THE LOST ART OF ORATORY: DAMN THE OVERHEAD PROJECTOR

John S. Rigden

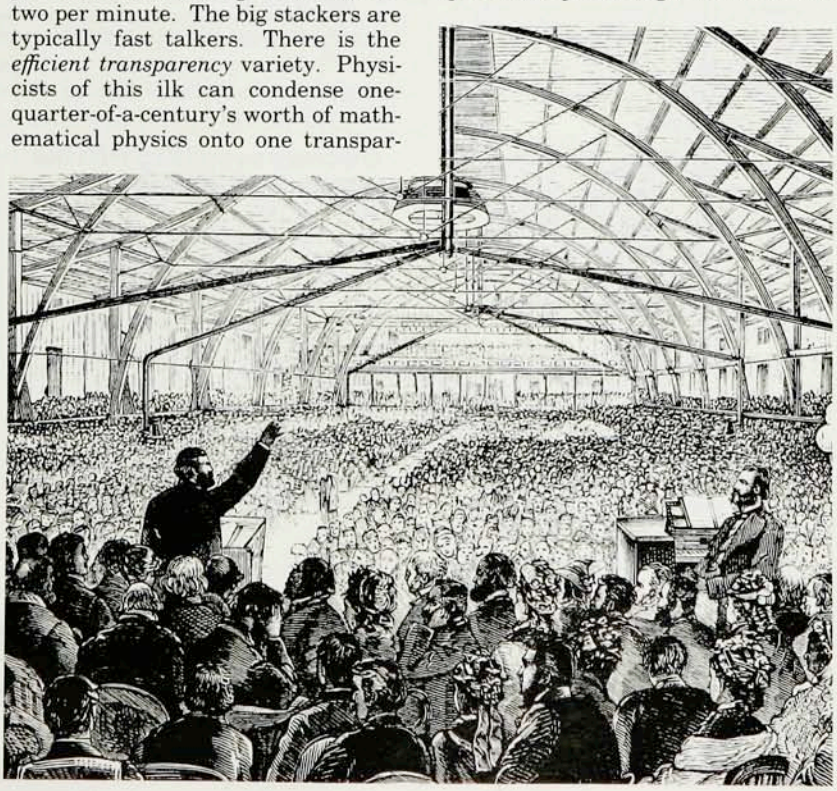
A dense quiet came over the crowd as the President of the United States stepped to the speaker's table. He placed a transparency on the stage of the overhead projector, and onto the screen was projected a map of the original 13 colonies of the United States. "Eighty-seven years ago," he began, as the image of his finger was seen to trace the coastline from North Carolina to Delaware, "this was the new country that our forefathers brought to us: North Carolina, Virginia, Delaware, *et cetera*. The propositions on which they based their thinking are contained in this famous document." The screen went brightly blank for a moment as the 13 colonies disappeared. Then a page of beautiful calligraphy starting with the words "We hold these truths to be self-evident," splendidly illuminated, came into view. The President turned, looked in silence at the projected words and smiled, obviously moved by the impact of their message. "Now our nation," he continued, shuffling through the stack of transparencies on the table, "is divided by civil war"—another map appeared, appropriately rendered in blue and gray—"which not only tests the basic propositions"—back came the illuminated words of the Declaration of Independence—"on which the country is based, but also threatens its very existence." And with that, the President brought back the map transparency, took a wax pencil from his shirt pocket and proceeded to draw a sawtooth black line, which rent the nation into two jagged-edged, broken, blue and gray parts. "We are here today. . . ."

But Abraham Lincoln had no overhead projector. Without visual aids, with words alone, Lincoln spoke *to* his audience: "Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation or any nation so conceived and so dedicated can long endure. . . ." We all remember these powerfully moving words, and we recite them still, 126 years later.

Contemporary physicists *do* have overhead projectors, and through their constant use we have developed an addiction to them. Physicists like symbols and diagrams; symbols and diagrams can easily be drawn on a transparent surface; drawings can be projected onto a screen. Ergo, a symbiosis.

Physicists employ various styles in their use of overhead projectors. There is the *big stack of transparencies* physicist, who in a 50-minute talk is able to move through transparencies at an average rate of about two per minute. The big stackers are typically fast talkers. There is the *efficient transparency* variety. Physicists of this ilk can condense one-quarter-of-a-century's worth of mathematical physics onto one transparency. With this technique a speaker has virtually all the needed information at his or her fingertips; unfortunately, all too often, little of that information is successfully transmitted to the audience. Few probing questions are motivated by an efficient transparency. Then there is the *scratched, smudged transparency* variety. These physicists have, over many years, developed a basic set of N transparencies, which can be ordered in $N!$ different ways for $N!$ different lectures.

The wonderful thing about the use of overhead projectors is that you can prepare for a major talk in a matter of minutes. You merely shuffle through transparencies and put them in the sequence chosen for the occasion. The transparencies, as prompts, contain the essence of *what* is to be said, and there is little need to spend time pondering over the words



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to be used to say it. In fact, in a real pinch, you can simply read the transparencies. (It is curious that a professor who reads to a class from the textbook is severely chastised by the students, but the same professor, as distinguished speaker of note, can read one transparency after another to an audience of peers.)

Last year I attended a special session on the hot topic of cold fusion. *The New York Times* reported that there were 1800 physicists in the audience (a somewhat exaggerated estimate, I suggest). The press was there in full force, waiting for words of clarity on this controversial subject. What did they, and the audience, get? One information-dense transparency after another. I was sitting with 1000 other physicists in the contiguous county, out of range of the screen. It was rather like sitting in Swarthmore watching a drive-in movie playing in Philadelphia.

I. I. Rabi once said, "The power of physics is in words." Of course, Rabi had settled into fame and maturity before the overhead projector transformed the craft of oration into the industry of extemporaneous commentaries on projected equations. Rabi loved to quote from the speeches of Henry Rowland, who, as retiring president of The American Physical Society, spoke to physicists on 28 October 1899 about the state of the subject: "Then as to matter itself, how have our views changed and how are they constantly changing. The round hard atom of Newton, which God alone could break into pieces, has become a molecule composed of many atoms, and each of these smaller atoms has become so elastic that after vibrating 100 000 times its amplitude of vibration is scarcely diminished. It has become so complicated that it can vibrate with as many as a thousand notes. We cover the atom with patches of electricity here and there and make of it a system compared with which the planetary system, nay, the universe itself, is simplicity. Nay, more: Some of us even claim the power, which Newton attributed to God alone, of breaking the atom into smaller pieces whose size is left to the imagination. Where, then, is that person who ignorantly sneers at the study of matter as a material and gross study?" I can understand Rabi's fascination with words.

Enough. I have expressed my thoughts, and—to borrow once again from Lincoln—I have done so in the hope that the good and powerful words "of the people, by the people, for the people, shall not perish from the Earth." ■