

When Shannon told me that Bishop Miller—who's a Michigan State alum—was going to preside on the day I'd volunteered to preach, I figured that it at least meant a few minutes of open season for jokes about his alma mater. However, disappointing bowl game and March Madness appearances for both the Spartans and Badgers this year seemed to take some of the joy out of that, plus our teams haven't played each other in either sport for over a month now. Thus, inspired by a recent show of sportsmanship at the Province V youth gathering, where we heard Michigan State students pray during the Prayers of the People for "all the Prov. V chaplaincies, even Michigan," I resolved to take the high road as well and simply share the most recent UW vs. MSU result I could find. It was a 2-0 sweep in women's softball: Spartans over Badgers at the end of March. We'll see you November 1 in East Lansing, Bishop Miller.

Anyway, I'd like to speak briefly this evening about one of my research interests: engineering education. This long-neglected field is rife with interesting and significant research questions, the answers to some of which stand to significantly improve the lives of engineering students. Now for those of you who don't subscribe to the *Journal of Engineering Education*, I can tell you that there's a budding reform movement sweeping our nation's engineering schools, and, frankly, I'm a bit torn about its timing. On the one hand, had this movement materialized ten years earlier, I could have benefited from it more as an undergrad and maybe been a bit less miserable. On the other hand, it's very exciting to be a part of a discipline that's just waking up to the opportunities ahead of it.

One of those opportunities is the chance to teach students who look very different from...well, me. Male, middle-class Midwesterners are no longer the majority shareholders in the American engineering education enterprise. Crew cuts and closed-toed shoes are out. Those skinny ties? Also out, which I'll admit to being a little bummed over. In any event, these shifting

demographics are forcing engineering faculty to more deliberately address an institutional deficiency that was problematic even when their graduating classes *were* a bespectacled monocrop: people all learn in different ways. Of course, you shouldn't need a doctorate in educational psychology to realize the importance of catering your teaching to a variety of learning styles; one look at an old-school engineering classroom, though, suggests that you *do* need something besides an advanced degree in fluid mechanics, solid-state physics, or polymer processing.

Jesus, of course, gets it. In fact, I think he's the ultimate professor. He realizes the importance of analogies and metaphors, and of storytelling in general. He provides plenty of demonstrations of the concepts he's trying to get across, especially the hardest one for us to understand: radical love for our neighbors, all of them. He cites sources but never forgets to explicate these original texts and offer new interpretations. And in his sending out of the disciples, we can even see that he's an early advocate of service learning. Most resonant to me is that Jesus always drew his examples from a variety of disciplines: agricultural economics, animal husbandry, botany, and the behavioral sciences are the first few that come to mind. Jesus so yearns to have His message heard by all people that His methods for sharing it with us are as diverse as we are.

The designers of the lectionary get this final point too, I think. Last week was Good Shepherd Sunday, so we were bathed in pastoral imagery of green pastures and still waters, right pathways and revived souls. No doubt about it: these passages paint a beautiful and reassuring picture of our relationship with God. However, Jesus and—I learned this yesterday—the “North American Consultation on Common Texts” both understand that, in Biblical times and especially today, this pastoral imagery is *directly* meaningful to some but not all of the intended audience.

Shannon spoke last week about having once met an actual shepherd; I suspect that few among us here share that experience.

Consequently, this week we get a similar message packaged very differently. The imagery here is very stark. In the psalm, the Lord is “[our] strong rock,” “a castle to keep [us] safe,” “[our] crag and [our] stronghold.” Similarly, in this week’s Gospel reading, Jesus mentions the “many dwelling places” for us in “[his] Father’s house.” But both readings seem point to the same conclusion. Last week, Jesus was “the gate for the sheep” through whom all who “come in” will then “go out and find pasture.” This week, He’s “the way” through whom we “come to the Father.” It’s the same lesson, just in two different lectures. Two different ways of knowing God.

