

2020 Daniel W. Mead Prize for Younger Members

To Uphold and Enhance the Profession

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"I prefer to fail with honor than to win by cheating," Sophocles said over 2,400 years ago.¹ That resolve would serve us well today, when the media has exposed prominent "pay to play" scandals in college admissions as well as in engineering and construction organizations.

The American Society of Civil Engineers' Code of Ethics,² which has guided our profession for over a century, sets a higher standard in Canon 6: "Engineers shall act in such a manner as to uphold and enhance the honor, integrity, and dignity of the engineering profession and shall act with zero tolerance for bribery, fraud, and corruption."

This year's Mead Prize topic invites exploration of the scandals, Canon 6, and their impact on our profession. The following examples illustrate how this type of unethical behavior weakens the integrity of the civil engineering profession by devaluing education, eroding public trust, diverting resources, and risking lives.

And yet the call "to uphold and enhance" the profession remains.

Devaluing Education

In 2019, U.S. prosecutors disclosed a major college admissions scandal, in which dozens of people were alleged to have paid some \$25 million to guarantee their children's admission to prestigious universities.³ Nicknamed "Operation Varsity Blues," the conspiracy included bribing coaches to inflate the students' athletic records, hiring experts to take entrance exams, and paying testing center personnel to alter scores. "For every student admitted through fraud, an honest and genuinely talented student was rejected," a U.S. attorney said when announcing the case.

The scandal is particularly troubling since it devalues the educational foundation of engineering and other professions. When college admission can be bought rather than earned, unqualified applicants become unqualified students, unqualified students become unqualified graduates, and unqualified graduates become unqualified practitioners. This pattern, while deplorable in any situation, is especially destructive where one is placed in a profession of trust, such as engineering, without having satisfied the most basic academic requirements.

Unethical behavior in education is not limited to admissions. While an adjunct college instructor years ago, I caught an engineering student who had plagiarized his final paper. When confronted, he explained his desperation to pass the class and continue his engineering education. This was a student who had sparsely attended my lectures, turned in few assignments, and repeatedly declined my offers of help outside of class. This last, fraudulent attempt only solidified his failing grade and ejection from the program.

¹ Sophocles, *Philoctetes*. Wording varies with translation.

² American Society of Civil Engineers, Code of Ethics, <https://www.asce.org/code-of-ethics/>. Hereafter cited by canon and/or guideline.

³ Alanna Durkin Richer and Collin Binkley, "TV Stars and Coaches Charged in College Bribery Scheme," Associated Press, March 12, 2019, <https://apnews.com/2450688f9e67435c8590e59alb0e5b47>.

The Code of Ethics advises engineers "to perform engineering assignments only when qualified by *education* or experience."⁴ Further, since "the lives, safety, health, and welfare of the general public"⁵ depend on engineers, shortcuts in engineering education-at any stage, from admissions to graduation-cannot be permitted.

Eroding Public Trust

A 2018 case in New York City accused a city environmental director, city employees, and engineering firm executives of procurement fraud.⁶ Most have pleaded guilty or have been convicted. For over a decade the firms had won major contracts for the city's water system with confidential information leaked by the director. In return, the firms gave the director expensive gifts, offered jobs to his relatives, and provided lucrative subcontracts to his friends' companies.⁷ The firms also concealed their ownership in order to secure contracts meant for women- and minority-owned businesses.⁸

As an engineering consultant I understand the pressures of competitive business: the pressure to stand out, the pressure to be heard, the pressure to win. I have been there. Sometimes those pressures may entice one-for a seemingly small cost-to short-circuit the system and follow the path of least resistance, as these New York firms did. But our ethical code demands that we build our reputation "on the merit of our services"⁹ rather than on the merit of our money.

Millions of New Yorkers who rely on the water system every day implicitly trusted the city to find the best value for the projects, matching the firms' costs and qualifications to the city's need to fix deficient water infrastructure. Instead, the team resorted to unethical practices.

