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The Craft of Storytelling in Engineering Education

Ethan Brue

Abstract

For all the efforts over the last decade or more to attract, retain, and engage more students in STEM education, the challenge remains. Most programs have focused on creating gateway programs that attempt to sell the content of engineering as fun and entertaining. While there is little doubt that the task of engineering will be existentially pleasing, it is not a re-casting of the content alone that will attract and keep students in STEM disciplines. In both industry and education, the challenge of engineering is rarely one of content, but rather one of underlying motivation and purpose. History demonstrates that tenacious engineers and their engineering feats emerge most often from transcendent narratives.

Reference to the primacy of story within the task of higher education extends beyond the walls of Christian education. Scholars and writers in our post-modern culture increasingly use the language of narratives and meta-narratives when discussing worldviews. While Christians disagree with the proponents of post-modernism on many foundational issues, there is general agreement that overarching narratives (i.e. stories) play a powerful role in shaping an individual’s life. The power of story lies in its inherent wholeness. A good story, in all of its complexity and nuance, resists dissection, analysis, and explanation. A story simply invites us to participate in the narrative, to see ourselves inside the story.

I will reaffirm in this paper that the central task of our life-long Christian education is to work, live, and play inside the Biblical narrative of the kingdom of God. However, traditional STEM pedagogies rarely reflect the holistic character of engineering as a human activity and inadvertently sever engineering from its context in the bigger story. Thus, our pedagogical techniques and curricular structure often contradict what we intend to teach as Christian educators.

Refining our story-telling in the engineering curriculum is a potential means of retaining more students in STEM. More importantly, is an essential element of teaching integrally Christian. I will propose three approaches to accomplishing this. The first method integrates historical narrative into the engineering curriculum, the second involves blending contemporary narrative into classroom discourse, and the third involves the use of Biblical narrative within the context of technical subjects in a way that resists a counterproductive sacred-mundane dichotomy.

Escaping the straight-jacket of “scholarship”

Technological systems always have biases, that is, things that they can do and things that they cannot do. Systems of education and scholarship are no less constrained.

1 Dorst College, Sioux Center, IA
is great irony that fact that one of the most influential Christian writers of our time is using a “rational” technological medium to debunk the epistemology and anthropology that has for the last 100+ years assumed humans to be “brains on a stick”\textsuperscript{1}. It is like watching an 8-hour television documentary series on the dangers of television or lecturing on active learning strategies. However, since academics and professionals rarely accept sitting around the campfire or gathering around the water cooler as viable professional development hours, we have no options. We are obliged to share these ideas on teaching and learning in the wrong medium. As we all know, stories are told, not argued, posited, or analyzed.

Outside of the story, my topic is about “ways of knowing”. It is a topic that begs for further analysis and development in the context of Christian engineering education. Let it suffice to say that I believe our “ways of knowing” in engineering education have traditionally been monopolized by rationalistic ways of knowing. The technical conference paper culture is an artifact of the science societies of the enlightenment and is biased toward one particular type of knowing.

I am going to suggest (but not argue or defend) that without rejecting the powerful tool of knowing that comes from rational/scientific abstraction that typifies engineering education, we can embrace another, equally powerful means of knowing in story-telling that may better help us achieve our goals as Christian engineering educators.

Many people fail to recognize that most of our “knowing” is of the pre-theoretical type. As we travel to this conference, we have crossed bridges and have flown in airplanes. I will risk being presumptuous, but I suspect that none of us have even the slightest knowledge of the maximum Von Mises stress in either the airplane wing or bridge cross member as we made our way to this conference. Either we are careless, dangerously naïve, or incompetently ignorant in the face of impending doom, or there is another kind of knowing that is more powerful and significant than the theoretical knowing we hold so dear in journal publications and conference presentations. How did you assume the bridge or plane was safe? Experience.

Experience is at the core of the largest percent of our knowing. Experience, the stuff of story; not just the extraordinary, mystical, stunning, shocking, or overwhelming, but simple experience. The tears of a mother or father, the sound of the wind in the cottonwoods, the pop of an actuator at just the right time in a well-designed mechatronic device. Before any knowing is theoretical, it is experienced.

