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Engineering and Administrative Governance in a Post-Chevron Era: Bridging the Gap Between Technical Expertise and Public Accountability

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Abstract

The practice of engineering, in many instances, requires solutions that are in harmony with complex regulatory frameworks that are guided by public policy, administrative law, and at times judicial oversight. Across engineering disciplines, the practice of engineering requires compliance with statutory mandates. Traditionally, Congress may delegate power to promulgate legislative rules to multiple administrative agencies, such as the Environmental Protection Agency. The rules and technical standards developed by these agencies carry the force and effect of law just as statutes do. In *Chevron U.S.A., Inc. v. Natural Resources Defense Council* (1984), the Supreme Court ruled that rules and standards developed and enforced by agencies are to be given deference when interpreting a statute that is deemed ambiguous.

However, two recent U.S. Supreme Court decisions, *Loper Bright Enterprises v. Raimondo and Relentless, Inc. v. Department of Commerce*, have effectively overturned Chevron thus curtailing judicial deference to agency interpretations. In curtailing judicial deference these cases raise important questions about the role and function of administrative agencies regulating complex technical fields—such as engineering, particularly in areas requiring specialized and evolving knowledge.

This article explores the implications of these two Supreme Court cases for the practice of engineering, highlighting tensions between legal authority, technical competence, and professional discretion, and proposes strategies for interdisciplinary coordination between engineers, regulators, and policymakers. It argues for regulatory models that sustain both public accountability and the integrity of engineering judgment in an era of diminished administrative autonomy.

Introduction

The Administrative Procedure Act (APA) [1] enacted in 1946 provided the framework for governance by federal agencies. The APA governs how federal agencies regulate and over the decades has become quasi-constitutional acting as a “super statute” [2]. This act offered administrative agencies law enforceable rule making authority combined with due process rights to challenge the agency’s rule. Oftentimes Congress delegates the authority to make binding rules to specialized administrative agencies not vested with legislative authority [3]. It was not until *Chevron* [4] that framework changed as the Supreme Court ruled that under the APA agency “rules and standards were enforceable and given deference when interpreting a statute that is deemed ambiguous” [5].

However, in *West Virginia v. EPA*, the Supreme Court reviewing an EPA rule enacting the Clean Power Plan encouraging coal-fired plants to use non-coal sources of energy lacked statutory authority [6]. The Supreme Court held that it will not uphold “extraordinary grants of regulatory authority” [7]. Subsequently, the Supreme Court in the landmark decision of Loper Bright overturned the case of *Chevron* and held that courts must exercise independent judgment when interpreting statutes meaning that courts no longer were required to accept an agency’s interpretation of an ambiguous statute [8]. Courts in exercising their own judgment may still conclude that the agency has best reading of an ambiguous statute [9]. Prior to the APA, the Supreme Court in *Skidmore* established that courts may defer to an agency’s informal interpretation to which courts and litigants may properly resort for guidance [9]. The weight of such a judgment in a particular case will depend upon the thoroughness of the analysis, the validity of its reasoning, and other factors which give it power to persuade [9].

Professional Engineering Societies

Professional engineering societies have as their core mission to "hold paramount the safety, health, and welfare of the public” [10]. The professional organizations are advocating for a transition from the mandatory deference standard of *Chevron* to the “persuasive” *Skidmore* [9] standard. Under this approach, a court will defer to an agency’s technical interpretation only if its reasoning is sound and thorough. Thus, professional engineers are now having greater responsibility to understand the statutory basis of regulations.

