The wind, the trees, and the flame

A centennial is an occasion to look back at what has been, to look at now and what is, and to look ahead at what might be.

We can look back at the first 100 years of the Monthly with great satisfaction. If we look at the present, the Monthly is in the hands of outstanding and creative stewards, and we have further cause for satisfaction.

But I am temperamentally incapable of looking anywhere but ahead. I want to talk to you tonight about the next hundred years and what the heavily clouded crystal ball looks like to me.

When gales blow across the land, all trees must bend. Strong, supple trees bend gracefully, yielding, but not breaking. Weak trees bow their heads to the ground, and drop their branches.

Among the storms that now rage across our land there are some that threaten us who are here tonight, our trees, our structures. There is one that I particularly want to mention, and which I believe will be an important part of the environment of the Monthly, and of mathematical education in general, for years to come, and it is this-

It is my perception that our students, our children, are less well prepared to learn the mathematics that they will need than they were a few decades ago, that they exhibit less intellectual drive and curiosity than they have in the past, and that they are less able to handle the requisite difficult and substantive conceptual tasks.

This matches some feelings that I have about trends in society as a whole. It is my perception that we Americans are growing more and more impatient with lengthy explanations, with deferred gratification, and with complex, detailed thought processes. We are increasingly bottom-line oriented; a people who want things said briefly or not at all.

That attitude can be death to mathematical training. Among all human enterprises, if there is one that demands lengthy explanations, that is vertically structured, that resists summarizing on a bottom line, it is mathematics.

Unfortunately, I have no professional qualifications that would license me to discuss the causes of this phenomenon with you tonight.

But I'll do it anyway.

As a teacher and as a parent, it seems to me that changes in the nature and structure of the American family have a lot to do with it. Many of these changes have resulted in deficient parenting of our children, with the observed results. My guess would be that this is the single most important cause, but it's also the one that is most beyond our control, so I won't dwell on it here.

The role of the national media in the shaping of these attitudes is also important, since the media systematically pick out what they regard as the trendiest trends in our society, and they exacerbate those trends.

Our national consciousness has been numbed by the media. The newspapers, television, recorded music, motion pictures, etc., have evolved in ways that have both reflected and affected our entire culture.

Say it fast, they tell us; skip the complications, they tell us; they quote the flashiest pieces of the story, out of context; they make 12 second sound bites out of carefully constructed discussions of complex issues; they downplay intellectual substance. The media proclaim, in countless ways, that what we should value is external glitter rather than internal content.

The media in this country, of course, had been cavorting in this fashion for many years before the onset of the attitudes that I am describing. What are new, though, are the power, the pervasiveness, the perceived glamour, and the influence of the media in this age of technically gorgeous TV pictures in blazing color and with stereo-surround sound.

The results have been that the tendencies that all of us have in some degree, towards skipping over the hard parts, have been emphasized and glamorized, while complete, in-depth examinations have been downgraded to a quaint pastime practiced by a small priesthood.

The American Mathematical Monthly of the next hundred years will have to live in that kind of a world. Not only the Monthly, but all of our publications, and indeed all of our mathematics, will have to be carried on in that setting.

The climate is very difficult. Political figures who attempt to deal with issues of life and death, war and peace, national solvency, health, and so forth, in thoughtful ways, will of course have to spend a fair amount of time talking about them. But on the evening TV news, perhaps only one sentence from the speech, taken out of its context, will appear, in the style of a bumper sticker.

When Ross Perot spent a lot of money for the first of his half-hour televised statements of his views, and he spent the time talking about the economic and educational declines that he perceived, complete with bar charts, pie charts, and histograms, all I heard on the a.m. news was that he had said we were "in deep voodoo." I saw his speech, then I heard that summary, ... and I thought he was entitled to a refund. It is instructive to note that Perot got a lot of votes, too, which says to me that there are, out there, large unmet needs in the population for substantive discussions of the issues. (No, that was not an endorsement of Perot; but I thought there was a lot to learn from his example.)

Not only is the style of TV programming hazardous to your IQ, but the habit patterns that one forms from sitting in front of the shimmering images, flipping from one channel to another, are conducive to cerebral atrophy.

My former colleague Ed Effros, now of UCLA, suggested that across the bottom of the TV screen there should be a permanent warning from the Surgeon General of the United States, concerning hazards to mental functioning that may result from watching more than one hour per day of TV programs.

Let’s put it this way. There’s not much on TV besides sex and violence; and I can’t stand violence.

The use of computers in mathematical education is a two-edged sword, one of whose edges is like TV.

At their best, computers are powerful extensions of the human mind, creating examples, investigating structures and helping us actively to explore a world that would otherwise have been out of reach.

At their worst, computers can be used merely as a source of passively-viewable color images whose intellectual content rivals that of your favorite Madonna video.

In recent years we have witnessed serious declines in the demands that we make on our students for intensive and solid intellectual achievement in mathematics. When we feed them more baby food every year - we thereby become accomplices to their intellectual softening. We often blur over vital distinctions because we feel that the poor things wouldn’t be able to take it straight and undiluted, and we feel that way because we feel their impatience with the details of scholarship. We respond to that impatience by lessening, rather than increasing, the demands that we make upon them.

We must arrest and reverse that decline. We must tell it like it is and demand our students’ active involvement and understanding. We must persuade our leaders to reach for the best that is in us, rather than for the lowest common denominator of mindlessness.

Ladies and gentlemen, you and I who are here tonight, and our mathematical colleagues everywhere, stand in the very teeth of this gale, because academic pursuits in general, and the study of mathematics most particularly, are antithetical to these techniques of the media. We depend on difficult, thorough, careful, often lengthy, and highly structured arguments that cannot be packaged in small timed-release caplets.

We must bend in the wind. All trees must. There is no choice, because we exist in our society, and we could not ignore it even if we wanted to.

We can bend in many constructive and healthy ways. We can make our teaching, our writing, our Monthly, our creation of mathematics, livelier and more appealing. We can spend more time organizing interesting courses and curricula, more time preparing our presentations, and so forth. Ladies and gentlemen, we must bend, but we must not yield our substance. We must use the security of our academic positions and sanctuaries to stand against the gale.

Again following the analogy with trees, if we stand together, in a strong forest, rather than apart as individuals, we will better be able to resist the prevailing winds.

Let us rejoice in the beauty of our subject that is revealed in its depth. Let us celebrate that beauty and transmit the celebration to our students and our readers.

So yes, let's liven up our style and be more caring and thorough in our teaching and in our writing. But there let us draw the line. For in times of sweeping changes in the body politic, academicians must be the keepers of the flame. Society needs us to do that.

The flame never needs keeping more ... than when gales blow across the land.

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