If our aim as educators is to nurture in our students in both knowledge and wisdom, then I believe our traditional pedagogical toolbox may not have all the necessary tools. We are in the business of training faithful disciples, not just engineers. You need both narrative and argument to train a holistic engineer.

The notion of both education and spiritual formation as belonging to the story-telling business is not new. Daniel Taylor, professor of literature at Bethel University asserts, “All the academic disciplines…are in the storytelling business”.\textsuperscript{2} Eugene Peterson declares, “Story is the primary way in which the revelation of God is given to us. The Holy Spirit’s genre of choice is story…”.\textsuperscript{3} If it is true that all academic disciplines are in the storytelling business and that story is the genre of choice for the work of the Holy Spirit who leads us into all knowing, even engineering know-how, then how is this
reflected in our pedagogy? Are we using the right mediums and methods to create the space for the work of the Holy Spirit in our engineering students?

Without further apology, this will be a bit of an anti-paper -- a rejection of the very core of what an academic paper is supposed to be. I will tell stories, but not without a disclaimer. Teaching is intensely personal. To be an effective Christian teacher your pedagogy needs to grow out of the “guts” of who you are as a child of God. Therefore, I will not suggest that what fits me will fit every instructor. Just as there is more than one way of knowing, there is more than one way of teaching.

**Finding that “little bit of cathedral”**

Over the last 30 years, there has been minimal progress as a whole in attracting and retaining students in STEM fields. For years, we have asked engineers to grind through some of the most arduous and rationalistic subjects as a professional initiation ritual before they ever get a taste of the creative problem solving and design processes. Recognizing this curricular incongruity, we have recently worked to sell engineering as fun, exciting, rewarding, empowering, and self-fulfilling, only to discover that the effort and tedium that one must expend on an art before the canvas comes alive or the concerto resembles music is often a price many are unwilling to pay. The art of engineering requires a patience with the early years of learning the grammar and techniques of the artist. I tend to agree with Samuel Florman, that the solution is not to reshape the individual’s perception or experience, but rather to reacquaint them with a dream of the future possibilities that the craft of engineering (once mastered) holds out to them. In other words, to teach them how to imagine the “new creation.”

What Florman understands is that doing engineering is a religious endeavor. The activity calls us into a posture of transcendent imagination and escape the prison-house of the “plodding technician.”

Not only cathedrals, but every great engineering work is an expression of motivation and of purpose which cannot be divorced from religious implications. This truth provides the engineer with that many would assert to be the ultimate existential experience...The age of cathedral building is long past...but every manmade structure, no matter how mundane, has a little bit of cathedral in it, since man cannot help but transcend himself as soon as he begins to design and construct.4

Here lies our problem. We want men and women to dream about doing engineering, but we give them nothing to dream about that transcends themselves or their profession. They are given derivations rather that story, proof rather than poetry, and empirical correlations rather than myths. It is no wonder we cannot retain our students as engineers.

The apologetic aspiration of the Holy Spirit is to open our eyes to our deepest desires, which is a common theme in much of what C.S. Lewis writes. The engineering texts so often miss what our age-old poems and mythologies have been telling us for centuries. He suggests that at the core of our being, “we want something else which can hardly be put into words – to be united with the beauty we see, to pass into it, to receive it into
ourselves, to bathe in it."^5 And he suggests that those who have immersed themselves in the Biblical narrative will take imagination seriously.

“For if we take the imagery of scripture seriously, if we believe that God will one day give us the Morning Star and cause us to put on the splendor of the sun, then we may surmise that both the ancient myths and modern poetry, so false as history may be very near the truth as prophecy…We cannot mingle with the splendors we see. But all the leaves of New Testament are rustling with the rumour that it will not always be so.”^6

Lewis understands that within the myths and poetry we write in our culture often lies a truth that no theory or derivation will ever be able to express. Christian engineering education needs to create more prophetic myth. I believe part of the solution to retention problems in engineering is to learn how to tell better stories. Stories have the power to tap into our deepest longings and translate them into robust motivations.

