from the director's desk

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At CBHD, we have written and spoken about the need for biblical, theological, cultural, and ethical literacy. Today, I would like to encourage you to pursue scientific literacy.

If you have children or grandchildren in school, you have probably heard of the emphasis on STEM (science, technology, engineering, and math). STEM programs teach the four disciplines in an interdisciplinary, applied approach, rather than as separate classes. Backed with support from the Department of Education and thirteen agencies, the STEM goal is to move American students "from the middle of the pack in science and math to the top of the pack in the international arena."[1]

But STEM is not just for our children and grandchildren. We live in a scientifically and technologically advanced age, and the pace of innovation shows no sign of slowing down. Do we have a basic understanding of the science that is involved? Some of the innovations border on the miraculous, restoring sight to the blind, making the deaf hear, helping the paralyzed to walk again, and attaching prosthetic limbs that might be stronger than the original. The potential of medical and scientific technologies is boosted by massive increases in computational power. (The average car today has more computing power than the system that took the Apollo astronauts to the moon.[2])

Are we safe in assuming that every breakthrough is a benefit? An unmitigated good for society? Of course, we know that is not the case. The question then becomes, how do we evaluate this dizzying array of technologies? We must consider how to develop discernment and grow in wisdom about our use and refusal to use technology. We do not assume that technology is basically neutral. It has a direction or *telos*, a propensity to shape us, both overtly and covertly.

What Is 'Scientific Literacy'?

Here is one way of thinking about scientific literacy. One of Taylor University's foundational core requirements is scientific literacy, to "enable students to explore God's creation, investigate contemporary human challenges, and use technology thoughtfully in the context of human interaction.[3]" Although it is not feasible for us to conduct lab experiments and field observations as undergrad students do, it is possible to observe God's creation, to learn more about technology, and to think about how technology might—or might not—ethically solve human problems.

Why Scientific Literacy Matters to the Church

STEM is broader than bioethical concerns. Digital technologies affect not only electronic medical records and the doctor-patient relationship, they also have transformed communications. Think, for example, of the impact of smartphones on learning in the classroom, family meals, dating relationships, or even the safety of pedestrians.[4] On what grounds would we endorse or oppose smartphones, social media, or the internet? What is the trajectory of digital technologies? They are reshaping culture in seemingly dramatic ways. These ways can be positive or worrisome. The question for the church, then, is *how well do we interpret the signs of the times?*

Technology and Human Relationships

In *Alone Together*, Sherry Turkle writes, "We expect more from technology and less from each other."[5] An early advocate of how virtual technology could help us live better lives in the real world, Turkle now warns that "we're letting it take us places that we don't want to go."[6] Robots, computers, and smartphones of all kinds are driving us toward virtual, rather than real, intimacy. Our children are experts in texting, but not in speaking face to face. Actual people become an annoyance, while the incoming text message irresistibly demands our attention. Meanwhile, the technologies that promised to give us more

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leisure time make the boundaries between work and personal life increasingly porous.

Ignorance about how something works can lead to a distorted relationship with the technology. Turkle points out that unfamiliarity with how computer hardware works, or how software is coded, enables us to relate to the technology as human-like. This may explain why people confide in robots or computer-based therapists (with no actual person involved) even though the robot's or computer's responses are programmed, not human. Perhaps, like Riley's friend Bing Bong in the movie *Inside Out*, technology has become the adult version of an imaginary friend.

Medicine, Science, and Technology

One place to begin in evaluating new technologies is to ask what goal they serve. My colleague Michael Sleasman has observed that medicine and technology should always function in the service of human flourishing. Science can serve human flourishing, but also can be pursued simply in the "wonder of God" and his creation. Before buying the next wearable technology, you might ask if and how it will help you to flourish? Or will it make you more and more dependent upon the technology? And, before criticizing funding for basic research, we might consider that condensed-matter physics research linked with string theory gives us more insight into black holes.[7] For me, that is an awe-inspiring, wonder-of-God's-creation moment.