Along with the National Society of Professional Engineers (NSPE), the American Council of Engineering Companies (ACEC), American society of Mechanical Engineers, and American Society of Civil Engineers, among others, are advocating for engaging federal agencies in the development of standards that Congress can incorporate in drafting legislation consistent with *Skidmore*. For example, The Bipartisan Policy Center established the Working Group on Congress, Courts, and Administrative Law in 2024 to enhance the processes and resources in response to the Loper decision. [11]

Additionally, professional engineering societies are advocating for workshops, STEM education, risk mitigation, and to develop technical standards to provide the objectivity and clarity that agencies now must provide under the microscope of post-*Chevron* judicial review [12]. The *Loper* decision has “shaken the medical device industry, ushering in a seismic shift in the balance of power between agencies and courts” [13] citing that standards will bring objectivity and a level of clarity for regulators [13].

The shift in environmental regulations is underway. In considering source standards for “generation shifting” purposes - from higher carbon resources to lower carbon resources when determining the “best system of emissions reduction”- under the Clean Air Act, the Supreme Court declared that EPA cannot set existing source standard on generation shifting but can regulate carbon dioxide emissions at new and existing power plants [7]. This ruling forced the EPA to return to a "source-based" approach, focusing on technological improvements at

individual plants (like installing scrubbers or other controls) rather than establishing a national energy policy [7]. This ruling requiring agencies to prove that their interpretation of a technical statute is the *best* reading when a law is silent on the subject matter or vague. Courts, on their own, can utilize the services of experts [14] in determining the technical merits of an agency's determination.

Engineering Education, Accreditation, and Profession

Engineering education accreditation, primarily through ABET, ensures graduates meet quality standards for professional practice. More specifically, Criterion 3 Outcome 2and 4, require "an ability … produce solutions…with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors" [15].

Engineering educators must move beyond theory to prepare engineers to navigate complex regulatory systems. New graduates need to know that all email, whether technical or not and any risk assessments are primary evidence in court. Educating students on why a design choice is made and how it addresses public safety and welfare makes their work more likely to be defensible in court. Furthermore, technical rigor combined with a clear understanding of liability as a risk mitigation tool provides for the long-term business interests of the firm. Identifying and addressing "unreasonable risks" during the early design phases, before production, or during a notice-and-comment period, ensures that safety is "baked in" which directly mitigates liability exposure.

Regulatory Framework

In addition to *Loper*, the Supreme Court in *Corner Post* [16] stated that the time clock for an Administrative Procedure Act claim does not begin to accrue until the plaintiff is injured by final agency action [16]. Both *Corner Post*, decided on July 1, 2024, and *Loper* decided just days prior have generated concern over the ability of administrative agencies to provide the public with a robust **notice and an opportunity to comment** (emphasis added) period on agency interpretations prior to the implementation of statutes.

In response to *Corner Post* and *Loper*, administrative agencies need to adapt to interpreting the rules reflecting agency's current understanding of the statute which may be upended by the next case. Moving to interpretive rules would significantly speed up the rulemaking process because "interpretive rules do not require notice and comment" (5 U.S.C. § 553) processes that must be followed to create legally binding regulations. However, these agencies often provide opportunities for post-publication comments and issue modifications to the rules.

It may be beneficial for agencies to incorporate review teams to assess the impact of statutes by relying on neutral experts, such as regulatory attorneys or design engineers, in developing its interpretive rules. In any case Congress may rely on input from neutral experts in drafting laws that are more likely to be upheld by the courts. For example, in a 2025 decision from the U.S. Court of Appeals for the Sixth Circuit, marked the first time that a court on its own—without

deferring to the Federal Communications Commission (FCC)- determined how Broadband Internet Access Service (BIAS) should be treated under the Act [17].

For the professional engineering firm, *Loper* and *Corner Post* provide an opportunity to re-evaluate their processes in developing robust technical reviews keeping in mind that courts will look to their methodologies when providing guidance to governmental agencies. An issue on the horizon for firms impacted by agency decisions is forum shopping. That is, the ability of a firm to choose a federal court that is more friendly to the corporate environment and more likely to rule to benefit the corporation. In Union Pacific Railroad, the United States Court of Appeals for the Eighth Circuit rejected the Board's (Board) decision related to the reasonableness of setting rail carrier rates concluding that the Board lacked the authority set rates [18]. Additionally, in *AT&T Inc. v. FCC*, the U.S. Chamber of Commerce filed a friend of the court, amicus brief, supporting AT&T's challenge to a $57 million FCC fine for mishandling customer location data [19]. In this case the Chamber of Commerce claimed that the FCC's internal process violated AT&T's Seventh Amendment right to a jury trial, a stance echoed by the Fifth Circuit's decision to vacate the fine, “ruling the agency acted as prosecutor, judge, and jury” [19].