However, not all stories engage students with the same transformational or motivational power. As Neil Postman describes a concept first introduced by Northrup Frye, a story is able to come alive in a listener or culture when it achieves resonance, which is the right combination of context and connection so as to “acquire a universal significance.”^7 In other words, regardless of the setting, the listener of a story with resonance is able to hear the story and easily relate it to their experience in an entirely different place and time. However, for effective learning, it is also true that a story with substantial dissonance can also be a powerful teaching tool. If the listener is forced to take a look at their own experiences and exclaim “but my world is different because…” the story has also been a pedagogical success. For the instructor, good storytelling begins with listening to the audience. Ensuring that they are either experiencing resonance or dissonance (but not ambivalence) is the determining factor as to whether the story is told well.

Re-telling Engineering History

One of the ways we tell stories to each other is through our ongoing creating and re-creating of history. In a previous paper at the annual ASEE conference^8, I discussed the importance of integrating historical narrative in the engineering curriculum. It is important for engineering students to recognize that engineering is a human activity not an impersonal force. As a human activity, it emerges from the context of a larger story of obedience and disobedience, success and failure, progress and regress. It is a story that is unfinished and that they are a part of. In historical context, they see their dreams not as originals, but as oft-plagiarized products of generations past. However, contrary to how history is often taught, it is not the dates, times, or artifacts that are most important to retell, since these are the parochial products of the story. Rather what needs to be emphasized are those longings and desires that resonate across time or clearly clash with contemporary paradigms. David McCullough has recently captured the essence of the development of the aeroplane.\(^9\)

On December 17, 1903, a cathedral was built on the sands of a North Carolina beach. A dream took shape in the form of a technological artifact. Many historians still miss the point of this event at Kitty Hawk. What took flight was not cables, struts, and pistons, but rather a play-filled work of art, expressing the dreams of \textit{homo faber}, humanity the culture makers. The story of the Wright brothers seems to reinforce the notion that in the
activity of culture making, the artist often arrives before the scientist or entrepreneur. If it happened in reverse order, the drama would cast Samuel Langley in the lead role, not Orville or Wilbur Wright.

As is often the case in the most momentous technological change, an expression of a deeper yearning or belief is at work. As the story unfolds from inauspicious Dayton, Ohio to the boondocks of Kitty Hawk, the story is far less about the technology, and more about the makers. In today’s world in which some mega-corporations will employ as many patent attorneys as engineers, we often connect innovation to work rather than play. Commerce seems to spur innovation. With history’s grandest technological achievements, the story unfolds differently. When we enter the Wright story, we do not find Orville and Wilbur the employees, but rather we see gymnasts, football players, pond hockey players, skate sharpeners, book lovers, naturalists, art connoisseurs, musicians, suffragists, worshipers, and committed family members. There is nothing in their identity that looks aeroplane-like. This is precisely the reason for the Wright brother’s success. In the early development of the first flyers, their identity was not bound up in the plane, but rather in the activity of creating.

One of the most striking features of the story is that we see a motivation for technological development arising not out of some practical need, but out of a desire to “play” and “explore.” Kitty Hawk should not be thought of as a testing ground. It was closer akin to a vacation than a project, and the memoirs from their experiences on the Atlantic coast read more like poetry than a lab report. Many historians comment on the tenacity of the Wright brothers, who spent far more time fixing the results of “failures,” than witnessing success.

The engineer takes from the story a deeper understanding of technology as an art, a playful expression of a joy or longing. It is easy for the artist or athlete to resonate with this story. Failure is the motivator. For the artist, the absence of conflict ruins a story. For the athlete, the absence of a challenging competitor ruins play. Creativity thrives in an environment of resistance, non-mastery, and nuance. In contrast, modern science abhors complexity and contingency. Its guiding principle is transparency and control, in which the eradication of mystery and failure is paramount. Engineering cannot survive in a rational-scientific environment. How we tell the story matters.

