Too Close for Comfort?

The Report Card for America's Infrastructure in the Context of the Code of Ethics

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In 2009, the American Society of Civil Engineers (ASCE) published the 2009 ASCE Report Card for America's Infrastructure, a document intended to summarize the evaluation of the entire country's infrastructure and propose improvements to the public and to policy makers. The report card gives the infrastructure as a whole a grade of D (on an A to F scale) and estimates that $2.2 trillion will be necessary over the course of five years to bring the infrastructure up to good condition (ASCE 2009). That there is a conflict of interest inherent in the idea of the report card is undeniable. Given the physical extent of the country and the consequent size of its infrastructure, as well as the political realities of infrastructure funding, it is quite unlikely any such report will ever state that the country's infrastructure requires no investment. A report calling for more infrastructure investment from an organization representing a profession that profits in direct proportion to infrastructure investment should raise eyebrows. Given this, is it ethical for ASCE to produce the report card?

As the only organization with the independence and breadth of expertise in the field of civil engineering to assess the entire infrastructure of the country, ASCE is best equipped to make evaluations of the infrastructure's current state and recommendations for its improvement. Federal, state, and local governments have extensive knowledge of the infrastructure under their responsibility and the staff to make sound engineering assessments. But their connection with the bodies that fund and prioritize public works presents an even greater conflict of interest than ASCE's. Alternatively, standards organizations such as the American Association of State Highway and Transportation Officials (AASHTO) and the International Code Council (ICC), or other professional organizations such as the Structural Engineers Association (SEA) are independent of funding and policy decisions and have expertise in particular sub-disciplines of civil engineering and could likewise issue evaluations and recommendations. But these organizations lack the breadth of experience to assess the entire infrastructure inventory of the country as well as the legitimacy that comes with representing the entire profession. Practically speaking, ASCE is the ideal organization to issue a report on the status of the nation's infrastructure.

ASCE's obligation to provide recommendations is not just practical, but embedded in the value system of the organization. The first Fundamental Principle of the ASCE Code of Ethics states that, "Engineers uphold and advance the integrity, honor and dignity of the engineering profession by using their knowledge and skill for the enhancement of human welfare and the environment [...]" (ASCE 1996). The first Fundamental Canon of the ASCE Code of Ethics states, "Engineers shall hold paramount the safety, health and welfare of the public [...]" (ASCE 1996). While the intent is that individual civil engineers are held to these standards in the course of performing their professional duties, an organization that represents the profession should be held to exemplify these values on the national stage by ensuring the public has adequate knowledge of the state of their infrastructure.

Despite the clear need for ASCE to evaluate the country's infrastructure, the way it has been done in the 2009 ASCE Report Card for America's Infrastructure comes dangerously close to violating the ASCE Code of Ethics. Fundamental Canon 3 states, "Engineers shall issue public statements only in an objective and truthful manner," (ASCE 1996). The data that forms the basis of the report is assumed to be truthful, but it is

difficult to judge the reported conclusions as objective. Each segment of the country's infrastructure was issued a single letter grade from A to F. According to the report's methodology, the grades were assigned based on evaluations of several fundamental components of the infrastructure: capacity, condition, funding, future need, operation and maintenance, public safety, and resilience (ASCE 2009). The purpose of the report card is to provide information to the public, but amalgamating so many different criteria into a single letter grade actually serves to obscure the data the report is supposed to reveal. The level of objectivity possible in assessment varies drastically among the fundamental components—from an engineering perspective, there is much more certainty in determining system capacity than there is in determining funding needs. Obscuring matters further, the relative weight of each fundamental component in the final letter grade was determined on a case-by-case basis by the advisory council experts in each infrastructure segment (ASCE 2009). The only data in the published report linking the raw data to the letter grade is brief and qualitative. A lack of a clear, consistent, and visible method for assigning letter grades to the infrastructure segments calls into question the objectivity of the report card.

