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## GEO-MÉLANGE





# The Trouble with STEM

By John P. Bachner



Let's talk about science, technology, engineering, and mathematics – STEM – and Presidents Bush's and Obama's efforts to make it a national priority. And with good reason: The United States is not graduating enough scientists, technologists, engineers, and mathematicians at a time when the nation's need for these professionals increases dramatically every day. I'm not in a position to address the shortages associated with STM, but I do have an opinion or two when it comes to E.

First, this thought: Two U.S. presidents have on more than one occasion told the nation about the importance of E. And as proof of the pudding, each has put how many engineers into his cabinet? Not one. And how many engineers have received public attention and praise for their service on the President's Commission to Achieve a Secure Future through Engineering? Not one, because a such commission exists. And how often has a U.S.

president hosted a National Academy of Engineering awards ceremony and insisted that the event be broadcast at least on C-SPAN? Never.

My question: If engineering is so important, why is it that no one important seems to treat it that way? Far more important, evidently, is the annual White House Correspondents' Association Dinner, where politicians and movie stars bask in their own vapid celebrity, and the news mediaglom onto it like it actually means something.

But let's get real: It's not U. S. presidents' job to carry engineers on their shoulders. Like opportunity, the presidents knocked on the door... but no one answered. It seems to me that engineers by and large prefer to remain in the shadows, out of sight, whispering suggestions about this and opinions about that into the ears of people who have enough courage – or ego – to seek public office. Where are the engineers who seek the spotlight to create the impression that being an engineer is cool; that being an engineer can take you to the most enviable of places? They're not there, because they're so few and far between; because STEM initiatives of the last 50 years have failed to attract them to engineering. Why? Because STEM initiatives have focused on the coolness of *engineering*, not on the coolness of *being an engineer*.

So far as I can tell, engineering does not now meet young peoples' definition of cool (or "chill," as cool is now being called), because the youngsters who seem to like it the most — who are also STEM targets — are not, generally speaking, what most might regard as cool. The cool people – the high-school leaders – don't do E, and they avoid STM as well. Sure, 20 years after graduating, some of those high-school leaders may be pushing a broom at a Taco Bell, but by then, it's too late: They've lost their chance... and so has engineering. So has the United States, for that matter, because STEM initiatives are designed to attract people who love or learn to

love science, technology, engineering, and math. Few of them are part of the nation's general leadership community.

Not all U.S. engineers get off on engineering, to be sure. Just look at the CEOs of some of the larger U.S. engineering firms. They tend to be gregarious leaders who, for the most part, have attitudes far different from those possessed by those they lead. So, how do we get more folks like that involved in engineering, because – clearly – engineering needs more of them: people who don't like the



# STEM

shadows; people who respond eagerly to opportunity's knock; even people who are unafraid to open closed doors and demand that opportunity show itself.

Clearly, we are not going to get more of "them" by telling them as youngsters that engineering is cool, when they believe it isn't, or that engineers are cool when, for the most part, engineers seem to be in hiding. As such, if the nation is serious about encouraging more STEM involvement, especially among the leadership types who do not respond to current STEM initiatives, it needs to take a different approach. I offer a three-step plan.


*Step one:* Conduct a credible national survey to learn why people become engineers in the first place. While many are attracted by the lure of the technical challenge championed by STEM outreach, my own admittedly limited sampling suggests that many choose an engineering career because someone they loved, respected, or admired growing up was an engineer or was somehow involved in engineering or a related discipline. Assuming that to be the case, we need to get more engineers involved in their communities, especially by working with kids, and not necessarily by telling the kids how great it is to be an engineer. All engineers really need to do is make an effort to be mentors to kids and let the kids know they're engineers, so those kids come to love, respect, or admire the engineers who teach them about life.

The engineers can surely mention that an engineering degree is more valuable than just about any other, because it's the only degree that permits a person to do just about anything. They can mention that many engineers do continually less engineering once they achieve a management position, often within five years of starting their engineering careers. And they can tell them how important engineering is; how the seven wonders of the ancient world were each an engineer-led design/build project. And the kids engineers mentor may just be able to teach the engineers a thing or two in return.

*Step two:* Establish a multipronged effort to make engineering cool. TV advertising would be part of it, because TV advertising is so powerful. (For goodness sake, cigarette companies are banned from advertising their products on TV because TV advertising could once again make attractive a habit that everyone knows makes people smell bad and then die.) Who would pay for the ads and the collateral programs, materials, and communication? Uncle Sam, of course, because we're talking about a

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national need. And besides, the amount of money involved would be but a drop in Uncle Sam's proverbial bucket.

*Step three:* Do something to heighten engineers' knowledge of and appreciation for their own profession. I am so tired of hearing, "I'm just an engineer." Right: How much more important it is to be a Kardashian. Give me a break! Engineers make the world work. If Earth is capable of supporting life 50 years from now, our progeny will have engineers to thank. When more engineers realize that; when more engineers take pride in the fact that they really are the most important professionals of all, we may kindle new attitudes so powerful, that even the most leadership-averse engineers regard themselves as cool... and when that happens, watch out! The STEM initiative will finally take off. 

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