Personal and Life Story in Engineering

Contemporary story -- autobiographical, fiction, or non-fiction -- all have a place in the engineering classroom. The most effective ones are derived directly from personal experience (in some way or another) as an engineer in the world. For resonance, the most important consideration is to keep them broad as life itself. Serving as an engineer is far from being just technical, it includes all the joys, pains, challenges, mistakes, etc. of being human. A second goal in developing such narrative is to avoid explanation. Simply tell it. Force the students “into the story” and give them the power to read between the lines. Like a good sermon, the application should primarily be the work of the congregation, not the preacher.

I often start class with narratives. Here are two examples that I have used in System Dynamics and Controls class. It is a class that leans toward the more abstract on the continuum of engineering courses. Therefore, I believe one of the challenges to teaching
a course like linear systems from a Christian perspective is to periodically draw students into the more complicated rhythm of engineering, the overtones of life itself.

_System Dynamics and Controls – Narrative #1 – Reflective Memoir_

_Time. It’s a significant part of this course. It’s a significant part of differential equations class, right? You are always looking for the “solution” which means what? (...a representation of the response as a function of time...). However, have you ever noticed how seemingly insignificant time is to “real life”? Have you noticed how time gets censored out of our histories, our best stories? Time simply makes for dull narrative. Take war stories for instance. Everyone has heard of the Charge of the Light Brigade, or Pickett’s Charge, or Custer’s Last Stand, or D-Day. But these are all stories that took minutes or hours...while wars took years. In other words, statistically speaking, being a soldier will mean a great deal more of picking your finger nails than picking any fights. Hours and hours are simply dull, wasted, uneventful. In between those story making events lies a great deal of humdrum. Engineering doesn’t escape this fate.

I learned this in my first position in industry. It was the consulting industry...you know “feast or famine” (explain). Not soon after I started I hit a famine. Which makes me wonder as I look back...is there a Christian perspective on killing time? My whole education was about designing responsible technology, about transforming technological systems into obedient service.

But what if I found myself in a place and time that has no immediate need for my shaping and forming? Give it some thought. I have a few ideas...but there are no answers in the back of the book on this one. All I know is that based on my experience, it seems our most powerful witness may be how we actively steward our waiting.

In this first engineering position, I had a colleague who was Ivy-league educated at Princeton. Unfortunately, I’m afraid that in their zeal to teach him everything about engineering, they forgot to teach him anything about time stewardship. When there wasn’t work...he’d waste it. Spit-wads over the cubicle walls, solitaire, downloading demeaning images...he didn’t last long. It seems that a persons true character is either determined or developed in the “between times,” in the “waiting.”

You know the stories...a David moonlighting as music therapist for a manic-depressant king, a Samuel dusting the temple furniture in a patched up ephod. They spent a good portion of their life “killing time” before they really got to serve...OR maybe that’s exactly how they served. The first material we are typically given to design with is time.

_Time is more than a variable. It is a God breathed creature that needs reclamation as much as you and I. So as an engineer, don’t treat it like anything less...give it some thought._
“So what d’you find out?”…The voice on the other end of the phone was Ted Barnum, a partner of the firm from upstairs, the rather heavy set one who didn’t smile much.

“Not much” I said, “they weren’t very helpful”…I have this way of understating things…truth was, they gave me a verbal lashing.

“Why not?…you were just looking for a budget quote”…There was a hint of jest and sarcasm in his voice.

“yeah, but when I told them I was from BVP Associates, they laid into me about not playing that damn game with me…”

“So why in the hell did you tell ‘em?” …he said, not in an angry sort of way…but rather in one of those ways that made me feel just slightly smaller than the computer mouse that I was fidgeting with.

“I don’t know”…I didn’t really have anything more to say.  I guess my mom always taught me to tell who was calling.  But I doubt Ted would care what my mom thought. Besides, I had never been told that one must hide one’s identity when calling for a budget quote on a set of Diesel Generators.

There was one of those uncomfortable lulls in the conversation.  The phone in the cubicle across from me was ringing.  I felt like answering it.

“Oh well…we’ll have to try to find out some other way…I’ll take it from here”  He hung up.  I think I said “O.K.”…but not before the “click” on the other end.