After such a conspiracy, how can the public trust the process again? The scheme not only delays the immediate improvements in New York but erodes the public's trust in engineers as "faithful agents" who are supposed to provide "open, honest, and impartial service with fidelity to the public."¹⁰

Diverting Resources

My consulting job at Hansen, Allen & Luce requires me to travel regularly. In a recent 12-month period I flew more than 60 times and spent countless hours in dozens of U.S. and Canadian airports. A few airports are outstanding thanks to significant investment and excellent engineering of the entire traveler experience, from parking to takeoff, that I have learned to appreciate. Most airports are worse; America's aviation infrastructure earned a solid "D" grade in ASCE's 2017 *Infrastructure Report Card*.¹¹

⁴Canon 2, guideline a, emphasis added.

⁵Canon 1, guideline a.

⁶Eydie Cubarrubia, "In Hot Water: New York Engineering Executives Charged in Pay-to-Play Scheme," *Engineering News-Record*, April 25, 2018, <https://www.enr.com/articles/44380-in-hot-water-new-york-engineering-executives-charged-in-pay-to-play-scheme>; "NYC Design Firm Executives Plead Guilty in Pay-to-Play Scheme," *Engineering News-Record*, May 17, 2019, <https://www.enr.com/articles/46860-nyc-design-firm-executives-plead-guilty-in-pay-to-play-scheme>.

⁷Kickbacks and bribes defy Canon 5, which prohibits "any political contribution, gratuity, or unlawful consideration in order to secure work." The engineers should have avoided these obvious conflicts of interest (Canon 4) and sought transparency in procurement (Canon 6, guideline e).

⁸Canon 8 bars discrimination of minorities and women.

⁹Canon 5.

¹⁰Canon 4; Canon 6, guideline b.

¹¹American Society of Civil Engineers, 2017 *Infrastructure Report Card*, <https://www.infrastructurereportcard.org/>. The report notes that despite advances in *aircraft* technology, "the associated infrastructure of airports[...] is not keeping up."

Chicago's O'Hare International Airport has long been one of the busiest airports in the world, and yet decades of infrastructure improvements have failed to deliver the efficiency, reliability, and comfort that travelers need.¹² Despite tens of billions of dollars in overhauls, O'Hare's traveler satisfaction and on-time flights still lag well behind those of other U.S. airports.

Why has O'Hare spent so much and accomplished so little? A 2019 investigation cited a long history of corruption around O'Hare: "Numerous probes have unveiled sweetheart deals that benefited the businesses of elected officials and cronies, illegal payments to secure contracts, and the gaming of programs meant to increase the hiring of businesses owned by minorities and women." This would be bad enough were it not occurring while "passengers trudge through a transit hub that persistently underperforms."

Canon 6 expects engineers to honestly control money and promote effective use of resources.¹³ Corrupt parties involved with O'Hare have done just the opposite: *dishonestly* controlled money and *diverted* resources from urgent problems, effectively hindering civil engineering solutions that could benefit millions of travelers like me every year.

Risking Lives

In 2019 the U.S. Department of Justice sued defense contractor Lockheed Martin in a kickback scheme related to cleanup of nuclear waste at the Hanford Site in rural Washington.¹⁴ The suit alleges that Lockheed resorted to lies, favoritism, and \$1 million in kickbacks to secure a \$232 million contract, and then wringed additional illegal profits when the part of the work was subcontracted to its own subsidiary.

I first heard about Hanford in 2016 when I was a visiting researcher at nearby Pacific Northwest National Laboratory in Richland, Washington. Once a critical piece of the U.S. nuclear arsenal, Hanford was decommissioned in 1987, but corroding underground storage tanks have leaked an estimated 1 million gallons of radioactive waste. The site is situated on the Columbia River, which supplies drinking water to millions of people and irrigates over 600,000 acres of farmland. Any nuclear waste reaching the river could easily be transported downstream.

"Fraud, corruption, and self-dealing at Hanford will simply not be tolerated," a U.S. attorney declared. "The critical mission of cleaning up the Hanford Site in a safe, timely, environmentally responsible, and cost-effective manner is too important to the public and the residents of this region."

While no specific safety violation has been cited, the way in which the work was *secured* calls into question how the work was *performed*. Did the same dishonesty allegedly used to win the contract also extend into the execution of the cleanup activities, threatening the Columbia River and its users? That remains to be seen.

¹²Alejandra Cancino, "O'Hare's Billions in Broken Promises," *Chicago Magazine* and Better Government Association, July 24, 2019, <https://www.chicagomag.com/city-life/july-2019/0Hares-Billions-In-Broken-Promises/>.

