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SPECIAL ISSUE EDITORIAL

Editorial: The Future of STEM Is Black: Afrofuturism, Equity, and Innovation

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The Future is Black: Engineering Our Thrival

> A unified mass of educated black people can change the world.
> — Cherry Haywood, chairwoman of the National Society of Black Engineers at Southern Illinois University at Edwardsville in 1992

The National Society of Black Engineers (NSBE) originated at Purdue University in 1971 in response to the urgent need to support Black engineering students facing severe attrition rates (Good, 2005; Purdue NSBE Chapter, n.d.). Initially founded as the Black Society of Engineers (BSE), the organization was conceived by Purdue undergraduates Edward Barnett and Fred Cooper, alongside faculty advisor Arthur Bond, an electrical engineering Ph.D. candidate and staff member (Good, 2005). At the time, approximately 80 percent of Black freshmen entering Purdue's engineering program were dropping out, prompting Barnett and Cooper to approach the Dean of Students with the proposal to establish a structured support system for Black students. The primary purpose of the organization was to improve the recruitment and retention of Black engineering students and ensure their successful graduation (Good, 2005).

In 1974, the organization's name was changed to the Society of Black Engineers (SBE) to align more closely with traditional engineering societies on campus (Good, 2005). Building on its early success at Purdue, SBE members later spearheaded the formation of a national organization. Often referred to as the "Chicago Six," Anthony Harris, Brian Harris, Stanley Kirtley, John Logan Jr., Edward Coleman, and George Smith emerged from Purdue's Society of Black Engineers as key architects of NSBE's national founding, with the group's core officers and organizers functioning as a strategic planning team that coordinated early national expansion efforts and helped shape the agenda for the first national conference in April 1975 (Good, 2005; Purdue NSBE Chapter, n.d.). As the Purdue chapter gained momentum, Anthony Harris led outreach beyond Purdue by contacting

Joint second authors

accredited engineering programs nationwide to identify Black student leaders and allied organizations, laying groundwork for a national convening (Purdue NSBE Chapter, n.d.).

Building on these efforts, delegates from multiple institutions gathered for the first national meeting held April 10 to April 12, 1975, where participants voted to adopt the name National Society of Black Engineers (NSBE), marking the transition from a campus-based initiative to a national movement (Good, 2005; Purdue NSBE Chapter, n.d.). 48 students representing 32 schools attended the first National Conference at Purdue University and that major institutional actions occurred there, including selection of the national symbol, drafting of a national constitution, division of the organization into six geographic regions, election of the first National Chairperson (John Cason), and formal selection of the name "National Society of Black Engineers" (National Society of Black Engineers, 2009). Following the adoption of the new name, NSBE was incorporated in 1976 as a nonprofit organization in Texas and recognized as a tax-exempt organization under Section 501(c)(3), solidifying its national structure and long-term capacity for programming (National Society of Black Engineers, 2009).

By 1987, NSBE student leadership was publicly engaged in confronting racial hostility on campuses nationwide. During a dispute at the New Jersey Institute of Technology, **Debra Smith, president of the NSBE campus chapter** participated in efforts to address a fraternity advertisement that could incite racial violence (Associated Press, 1987). Following protests from Black and Caribbean-American student groups, the fraternity's charter was revoked and later reinstated under probationary conditions that included mandatory community service and a formal apology. After the agreement was reached, Smith affirmed the outcome plainly: "The matter is settled" (Associated Press, 1987).

Similarly, in 1992, NSBE student leaders at Southern Illinois University Edwardsville (SIUE) publicly addressed the acquittal of the Los Angeles police officers in the beating of Rodney King. **Cherry Haywood, chairwoman of the National Society of Black Engineers at SIUE,** called for Black unity, educational advancement, and economic empowerment as strategies to confront systemic racism, while **Anthony Hickman, vice president of the Society of Black Engineers,** emphasized economic investment within Black communities through Black owned banks (Bosworth, 1992).

By 1994, NSBE members were also confronting racism in emerging digital spaces. After a **University of Michigan student claimed that a hacker had used his account to distribute a virulently racist message across Usenet**, the post spread rapidly through academic and corporate networks, reaching institutions such as **Howard University** and companies including **Sun Microsystems, AT&T, and Boeing**. In response, **Jason Lee of the National Society of Black Engineers** wrote,

> "I thought you should be aware of what's going on in the world today and how people still feel about black people [...] After reading this message it will be easy to see that racism still thrives in the U.S., the so-called land of the free. The sad fact is this is the way many white people see us" (Levander, 1994).

At a moment when the internet was widely framed as an open and neutral innovation space, Lee's words demonstrated that NSBE engineers were already naming and challenging racism embedded within digital communication systems. NSBE members recognized early that technological infrastructures could amplify racial hostility at scale.