It was an odd exchange.  The oddest thing about it was that I never knew the full story until I was accused of being a corporate spy.  I guess Ted had a project in which he was bidding on a job with a series of microturbines.  Somehow he knew that Wartsilla Diesel was also bidding on the project.  Instead of doing the engineering work required to deliver a good product, Ted was more concerned with simply undercutting the competition…he just needed their bid.  He never told me this.  I was the unsuspecting ignorant fool in the middle.  This was the last time Ted ever asked me to do any work for him.  To be honest, I wasn’t disappointed.

We deal with a lot of hypothetical situations in this course; some are not so far from my experience.  In fact I think the most “far out” situations in my engineering education came in the engineering ethics coverage.  Ethics courses always assume that a person is rationally conscious when confronting moral dilemmas in engineering.  I’m not so sure.

Honesty sometimes looks a lot less like “a noble George Washington with ax in one hand and confession in the other” and more like an unsuspecting butt of a bad joke.  It’s a norm we call openness in communication…try to make it a habit…you may find yourself being accidentally honest.  And even though in the process you look like a naïve fool…it may just keep you from having to work with Ted again.  End of story.
Biblical Narrative as Science and Engineering Narrative

In a previous paper, I challenged us to look carefully at how scripture guides and directs all of our learning. Biblical instruction should never let a specific story be severed from the grand narrative, that is, those central themes that echo across and through scripture\textsuperscript{11}. This has led me to develop stories such as the Naaman story as an example of technological paradigms in conflict and to challenge students to become more attuned to contemporary blinders. Other stories, such as the experience on Mount Carmel, also provide great instances of not just “kingdoms in conflict,” but technological and scientific paradigms in conflict. Religious belief forms the basis for all modeling and manipulating the world around us. It has not changed. Modeling is never neutral. Such re-narrating of biblical stories tend to tell like an Aesop Fable. They end with a moral. This can be a dangerous use of scripture, if it is not understood as a broader scriptural theme, or assumed to be the only message of a particular passage.

A second form of narrative is to draw students with traditional fluid mechanics textbooks or material science texts into the larger biblical narrative. Aside from reinforcing a principle of fluid mechanics, it teaches an important principle about understanding Scripture. Scripture should not be understood as some type of static spiritual encyclopedia for reference or inspirational drug. It must be understood as a dynamic narrative that calls us into its story.

Here are three examples that come from a series of five reflections on the miracle narratives, specifically the miracles of nature. The objective is to tell a story while subversively disabuse them of the popular (but pagan) notion of natural law and replace it with the more fundamental law of grace.

Meditation I: Jesus Doesn’t Do Miracles

John 2: Jesus Changes Water to Wine

On the third day a wedding took place at Cana in Galilee. Jesus’ mother was there, and Jesus and his disciples had also been invited to the wedding. When the wine was gone, Jesus’ mother said to him, "They have no more wine." Jesus replied, "My time has not yet come." His mother said to the servants, "Do whatever he tells you." Nearby stood six stone water jars, the kind used by the Jews for ceremonial washing, each holding from twenty to thirty gallons. Jesus said to the servants, "Fill the jars with water"; so they filled them to the brim. Then he told them, "Now draw some out and take it to the master of the banquet." They did so, and the master of the banquet tasted the water that had been turned into wine. He did not realize where it had come from, though the servants who had drawn the water knew. Then he called the bridegroom aside and said, "Everyone brings out the choice wine first and then the cheaper wine after the guests have had too much to drink; but you have saved the best till now." This, the first of his miraculous signs, Jesus performed in Cana of Galilee. He thus revealed his glory, and his disciples put their faith in him.
I am convinced that Jesus never really knew how to do a good miracle. Let’s be realistic, if you’re going to go through all the work of doing a top-notch, high-power, knee-shaking miracle, you’ve got to know how to sell it to the audience. Ask any Las Vegas magician – “it’s all in the presentation”. The problem with the so-called miracles of Jesus is that if you blink you miss ‘em. The only ones who really see them are the ones who have their eyes opened. Jesus is clearly not in sync with the broader audience. Simply put, he at least needs to make his miracles look like a miracles. Instead he makes them look as routine and mundane as brushing your teeth! Sometimes we hear them one too many times and we become dull like the disciples. Like the disciples, we think what Jesus does is pretty wild. But in our amazement, we’ve missed the point. In all of the “miracles of nature” that Jesus does (i.e. those miracles in which he in some way subdues or transforms the non-human creation) the weirdest characteristic of them all is the nonchalance and “matter-of-factness” with which he does them. He acts as if nothing unusual happened!

