Technology careers and their preparatory education are typically classified as “secular.” They aren’t favorably compared with the “spiritual calling” of pastors, Bible workers, or teachers—which carry the aura of having the ability to spiritually influence others. Technology careers aren’t classified as “helping vocations,” such as medical occupations, social work, and emergency-response occupations—which fit well into the Christian dogma of service. They aren’t trapped in the limelight of religious debates about evolution, appropriate literature (fiction vs. non-fiction), or business ethics, nor are they typically associated with challenges to one’s faith. Are technical vocations not legitimate occupations for “divine calling”? Do they actually have a faith connection?

As Adventist Christians, we have never been anti-technology like the Amish. We see biblical precedence in use of technology—ranging from fashioning tools (Genesis 4:22, Isaiah 2:4) to God’s direct instructions to build an ark (Genesis 6:14-16) to God’s use of human-built technology as a place to dwell among us (Exodus 25:8) to Christ’s use of buildings for illustrations (Matthew 7:24-27, Luke 13:4; 14:28-30). It seems clear that God intended for us to make and use tools—which is within the scope of technology careers. However, throughout my Adventist education (elementary, academy, and university), technology-related courses were never tied to a religious experience. They were taught as secular subjects with no affiliation to our Christian faith.

While it could be argued that the basis of technological design is the laws of physics and mathematics, which God created and holds constant, I would argue that technology careers have far more connectedness to our faith than has generally been perceived, and we should be spiritually mentoring our students in these fields. But how do we bridge the apparent gap between technology careers and faith?

A literature review in my area of technology (engineering) shows instructors using mission and service projects or...
external required reading to integrate faith into their classrooms. However, I believe the personal testimony of the teacher’s heartfelt spiritual connection to his or her occupation closes the apparent gap between technology careers and faith at a personal level for the students, and conveys that spiritual connection is not just what you do, but also who you are. To that end, I have used narratives in three categories to convey the correlation I’ve made between my faith and my career. The first is the narrative of the biblical holy calling of technologists. Second, the narrative of how God’s holy Word was carried to us through the ages by vessels of human technology. And finally, the narrative of God’s creative engineering designs, observed in nature, being “very good” (Genesis 1:31, NRSV).²

The Narrative of the Biblical Holy Calling of Technologists

The holy calling of work in technology starts in the Creation account in the Bible, where God created humankind in His own image. It is also reflected by the calling and ordination God imparted to the craftsmen (technologists) who built the tabernacle.

The Creation Account indicates that God created humans in His own image (Genesis 1:26, 27)—that is, to be creative beings. Designing and creating technology is a reflection of what God created us to be—creative. Working in technology is a reflection of our Creator’s image, a holy calling, and should be presented as such in Christian education.

Also included in the Creation account is the dominion mandate—God’s instruction for human beings to subdue and have dominion over the Earth (Genesis 1:28). The creation of technological devices consumes a great deal of Earth’s natural resources, and the vast majority of technological designs cater to the richest 10 percent of the world’s population.³ The ethics of the impact of technology development is a rich topic for classroom discussions with respect to God’s call for social and environmental responsibility in dominating the Earth.

God’s Calling and Ordination of the Craftsmen of the Tabernacle (Exodus 31:1-6; 35:20-36:1) highlight the fact that these professions are spiritually honorable. God “called” Bezalel by name to the work of building the tabernacle and filled him with the ability to do every sort of work done by a craftsman or by a designer (Exodus 35:31-34) and “inspired him to teach” (35:34), which provides biblical precedent for a spiritual calling to technology careers and technology educators. God extended His ordination to all the craftsmen of the tabernacle, filling them “with the Spirit of God, with ability and intelligence, with knowledge and all craftsmanship” (Exodus 31:3). Although the tabernacle was designed by God, He entrusted human beings to use their God-given ability, intelligence, and knowledge to develop the technology to accomplish the task at hand. I can extrapolate from this that all who work in technology do so with the God-given gifts of ability, intelligence, and knowledge. And we are exhorted, as the tabernacle engineers were, to “work in accordance with all the Lord has commanded” (Exodus 36:1; Ecclesiastes 9:10; 1 Corinthians 10:31; Colossians 3:23, 24), ordaining our career as a calling of service to God. This record in Scripture is packed with fodder for classroom discussions to close the gap with faith.