The End of an Era

Standards that were previously considered settled may now be challenged. Staying informed on challenges and court opinions related to *Loper* and subsequent cases can impact future technical requirements for designing systems. One would be hopeful to remind the engineering community and engineering educators that consultation with legal experts on system design is becoming the norm under *Loper* and that close attention to the *Skidmore* deference may provide the best guidance for system design. *Skidmore* deference is a legal principle where courts interpret a statute based on persuasiveness of the agency's interpretation, weighing such factors as “thoroughness of its reasoning, consistency, expertise, and formality” [9].

Federal agencies play a crucial role in developing rules when Congress enacts or updates legislation. Adapting to the changing environment post *Loper*, agencies can incorporate evolving industry standards into their rule making process grounded in, hopefully, neutral technical expertise, especially in emerging technologies like Artificial Intelligence, which can help a rule survive judicial scrutiny.

Engineering standards are private voluntary standards focusing on technical specifications while federal regulations set a “minimum mandatory national floor [20]” to address broader social constructs such as providing a healthy environment free from environmental pollution. In developing technical standards, engineers are guided by their ethical obligations [10] to protect public health, safety, and welfare, and are now tasked with proactively understanding the statutory frameworks of the regulations that govern design. Although the engineer acts in the capacity of a “faithful agent” in the best interest of the corporation, it does not supersede the primary obligation of protecting the public even at the risk of employment. NSPE case 93-7

makes it crystal clear that an engineer has a duty to the firm but “ the engineer's primary obligation is to protect the safety, health, property and welfare to the public” [21] at the cost of possibly losing employment.

The whistleblower on the Challenger disaster, Roger Boisjoly a senior scientist and rocket seal expert at Morton Thiokol faced an ethical challenge warning the employer of data showing that O-ring seals in the shuttle's solid rocket boosters in which there was documented evidence of "blowby" (hot gas leaks) in O-rings from previous, warmer shuttle flights (e.g., STS-51C at 53°F), indicating the joints were already operating with a low safety margin and that a launch in cold weather could result in a "catastrophe of the highest order". [22]

Despite these warnings, a flawed-decision process allowed the launch to proceed, resulting in the loss of the shuttle and its crew. Subsequent to the testimony presented to the presidential commission Roger Boisjoly was “removed from space project assignments, suffered from depression and treated for post-traumatic stress disorder lead to his resignation” [23]. Post-Challenger lessons learned of solid rocket booster (SRB) resulted in joint designs to improve sealing performance. [24] To mitigate such outcomes in high-risk industries, organizations must adopt structural safeguards that insulate technical judgment from commercial pressure. These can include independent safety review panels with veto power, mandatory ethics training, and third-party audits to ensure technical merits.

An informal rulemaking process is used when creating new or modifying administrative regulations, including complex areas like Self-Driving Vehicle (SDV) policy. This process includes a notice and comment period, allowing the public- engineers – to submit “written data, views, or arguments regarding the proposed rule which the agency “must consider” and “respond in some form to all comments received”. [25] A common concern is that agencies favor their own industry experts and ignoring warnings from the public. However, in cases where the federal agency ignores warnings, key data, or contrary evidence, the courts will “set aside an agency action that failed to include a rational connection between the facts presented and the choice made” [26].