Jesus turns water into wine. Why use only water? How mundane. If you want to get peoples attention you’ve got to use something with “pop” or “smoke” or “color” – or at least ask for a rare chemical like hexochlorobenzene. Don’t ask for water - colorless, everyday, ordinary water. Water is just too common a substance for a good miracle. To make matters worse, Jesus simply tells the servants to “fill the jars with water”, an ordinary activity with an ordinary substance. Then without even a word, or incantation, or procedure, there is wine. What happens is entirely predictable - a waste of a good miracle! The miracle is so subtle that most people at the wedding don’t even notice. They just wonder why the good stuff has been saved until everyone is stone drunk. For most of the wedding guests (including Jesus) nothing unusual happened. And they were right!

Jesus doesn’t do the extra-ordinary. He doesn’t do the supernatural. He’s not into magic. He only does what comes natural for him as Lord of the Universe. He rules. From the beginning of creation every atom, every electron and every quark has been at his beck ‘n call.

On that ordinary wedding day in Cana the hydrogen and oxygen atoms situated in six 20-gallon ceremonial kegs awaited their commands from the Lord of the Universe, like they always do. He calls. They obey. Atoms have no choice. It just happens that of the many dances that the Lord of the Universe has them perform, a slight deviation from the dance they are most familiar with was called out. A few carbon atoms were called into the ring and with a do-si-do and a bow to your partner - water is wine. Nothing out of the ordinary for the Lord of the dancing atoms, just a playful change.

To claim that Jesus needs to do miracles is to claim that atoms normally do their own thing. They don’t.
With this in mind, always remember that material science is simply the study of some of the more frequently observed dances of the atoms. These are not the ONLY dances that are called out.

Meditation IV: Jesus Doesn’t Do Miracles

Mark 6: Jesus Walks on the Water

45Immediately Jesus made his disciples get into the boat and go on ahead of him to Bethsaida, while he dismissed the crowd. 46After leaving them, he went up on a mountainside to pray. 47When evening came, the boat was in the middle of the lake, and he was alone on land. 48He saw the disciples straining at the oars, because the wind was against them. About the fourth watch of the night he went out to them, walking on the lake. He was about to pass by them, 49but when they saw him walking on the lake, they thought he was a ghost. They cried out, 50because they all saw him and were terrified. 51Immediately he spoke to them and said, "Take courage! It is I. Don’t be afraid.” Then he climbed into the boat with them, and the wind died down. They were completely amazed, 52for they had not understood about the loaves; their hearts were hardened.

In this episode we find Jesus sending his disciples ahead to Bethsaida. He says he’ll catch up with them later. He needs some time alone…to pray. As the sun sets, he looked out on the water from his vantage point and saw the disciples having quite a time getting across. They were fighting a major headwind. Nonetheless, it must not have worried him at that time. Six hours later or so he finally sets out to Bethsaida after them. He strolls out on to the water in their general direction. As he strolls toward the boat he realizes that due to the wind and due to his brisk pace, he is going to make it to Bethsaida before his disciples. Unfortunately, as he was about to pass by them they saw him and started going berserk. Realizing that he couldn’t leave his disciples going insane with fear in the boat, he changes course and heads over to settle the disciples down. Then he hops in the boat and settles for the conventional means of sea transportation. Although to comfort his friends and maybe to speed the trip up a bit, he turns down the volume of the sea a bit.