Narrative of God’s Word Being Entrusted to Human Technology

The Bible is the basis of Christianity, and God entrusted His sacred Word to human technicians and human technology to preserve, protect, reproduce, and disseminate it. The biblical account started out as oral tradition until technology was able to provide writing surfaces, appropriate inks, and application methods to transfer it to a written record.⁴ God’s Word was so precious to early Christians that they guarded it with their lives, and it was so precious to some Christian technologists that they developed technologies to propagate and disseminate it.

According to Jewish tradition, the first books of the Bible were recorded by Moses on gevil and formed into a scroll.⁵ Gevil, made from tanned, unsplit animal hide, was a product of technology and a writing surface used in Egypt at the time. Iron sulfate powder incorporated in the ink reacted

http://jae.adventist.org
with tannic acid from the hide preparation to give a pure black tint that adhered well.

Other early biblical manuscripts were written on papyri, a plant-based writing surface, on which Egypt had a monopoly, since the papyrus plant grew only along the Nile delta. The outer layer of the stalk of the papyrus plant was stripped off, leaving a sticky, fibrous inner pith that was sliced longitudinally into thin strips. The strips were laid in two perpendicular layers on a hard surface and hammered together while moist, then dried under pressure. The dried sheets were polished and rubbed with cedar wood oil to make a smooth writing surface capable of readily taking ink. Sheets were cut to size and glued together with a flour paste, matching the grain direction, to form a scroll. Scribes would write on the side that had the horizontal grain pattern, giving them a natural straight-line writing guide.

Ink for the papyrus was made from berries, plants, and minerals, and was applied by a reed brush made from hollow, tubular stems of marsh grasses. A blunt tip was cut on one end and slit multiple times to fashion a fine-pointed brush. The hollow reed was filled with ink, which was forced to the brush tip by squeezing the reed.

Papyrus was used from 2000 B.C. through the 12th century A.D. Although the expected lifetime of papyrus was 30 years, ancient papyri have been found in Egypt and the Judean desert, preserved by the dry arid climate. Papyrus fragments of the Jewish Old Testament have been found dating to the second century B.C.

The next progression for a biblical writing surface was parchment, which was more durable than papyrus. Parchment was made from animal skins using a more refined process than gelatine. Parchment production was a slow, physically demanding, time-sensitive, complicated process, making parchment an expensive commodity. It is believed that the parchment process was refined in Pergamon between 250 and 150 B.C. when Egypt temporarily stopped exporting papyrus. Parchment was used into the age of printing; however, it wasn’t until the fourth century A.D. that its use became more common than papyrus.

When Constantine adopted Christianity in the fourth century, the peril of destruction of sacred texts was over, and reproduction of the Bible was sanctioned by the state. Costly parchments were used, new ink from iron salts, tannins, and resin were developed, as well as the quill pen. Through the Middle Ages, Christians are credited with developments in the production of quality parchments, pigments, and inks, as scribes painstakingly hand-copied biblical manuscripts. Illuminated manuscripts from this time period included shading and decorative work in the written characters, lovely colors, ornamentation, small pictures, and gold leaf. The beauty of these artfully adorned medieval manuscripts reflects the high value ascribed to the Bible, and the passion for giving God the best that craftsmanship could supply.

Early Christians are credited with championing the most momentous technological development in the dissemination of knowledge before the printing press—the shift from the scroll form of manuscript to a codex form of binding. The codex is a collection of sheets of flexible writing material, papyrus, or parchment, folded double and fastened together at the back or spine. It was usually protected by wooden covers, and in the case of parchment, a clasp was used to clamp the codex shut between the wood covers so the parchment wouldn’t buckle due to changes in humidity.

The codex form had many advantages over the scroll. It was economical, since both sides of the writing surface were used, rather than the single side for scrolls. It provided enhanced accessibility—texts were easier to find and compare within a larger manuscript. The codex was also more compact—it could be held in one hand and was easier to transport and conceal.

For Christians, the adoption of the codex form was immediate. Almost all the early Christian manuscripts that have survived, the earliest dated to the second century A.D., are in codex form. However, the prevalence suggests that codex use must have started even earlier. For secular writ-
ings, however, the shift was a very slow, irreversible drift. In the first and second centuries A.D., the scroll was considered the proper form of books for polite society. In the third century, the codex was eventually given legal equality with the scroll in estate settlements, but it wasn’t until the fifth century that 90 percent of non-Christian manuscripts were in codex form.