In managing complex scientific or engineering issues, Courts appoint independent experts to educate the judge or provide testimony. The Court appointed experts must be distinguished from the advisors providing guidance to the agency. Unlike Court appointed technical advisors or experts that provide independent testimony, agency advisors provide policy interpretations, broad scientific knowledge to guide long-term policy. [27]

Reactions of Professional Societies and Impacts

With *Loper* overturning *Chevron* projects relying on agency regulations may face increased legal scrutiny and may require redesign if courts invalidate an agency interpretation while the project is in development stage. Thus, professional societies now are responsible to understand the statutory basis of regulations. For professional engineers this means that they must be up-to-date

on legal standards whereas before *Loper* guidance was provided by agency regulations, not state or federal law. Professional societies have offered targeted professional development sessions in response to *Chevron* and *Loper* to help engineers navigate the conundrum of statutory law and agency regulation [28] [29].

The ruling in *Loper,* preceded by *SEC* [30] restricting agency power, specifically ruling that enforcement actions with civil penalties require a jury trial, thus limiting agency in-house tribunals was followed immediately thereafter by *Corner Post* [31] which stated the statute of limitations to challenge an agency action begins when the plaintiff is injured and not when the rule is enacted. These cases offer insight into the impact of the shift of the balance of power away from regulatory agencies and toward courts in disputes over the meaning of statutes, whether they are federal or state law.

The rulings in *Loper* and its progeny have impacted several sectors by enabling successful challenges upending previously settled administrative agency rules and practices. From Telecommunications rulemaking regarding broadband access, Agriculture -regulating waters of the United States, pesticides, fertilizer runoff)- EPA regulating the Clean Air Act, Clean Water Act, Toxic Substances Control Act.

Accountability and Integrity

Ensuring integrity and accountability requires a framework for the regulatory environment. Agencies are adapting and "anchoring" [32] to specific congressional authorizations which expressly delegate authority to an agency. Additionally, agencies are adopting a more transparent, collaborative model by reinforcing the need for a more robust notice-and-comment process that once was namely a formality to a "critical aspect of building a strong record" [32]. Since most courts are staffed with judges that now need to interpret technical and scientific questions, legal scholars have proposed that Congress provide appellate courts access to "neutral experts" [33] that "have expert knowledge of relevant scientific disciplines" [33] to advise and educate judges on the scientific and technical aspects of the statutes too be interpreted.

There are many instances in which Courts make mistakes, most recently Supreme Court Justice Gorsuch repeatedly referred to the greenhouse gas nitrogen oxide as "nitrous oxide" resulting in the Supreme Court issuing a corrected opinion [34] In another case, *Sackett* [35], the Court undermined environmental protection by narrowing the meaning of what constitutes "waters of the United States" under the Clean Water Act inconsistent with scientific evidence [33].

Legislative drafting is moving toward using highly specific language to force agencies to look to experts in narrow technical and scientific areas to release rules consistent with Congressional authority [36]. "Congress could make clear that agencies must consider certain factors when making policy judgments" [36] when balancing "autonomy, efficiency, and fairness" [37] to interpret statutes. This "tripartite balancing" [37] mechanism is a "resilient and flexible approach" [37] to balance judicial oversight with effective protection of the public.

Conclusion

Loper ended forty years of administrative agencies decisions given what amounted to carte blanche rule making authority. In overruling *Chevron*, the Court in *Loper* has instituted a balanced playing field by increasing judicial scrutiny and providing litigants with the opportunity to be heard and that the litigant's technical expertise may be a better reading or understanding of a statute. Thus, *Loper* resolves the issue of whether administrative agencies' technical knowledge rises to that of especially competent to solve statutory ambiguity. It is the expertise of the judiciary applying legal reasoning to interpret Congress' intent in drafting the statute and that administrative agencies cannot usurp constitutional power. Ultimately, the post-Chevron engineer is an interdisciplinary professional serving as the bridge between technical competence and statutory compliance, capable of defending the technical merits of their work and its impact on public safety and welfare in a litigious society.

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