A bizarre story. Jesus acts as though walking on water is as ordinary as walking from the science building to east campus via the soccer field. He needed to get to Bethsaida. On that particular night he didn’t feel like taking the sidewalk. But then walking on water really isn’t something new. We cover it right here in fluid mechanics! Insects do it all the time. The creator spoils them. He commands the water molecules to link arms and carry these bugs wherever on the pond they desire. You can call it providential or you can call it the principle of surface tension, you’re likely getting at the same thing. Walking on the water is an ordinary occurrence. If God commands the water molecules to carry his bugs around like royalty, why do we find it out of the ordinary for water to carry around the King of the Universe? Jesus didn’t.
Meditation VI: Jesus Doesn’t Do Miracles…but it sure looks like it.

Mark 7: The Healing of a Deaf and Mute Man

31 Then Jesus left the vicinity of Tyre and went through Sidon, down to the Sea of Galilee and into the region of the Decapolis. 32 There some people brought to him a man who was deaf and could hardly talk, and they begged him to place his hand on the man. 33 After he took him aside, away from the crowd, Jesus put his fingers into the man’s ears. Then he spit and touched the man’s tongue. 34 He looked up to heaven and with a deep sigh said to him, “Ephphatha!” (which means, “Be opened!”). 35 At this, the man’s ears were opened, his tongue was loosened and he began to speak plainly. 36 Jesus commanded them not to tell anyone. But the more he did so, the more they kept talking about it. 37 People were overwhelmed with amazement. "He has done everything well," they said. "He even makes the deaf hear and the mute speak.”

We’ve looked at Jesus’ “miracles” of nature and either Jesus is trying his hardest to make them look like ordinary every day occurrences, or they simply are ordinary occurrences for the master of the universe. But what we haven’t done is look at Jesus’ other miracles, those miracles in which he subdues and transforms, not the non-human creation, but humans themselves. It is important to make a distinction between the human and non-human creation because if we don’t everything that we have concluded about Jesus’ nature miracles seems to be refuted in the above passage. There is nothing ordinary about these miracles. Jesus makes them look magical or occult. Popular superstition at that time believed that there were magical powers in spit. It seems Jesus has succumbed to doing miracles more like the people think they should be done. However, the miracle deserves a closer look, because if we have our eyes open we see in this act an important distinction that Jesus is making between his human creatures and the rest of creation.

The first thing to note is that Jesus takes the man aside away from the crowd. This is a very important note. Clearly Jesus’ intention is not to perform a Las Vegas like vaudeville act. Jesus doesn’t do magic. The spit, the sighing, the gestures...they aren’t for an audience. They are for the one longing to be whole. Nonetheless, Jesus doesn’t make the healing look ordinary. But he could. Right? The proteins and atoms and cells gathered in the ears and eyes are waiting for their next command. And proteins always obey. They have to. They have no choice. Jesus could have just made it right. No spit. No sigh. No ritual. No touch. But Jesus must have known that this image bearer needed more than just genetic re-engineering. It seems as though Jesus knows that human beings are more than just a compilation of proteins. Maybe the Lord of creation is on to something!

With human beings Jesus heals wholly. He must know that pain and suffering are more than physics or biology.
Jesus spits and touches the man’s ears, he spits and touches the man’s tongue, and with a sigh deep enough to see, he speaks loud enough to be heard. He is telling the man what he cannot hear in words. In the speech of touch he says “I understand what it is like to be deaf and mute. I know you have been thought of as stupid, as dumb, as cursed by God. But I know your real problem because I am Lord of creation. I know what it is like to be misunderstood. Things aren’t supposed to be this way…he sighs. It is in your ears and tongue. And most importantly, I want you to know that contrary to what most people think, you ARE loved by God.”

Because with humanity Jesus is concerned about more than just restoration, he is also after redirection. Jesus spends time and touch with his human miracles because while restoration is instantaneous, redirection is a never-ending process. It can take thousands of years of love letters. You see, while atoms must obey, humans only obey when their eyes are opened so that they can see how much they are loved. In philosophy we try to understand this by making distinctions between structure/direction, subject/object functionality, and norms/laws. But for all practical purposes…it’s all about grace.