1 Elaine J. Hom, "What is STEM Education?" *LiveScience*, February 11, 2014, http://www.livescience.com/43296-what-is-stem-education.html (accessed July 23, 2015).

2 Institute of Physics, *Physics.org*, http://www.physics.org/facts/apollo-really.asp (accessed July 1, 2015).

3 Thomas G. Jones, "Foundational Core," Taylor University. See http://www.taylor.edu/academics/files/undergrad-catalog/current/FCC.pdf (accessed July 23, 2015).

4 Katherine Shaver, "Safety experts to pedestrians: Put the smartphones down and pay attention," *Washington Post*, September 20, 2014, http://www.washingtonpost.com/local/trafficandcommuting/safety-experts-to-pedestrians-put-the-smartphones-down-and-pay-attention/2014/09/19/278352d0-3f3a-11e4-9587-5dafd96295f0_story.html (accessed July 23, 2015).

5 Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York: Basic Books, 2011), xii.

6 Sherry Turkle, "Connected, but Alone?" *TED Talk*, April 2012, http://www.ted.com/talks/sherry_turkle_alone_together/transcript.

7 Zeeya Merali, "Collaborative Physics: String Theory Finds a Bench Mate," *Nature*, October 19, 2011, http://www.nature.com/news/2011/111019/full/478302a.html (accessed July 23, 2015); Perimeter Institute for Theoretical Physics, "Waiter, There's a Black Hole in My Condensed Matter," March 24, 2014, https://www.perimeterinstitute.ca/news/waiter-theres-black-hole-my-condensed-matter (accessed July 23, 2015).

ORGAN DONATION—CONTINUED FROM PAGE 1

The process of becoming and being recognized as a donor is under the purview of state law. The UAGA, first drafted in 1968 and revised in 1987 and 2006, has been enacted in all states, although seven have not updated to the 2006 revision.[13] The UAGA respects the dominant ethos in the United States regarding organ donation: that it be the result of a free and voluntary decision made by the donor (or by a designated health-care proxy or close family member in the case of a permanently incapacitated patient). Its revisions conformed state laws to the system of organ procurement developed under NOTA to simplify the process of donation and expand the potential supply of donated organs. For example, the 2006 revision, now the law in most states, emphasizes the principle of first-person authorization; the donor's family thus has no legal right to override the deceased's prior decision to donate (although they suffer no legal penalty if they do so). Practices in response to this development vary. Some OPOs remain reluctant to oppose a family's effort to override the deceased's decision, but there also is evidence that the incidence of such objections has declined and that families of designated donors accept the principle of first-person authorization.[14] The UAGA also provides for the establishment of state organ donor registries (now adopted in all states), donor designations on driver licenses, and more efficient access by OPOs to such registries and records.

State and federal law reinforce each other on two salient points: the prohibition on financial incentives for organ donation, and the establishment of "routine inquiry" or "required consent" protocols, mandating that the families of donor-eligible patients be given the option to donate. Both sets of provisions merit further discussion, as the latter has been promoted (but largely failed)[15] to increase the supply of cadaveric organs, and the former criticized as an impediment to increasing both deceased and living organ donation—particularly of kidneys, which account for 80 percent of the current shortfall.[16]

Routine Inquiry to Presumed Consent?

Congress in 1986 required that hospitals participating in Medicare and Medicaid establish written protocols to identify potential organ donors and assure that families of such potential donors are made aware of their option to donate organs or tissue and their option to decline.[17] The following year, the Health Care Financing Administration (HCFA; now the Centers for Medicare & Medicaid Services or CMS) issued regulations, updated in 1998, requiring hospitals to incorporate an agreement with an OPO under which it must timely notify the OPO of individuals whose death is imminent or who have died in the hospital; OPO will then make a determination of medical suitability for organ donation. The hospital must collaborate with the OPO to ensure that a representative of the