¹³Canon 6, guideline b.

¹⁴Mary B. Powers, "US Sues DOE Cleanup Site Firms, Execs in Kickback Scheme," *Engineering News-Record*, February 13, 2019, <https://www.enr.com/articles/46366-us-sues-lockheed-martin-and-units-in-hanford-site-kickback-scheme>; Aaron Gregg, "U.S. Sues Lockheed Martin over Alleged Kickback Scheme at Nuclear Cleanup Site," *Washington Post*, February 10, 2019, <https://www.washingtonpost.com/business/2019/02/10/us-sues-lockheed-martin-over-a-lleged-kickback-scheme-nuclear-cleanup-site/>; Annette Cary, "Feds Sue Hanford Contractor, Claiming Kickbacks and Lies Defrauded Taxpayers out of Millions," *Tri-City Herald*, February 8, 2019, <https://www.tri-cityherald.com/news/local/hanford/article226014785.html>.

It is not hard to imagine how easily one unethical action that supposedly does not harm anyone can slip into another that does.¹⁵ In a lawsuit announced in January 2019, the U.S. Department of Justice sued engineering firm Tetra Tech for submitting \$60 million in fake invoices and falsifying soil samples while remediating a Superfund site in San Francisco.¹⁶ Directed by corporate managers, employees substituted clean soil for samples from contaminated areas.

Portions of the site originally deemed clean-and where crews had worked without protection-may still be radioactive. Up to 12,000 residential units are planned for the site; some are already complete. Further, large quantities of contaminated soil were stored immediately next to an on-site police station and may have exposed officers and civilians to radioactive dust for years without their knowledge.

If the claims are true, the firm not only defrauded its client but violated its primary engineering obligation to protect lives, safety, health, and welfare in fulfilling a professional assignment.¹⁷ The fraudulent invoices might be repaid, but injuries to the exposed individuals are not so easily resolved.

Beyond Zero Tolerance

"Pay to play" might be common or even popular among others, but civil engineers live a higher law. We reject the status quo of unethical business practices. We avoid conflicts of interest. We do not tolerate bribery, fraud, or corruption.

But zero tolerance is not enough. Simply avoiding the bad is only half the answer. Something must occupy that void: we must also seek the good.

Beyond shunning unethical conduct, Canon 6 calls on us "to *uphold* and *enhance* the honor, integrity, and dignity of the engineering profession."¹⁸ As engineers, we distinguish our reputation not by corrupt behavior but by the merit of our services. We act as faithful agents for our employers, clients, and communities rather than taking advantage of them. We are, in the words of ASCE's Vision 2025, "entrusted by society to create a sustainable world and enhance the global quality of life."¹⁹ And we hold paramount the safety, health, and welfare of the public and act in their interest rather than our own.

The call is to elevate not our earnings, but our ethics; not ourselves, but our profession.

¹⁵In *The Infinite Game* (Penguin, 2019), Simon Sinek calls this "ethical fading" and attributes it as much to an organization's culture-especially pressure to perform-as to an individual's choices. A scandal often reveals a failure in leadership, he says.

¹⁶Jason Fagone and Cynthia Dizikes, "US Sues Tetra Tech over Hunters Point Shipyard Work, Claiming Widespread Fraud," *San Francisco Chronicle*, January 15, 2019, <https://www.sfchronicle.com/bayarea/article/U-S-sues-Tetra-Tech-over-Hunters-Point-shipyard-13536013.php>; Mary B. Powers, "U.S. Joins Suits Citing Tetra Tech Fraud in Navy Site Cleanup," *Engineering News-Record*, January 23, 2019, <https://www.enr.com/articles/46260-us-joins-suits-citing-tetra-tech-fraud-in-navy-site-cleanup/>; Mary B. Powers, "Tetra Tech-U.S. Cleanup Dispute in San Francisco Grows," *Engineering News-Record*, May 8, 2019, <https://www.enr.com/articles/46839-tetra-tech-us-cleanup-dispute-in-san-francisco->

¹⁷ Canon 1, guideline a.

¹⁸ Emphasis added.

¹⁹American Society of Civil Engineers, "The Vision for Civil Engineering in 2025," <https://www.asce.org/vision2025/>.