The Conclusion of the Matter

Finally, sometimes you need unadorned story. Story without direction or pointed purpose. The kind of story that leaves students wondering what that had to do with the class - the kind of story that may elicit more questions than answers. Some stories can teach about the existential pleasure of engineering, the nature of technology, the ambiguity of naturalism, literacy, pacifism, the cultural mandate, triumphalism, stewardship, the liturgy of presence, shalom, and the power of weakness, that is, if you have ears to hear and can read between the lines.

Reflection on Cherry Creek

I grew up in the valley of Rivendell (well...more or less). Just on the other side of the river, two miles north up Hwy 99 over the bridge, across the tracks and past the old Whiskey River nightclub, and then three miles along County Road 23 that cuts a winding way along the bluffs that overlook the Minnesota river valley. The cherry creek ravine cut through our neighbors land, just beyond his orchard. I wish I had time to tell you how beautiful it was...but that will have to be another story.

Our neighbor Dan; he lived just up the gravel road to the north when I was in grade school. You could see his place from ours. He didn’t do anything...for a living...I mean. He didn’t punch a clock or anything. Dad said he used to be a librarian. His wife taught kindergarten in town. He just tended his very large garden (like acres of flowers and organic vegetables), fixed Volkswagens, built an energy efficient home, and had a lot of books...he loved books...and he smiled a lot. As kids, we didn’t know a lot about Dan. My dad said that he was a
Mennonite. I didn’t have any clue what that meant. I figured it was someone who tended a large garden, fixed Volkswagens, built an energy efficient home, had a lot of books...and smiled a lot. Dad also said he was a pacifist. I didn’t know what that was either. I figured it was someone who tended a large garden, fixed Volkswagens, built an energy efficient home, had a lot of books...and smiled.

I want to tell you how Dan impacted me as I grew up. I’d like to tell you some fantastic story about him putting his arm around me and looking me in the eye and giving me some fabulous spiritual quote to live by that I never would forget. But I don’t have such a story. I only have this picture of someone who tended a large garden, fixed Volkswagens, loved books, and smiled a lot. In other words he simply occupied a rather small presence up Township 10 that climbs up from our place to overlook the Cherry Creek valley. That’s it.

Dan died a year ago. His Parkinson’s finally silenced him. For someone who loved words, it seemed a bitter curse to be inflicted with a disease that twists every word into an excruciating chore.

The other day I was reminded of Dan. I was sorting through my books. I found a book that he gave me with a smile. He thought I would enjoy it. It’s leather bound. It looks like a Bible. It’s not. It’s Trautwine. And if you’re well versed in engineering texts, you will recognize the title of a classic Civil Engineering Handbook in 1906. Actually, I’ve never read it. I’ve only skimmed it. But I think Dan’s life is somehow bound up for me in this copy of Trautwine.

Dan was not an engineer in any formal sense. But I wonder if I didn’t begin to understand what engineering was by living down the road from Dan. Since my years along the banks of Cherry Creek I’ve always found it difficult to understand folks who like to divide life into “technological” and “non-technological,” as if the task of technology was any less natural than tending a garden, reading books, fixing Volkswagens, or building homes. I’m also wondering that if pacifism has anything to do with the biblical concept of shalom, then maybe Dan was more engineer than I first thought. And if I ever had any grand delusions of bringing the kingdom with my technology, then this triumphalism has been kept in check by this powerful vision of this, I suppose rather weak and insignificant, Mennonite doing nothing more than faithfully tending a garden on the banks of Cherry Creek...Organic food for thought.

Storytelling is not a technique or classroom practice, it is a space you create. This space which allows life to be told in all its fullness, can be opened up in you teaching in a variety of ways. Creating this space for the narrative of scripture to play is what makes engineering education radically Biblical. Secondly, behind all the false data points of students disinterested, discouraged, and disillusioned about their engineering education, lies an empty motivation, a purpose that lacks a glimpse of the new heaven and new earth blueprint. Part of the antidote may be the reclaiming of story.
References