More critically, a disconnect between ASCE's criteria for grading and the public's likely interpretation of the grades threatens to over-sensationalize the issue of the state of the country's infrastructure. For example, drinking water infrastructure was issued a grade of D, primarily because the existing infrastructure is aging and lacks additional capacity for future growth. Yet the public's likely reaction is to assume that a drinking water grade of D means poor water quality, despite the executive summary's assurance that "[...] Americans still enjoy some of the best tap water in the world [...]" (ASCE 2009). Likewise, while the D grades earned in hazardous waste and in bridges is based on inadequate funding for remediation of existing brownfields and the overall average age of our bridges, respectively, the image formed by a public exposed only to the letter grades will be an alarming one of ever-expanding toxic waste contamination and bridges on the brink of collapse. Of course, the country's infrastructure is in need of significant investment and recent failures, including the collapse of the I-35 bridge in Minneapolis in 2007, indicate a certain level of risk in the existing infrastructure—but a close reading of the text of the report card demonstrates that this risk is still not as high as the letter-grades' public interpretation would assume. Connecting the report advisory board's findings to a standard letter-grade scale should the help public understand the findings of the report; instead it gives an impression completely contrary to the findings of the report. To the advisory board, a D means the infrastructure segment needs significant attention to continue meeting current needs and to meet future needs; to the public, a D is not currently meeting needs and is very near to complete failure.

Whether the tone of alarmism suggested by the use of letter grades is a matter of poor judgment or a sincere effort to stir the public to action is an open question. ASCE's own material on the subject suggests that the latter may be the case. In the April, 2010 edition of Civil Engineering Magazine, the purpose of the report card is, "[...] not only to inform the public and policy makers about the condition of the nation's infrastructure; it also produced [the report] to sound an alarm," (Powell 2010). If alarm is truly necessary, then it is appropriate for the report card to incite it. However, if the alarm incited by the grading system is disproportionate to the information contained in the text of the report, then the report risks violating

Fundamental Canon 3 of the ASCE Code of Ethics at minimum, and may in fact reduce the public's trust of civil engineers as impartial experts, threatening the third Fundamental Principle: "Engineers uphold and advance the integrity, honor and dignity of the engineering profession by striving to increase the competence and prestige of the engineering profession," (ASCE 1996). Since the publication of the report card, ASCE members have been repeatedly interviewed by the media to provide expert opinion on the report's content due to civil engineers' status as experts and stewards of the built environment (ASCE 2010). Jeopardizing that public trust by deviating from the standard of objectivity injures the profession and threatens the legitimacy that gives the report card value and power.

If the 2009 ASCE Report Card for America's Infrastructure provides inadequate information to the public on the state of the country's infrastructure and could potentially harm the public perception of the profession, should ASCE produce future reports on the state of infrastructure? As established above, ASCE is the organization best-equipped to evaluate infrastructure and issue recommendations and its Code of Ethics charges it with doing so. However, evaluations and recommendations must be issued such that they are ethically consistent with the rest of the Code of Ethics. The criteria that lead from raw data to an evaluation must be available and consistently followed. The evaluation system needs to appropriately balance providing enough information for rational decision-making purposes with being intelligible to non-engineers, while simultaneously avoiding unnecessary sensationalism. Most importantly, the report must truthfully and objectively report on the status of the country's infrastructure while demonstrating transparently that the civil engineering profession is worthy of the public's trust.

While ASCE is the ideal organization to evaluate the country's infrastructure, the 2009 ASCE Report Card for America's Infrastructure falls short of effectively doing so by using an evaluation system that obscures necessary information and risks promoting an unsubstantiated alarmist position on the state of the country's infrastructure. The problems with this report are not insurmountable and are not sufficient reason for ASCE to avoid making such evaluations and recommendations. Indeed, to neglect to do so based simply on a fear of a conflict of interest or damage to the profession's perception would be to forfeit a key obligation of the professional organization. ASCE can and should produce a report of the state of the country's infrastructure that is consistent with its Code of Ethics.

References

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