As I was reflecting on this idea, I remembered something that Adam Kradel, a former interim chaplain at St. Francis House, once said to me about how we can always put our professional knowledge to work on questions of faith. As a bi-vocational priest-slash-political scientist who studies religious rhetoric and the presidency, Adam embodies that ideal well, but I confess to being puzzled when he said to me “you know, not enough people think about science as a way of knowing God.” Now, physicist Steven Hawking has famously commented that to formulate a complete theory of how the world works would be to “know the mind of God,” but my current work basically involves programming the SimCity version of the nuclear fuel cycle, so I don’t expect to be stumbling across any major contribution to Hawking’s research program any time soon. But after thinking a lot about this week’s Epistle, I think I’ve got an inkling of what Adam meant, of how what I know about engineering can help me know something about God.

In my opinion, nobody describes what engineers know about better than does a Duke University civil engineer and historian named Henry Petroski. In his book *To Engineer Is Human: The Role of Failure in Successful Design*, Petroski makes a point early on about the impermanence of the things engineers design and build: “Even the pyramids in the land of the Sphinx, whose riddle reminds us that we all must crawl before we walk and that we will not walk forever, have been eroded by the sand and the wind,” he writes. “Nothing on this earth is inviolate on the scale of geological time, and nothing we create will last at full strength forever. Steel corrodes and diamonds can be split. Even nuclear waste has a half-life” (Petroski 30). You can probably see why I like this guy.

The coolest part of this passage is where Petroski talks about a poem by Oliver Wendell Holmes, the father of the famous Supreme Court Justice of same name. Called “The Deacon’s Masterpiece or the Wonderful One-Hoss-Shay” the poem has an interesting theological back story and meaning, but I want to focus on the engineering aspect, which is this: Holmes jokingly conceives of a one-horse carriage that never breaks down because it has no “weakest link”; each part of the carriage is equally strong. It’s an intriguing idea, no? Test your design, see why it fails, create a new design to improve on the original flaw, and repeat. If you repeat enough times, you should arrive at a perfect design, right?

Well, no, of course not. Like cold fusion and perpetual motion machines, Holmes’s One-Hoss-Shay is an impossibility. Flaws in engineers’ materials, if not in their actual designs, will always cause a design to fail eventually, and the laws of probability tell us that the chances of all possible “failure modes” occurring at once are vanishingly small. So what’s an engineering professor to do? Well, you teach students how to identify the most likely failure modes and make

a prediction about how they limit the design. I'll give you an example... [Stress concentrations, key chain, propane tank.]

Now consider today's Epistle. "Come to him, a living stone, though rejected by mortals yet chosen and precious in God's sight, and like living stones, let yourselves be built into a spiritual house." As the passage goes on, we're told that Jesus Christ is the cornerstone of that house. Of course, plenty of houses crumble even when they are built on a sure foundation. Beams, walls, windows, insulation, plumbing, or in our case the kitchen can all be the weakest link, and they can all either cause the structure to fail outright or at least prevent it from serving its full purpose. Except for God's house. The normal rules don't apply here. Our own failure modes, though plentiful, are ultimately irrelevant. Our chief cornerstone, somehow, strengthens all the members of this house.

So here, at last, is the point. As an engineering student, I've been trained since probably my second semester to practice constant vigilance in the dogged pursuit of failure modes and worst-case scenarios. A design is only as strong as its weakest link, my professors tell me, so I'd better be darn sure I know what that link is. But now I see why in the St. Francis collect, we ask God to help us "count the wisdom of this world as foolishness." The better we understand that *in this world* a design is only as strong as its weakest link, the more we can appreciate the awesome promise that the strength, love, and unity of the communion of saints is determined by our *strongest* member, Jesus Christ, who offered, as it says in one of the Eucharistic prayers, "a full and perfect sacrifice for the whole world."

Thus, my prayer for all of us as we approach the end of the semester, that last great push to consolidate and internalize the wisdom of the world that we pay so much money to acquire here, is that in doing so, we all take time to remember that the knowledge from each of our

chosen fields really does have something to teach us about God, even if it's simply that God's world is so much different from our own.

Let us pray: O God, you reveal yourself to your children in many ways, so that we can all understand your will and your love. Help us remember that you call us to love you with our minds, and give us the wisdom to treat our studies as another opportunity to know you better. We ask this in the name of your Son Jesus Christ, the cornerstone who strengthens and sustains us all. Amen.