Timothy Stanley proposes that the reason Christians almost universally adopted the codex, counterculturally, was that this technology allowed them to bind together more texts than was feasible with the scroll, giving their scriptures a unifying effect. The four parallel narratives of the Gospels could be bound together rather than separated into four scrolls. Paul’s letters could be bound together in one codex, and these non-narratives were better consulted in the random-access form of the codex. The codex allowed for a collected sacred literature for the early Christians, a technology promoting theological unity.

The preciousness of God’s Word once again spurred on technology in 1450 when Johannes Gutenberg developed a movable type press in order to print the Bible. Gutenberg adapted wine-press technology, combining it with his own inventions of casting metal movable-type letters and an oil-based ink that would stick to the metal. In 1620, Gutenberg’s press was regarded as having had the biggest effect of any invention, equaled only by gunpowder and the compass, and the number of books 50 years after the invention of the press was equal to 1,000 years of European scribes’ work.

Gutenberg printed Bibles between 1450 and 1455, producing around 200 copies, some on parchment and some on paper, a much cheaper and easily made plant-pulp writing surface. Gutenberg then ran out of money, and his press was repossessed by his creditor, who wasn’t interested in printing Bibles. Only 21 known complete copies of the Gutenberg Bible have survived. They are considered to be the most valuable books in the world, assessed individually at $25 to $35 million.

Technology has continued to change the face of our Bible. We now have the Bible in audio form, searchable Internet Bibles in many versions and languages, and smartphone Bibles. Cutting-edge biblical technology is now being created to read ancient manuscripts—powerful imaging tools to read scrolls that are too fragile to unroll and to recover writing too faint to see. God’s precious Word has been carried to us through the ages by human technology and which continues to participate in biblical preservation and dissemination.

The Narrative of God’s Engineering Designs Being “Very Good”

God is the original engineer, the Master Designer of the world and all its habitation. Despite the Fall and the taint of sin and decay, nature still gives us insights into God’s well-thought-out, inquisitively complex, optimized designs.
Nature accomplishes feats that engineers can only dream of, attracting the attention of a wide range of researchers and scientists who have produced a veritable avalanche of studies into nature’s incredibly refined processes for development of better technologies. This area of research and the resulting innovative technology is called Bioinspired, Bionic, Biomimicry, or Biomimetics. This study of nature, through technological eyes, gives us insight into the awe-inspiring, exquisite, and elegant designs of God, the Master Engineer.

Biotechnology research covers such a broad range of nature and technological applications that only a small overview can be presented here—snippets extracted from several categories. Simple Internet searches will provide a variety of magnificent details relating to the examples listed and a treasure trove of more bioinspired designs. For Christians, these examples are windows into God’s ingenious, intricate designs, thought out to the minutest detail.

**Natural Materials:** Natural materials are so superior to manmade materials that researchers have focused a lot of time on trying to synthesize them. Scientists have sought to replicate spider silk and abalone shell nacre because of their incredible structural properties, but controlling material properties at the small scale of the abalone shell and mastering the colossal genetic sequencing of spider silk have eluded them so far. The medical need for wet environment adhesives has turned researchers to nature for inspiration. Human beings have created some impressive adhesives, but none of them works in wet environments. Research in this area started with mussels, which adhere their shells to underwater surfaces, and has expanded to caddisfly larvae and sandcastle marine worms, which fashion protective cases from small pieces of available materials.13

**Animal Mobility:** For all the progress engineers have made in robotics, mobility remains an issue in locations where wheels don’t work well—areas with rough terrain and obstacles. Once again, researchers and engineers look to nature to solve some of these difficulties. Boston Dynamics is the leader in developing complex feedback systems to maintain robotic balance for walking mobility. It developed a mule robot that can traverse some rough terrain, a humanoid that flails its appendages to maintain balance when jostled, and a four-legged cheetah robot with a flexible spine to allow a high-speed gallop. Festo, a German-based manufacturing company with a division dedicated to bioinspired designs, is a leader in robotic flight. They spent years deciphering bird flight in order to create their SmartBird, which flies using wing flaps rather than propellers. Although years of development have been invested in mobility and balance, all these robots are limited by battery life or tethered by power cords, and operation of the mule robot was too loud for the clandestine military movements it was designed to assist.

