describing my perplexity at the disorganization of mathematics. I said it seemed to me like Germany before Bismarck, divided into a bewildering profusion of principalities and kingdoms ruled by mad kings and beautiful princesses under the mesmeric influence of wicked Grand Viziers, a Ruritanian cosmos out of *The Prisoner of Zenda*, and that no one could hope to attain the vision of an emperor, save Hilbert once, or Weil or Grothendieck; whereas in mathematical physics at least you could at least tell up from down, and knew what the really fundamental problems were.

As for the variational principle, I made up many versions of that. The latest and greatest exploited the Hausdorff dimension of the fractal surface described by the leaves, and I still tinker with it occasionally. (The reason is typically Pythagorean: when I solved the problem in two dimensions, the optimal scaling factor turned out to be about .65, and every way I tweaked the calculation — by hand, I remarked to McMahon when I wrote him that if he ran across my Fairy Godmother — undoubtedly, I said, a bag lady in Cambridge — he should ask her to send me a computer — the answer got bigger, not smaller; a problem, obviously, since it ought to be .6180339... .)

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Another thing I'd done, much earlier, was to commence a draft of a critique of the principles of philosophical analysis with a mock-heroic description of the origins of the movement in a gangbang perpetrated upon the Muse by a drunken fraternity of philosophers.³

³ About this I remember nothing save that Whitehead always expressed regret for having participated, and that Wittgenstein watched.

McMahon's conceit in his Los Alamos novel was that the invention of nuclear weapons came about in just this fashion. After I read his version, I tore mine up and threw it out.

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McMahon did send me a brief note in which he mentioned, perhaps because he had been impressed or perhaps simply as pro forma encouragement, that some of the greatest scientists in history had been amateurs. But I knew that already, of course. And also knew that most of them were independently wealthy.