**Forms for Aerodynamics:** The aerodynamic forms in nature have proved far superior to the human understanding of fluid dynamics. However, some innovations in natural products have been borrowed by humans. The flexible layers of small teeth on shark skin have been mimicked to give better aerodynamic properties to jets, boats, and swimsuits. These products were so successful that the boat coatings were banned from competitive sailing in 1987, and Speedo’s sharkskin swimsuits were banned after the 2008 Olympics. More recently, scientists took a closer look at the counterintuitive bumps on the leading edge of humpback whale flippers. Compared to smooth fins, the bumpy humpback fins had 30 percent less drag and eight percent more lift, making them extremely dexterous and aquabatic for their size. Whalepower is developing bumpy leading-edge blades for turbines, pumps, and fans that are 20 percent more efficient than traditional blades.

**Forms for Functions:** Copying forms found in nature to accomplish a task or function is one of the oldest forms of biomimicry. Velcro was developed in 1955, inspired by the small hooks seen under magnification on prickly seed burrs that stick to clothes and animals. The air ventilation system in the Eastgate Center, an office and shopping complex in Zimbabwe, was fashioned after the self-cooling mounds of...
African termites. Its passive cooling system uses 90 percent less energy than air-conditioning systems in similar-sized neighboring buildings.19 Inspired by the Namib Desert beetle, which harvests water from morning fog, utilizing the surface structure on its back,20 the Dew Bank prototype has synthesized these surface features to deliver a glass of water from desert air.

Manufacturing: Modern manufacturing typically involves energy-intensive high pressure and temperatures, piles of waste, and lots of toxic byproducts. God designed nature to create all its products at normal temperature, pressure, and pH, out of biodegradable, water-based materials. They don’t use fossil fuels, nor do they pollute the planet. There is a drive to find manufacturing techniques that are more environmentally friendly, similar to nature’s assembly processes. Angela Belcher at MIT has used viruses to create a battery.21 She manipulated the virus DNA so inorganics and nanotubes bind to its outer coat, creating the positive and negative electrodes. This is just a start to a long journey of trying to manufacture with the same environmentalism that God designed nature to exhibit.

Final Thoughts

Our Christian faith has strong ties to technology. God ordained technical careers when He designed us to be creative, when He called Bezalel and ordained the tabernacle craftsmen. God entrusted human technologists and human technology to create a place where He could dwell among us, and He entrusted human technologists and human technology to preserve and disseminate His Word—the basis of our faith. God has also given us inspiration for technical development within His carefully, exquisitely created world.

Let’s be diligent in our God-given careers, following in His creative footsteps. Let’s ask for the same ordination as the temple craftsmen. Take on the name Bezalel when you approach your trade—whether you be a designer or a teacher. Let us treasure the technology that brought our Bible to us, and marvel at the thought and care God put into the design of our world. And once it becomes a part of our own life story, let us bring the heart-felt narratives of this connectedness to our Christian faith intentionally into our technology-based classrooms. 😊

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Laurel Dovich, PhD, PE, is a structural engineer specializing in seismic concrete design and retrofit. She has inspected seismic disasters around the world and has been awarded fellow status in her professional society. Dr. Dovich is also an active member of the Christian Engineering Society. For 15 years she served as a professor of engineering at Walla Walla University (College Place, Washington, U.S.A.) where she earned three teaching awards; and, in 2016, Walla Walla presented her with the Alumna of the Year award. Currently, Dr. Dovich teaches part-time as an adjunct professor at Gonzaga University, Eastern Washington University, University of Idaho, and Walla Walla University. This paper was presented while mentoring technology faculty during a Biblical Foundations Conference at Montemorelos University, Mexico.

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NOTES AND REFERENCES

1. Technology careers do have ethical challenges related to war, social and environmental justice, and product safety, but they’re rarely talked about.
2. All Scripture texts in this article are quoted from the New Revised Standard Version of the Bible. New Revised Standard Version Bible, copyright © 1989 the Division of Christian Education of the National Council of the Churches of Christ in the United States of America. Used by permission. All rights reserved.
4. There are many books on the formation of the Bible that include the technology used.
7. Ibid.
8. Ibid., 37.