The Future of STEM is Black: Afrofuturism, Equity, and Innovation

Building upon this legacy of collective action and institutional transformation, the Journal of Black Excellence in Engineering, Science and Technology (BEST) was established to serve as a scholarly extension of NSBE's founding mission. Just as NSBE emerged to confront inequitable conditions within engineering education, BEST was created to confront epistemic inequities within STEM scholarship. NSBE BEST seeks to amplify research, theory, and innovation rooted in the lived experiences and intellectual traditions of the African diaspora. Since its founding in 2022, under the leadership of Derius Galvez, the journal has provided a peer-reviewed platform for scholarship that not only documents Black excellence in STEM but theorizes it, critiques the structures that constrain it, and imagines futures beyond those constraints.

This special issue, *The Future of STEM is Black: Afrofuturism, Equity, and Innovation*, takes that mission further by situating Black STEM excellence within an Afrofuturist framework. Within STEM, Afrofuturism challenges the Eurocentric roots of scientific knowledge production and insists on recognizing African diasporic epistemologies, aesthetics, and ethics as central rather than peripheral to innovation (McGee & White, 2021). Afrofuturism names historical erasure as structural and intellectual violence and rejects the narrative that Black people are peripheral to technological progress. Instead, it insists that Black communities have always been architects of knowledge systems, from the philosophies of Kemet and the principle of Ma'at, which centered balance and justice, to the scientific ingenuity embedded in agricultural engineering, cosmology, architecture, and medicine long before European canonization (White & McGee, 2024). Afrofuturism thus operates through Sankofa, going back to retrieve suppressed histories to theorize and construct futures where Black life is central rather than marginal.

Sankofa is a Twi word from the Akan Tribe of Ghana. Its literal translation comes from the Akan proverb, "Se wo were fi na wosan kofa a yenkyiri", meaning, "It is not taboo to go back for what you forgot (or left behind)." Through Sankofa, we remember how Africans refused to leave their cultures behind, bringing a wealth of knowledge and expertise that built a nation. European colonizers witnessed the quality and intricacy of African

blacksmiths' work in west and west-central Africa, with some dating back to the early fifteenth century (Holmes, 2022; National Park Service, n.d.). Subsequently, colonizers enslaved Africans from these regions to complete metal works in the growing colonies. Despite relentless assaults to strip Africans of their cultures and language, the blacksmiths incorporated symbols like Sankofa into the ironworks as lasting representations of their heritage (Holmes, 2022). In the centuries that have followed, Black people have continued to engineer and innovate for justice and community care; of the many people we could name, we pause here to highlight Henry Boyd and Marie Van Brittan Brown.

In 1802, Henry Boyd was born enslaved in Kentucky where he worked to buy his freedom in 1826. After settling in Cincinnati, Ohio, he used his carpentry skills to invent the "Boyd Bedstead." Its unique "wood screw and swelled rail" design allowed wooden rails to connect sturdily to the headboard and footboard with more durability and more resistant to wear and pests. Beyond his inventions for conventional sale, Boyd was an active conductor on the Underground Railroad, designing hidden compartments into furniture to hide freedom seekers on their journey North. His ingenuity helped countless enslaved people reach freedom, exemplifying how Black innovation improves lives and promotes justice. Marie Van Brittan Brown also set out to improve lives with her invention of the first home security system.

Born in Queens, New York in 1922, Marie Van Brittan Brown worked as a nurse and her husband, Albert Brown, was an electronics technician. To increase her personal security, Brown wanted a system that had two-way communication, alarm, and surveillance features. Together, the Brown's received the patent in 1969 which has laid the foundation for modern security systems, being referenced in patents as recently as 2013. Now, this invention designed to increase the personal safety of a Black family is being used to profile and criminalize Black people. Scholars such as Ruha Benjamin (2019) warn that technological systems use surveillance infrastructures to algorithmic decision-making to reproduce racial hierarchies under the guise of neutrality. Afrofuturism shares this critique while insisting that technology can be reclaimed and redesigned. Tynes and colleagues (2023) argue that Afrofuturism positions Black youth and communities as creators of their present and future, capable of bending "spacetime" toward liberation rather than merely surviving racialized systems. Tynes and colleagues (2023) propose Afrofuturist Development, a theory, design lens, and praxis organized around ten core principles that center Black thrival across technological, educational, and developmental context. Although Afrofuturist Development is organized around ten interlocking principles, I focus here on the three most directly aligned with NSBE's intellectual and institutional project. First, Tynes and colleagues (2023) emphasize that Technology is never neutral; it is always embedded within racialized systems that either disappear Black people from the future or position them as disposable. Second, they purport that Black history knowledge and historical consciousness are foundational building

blocks for liberated futures. Lastly, Afrofuturist Development rejects the myth of Black technological disingenuity by asserting that technological ingenuity is part of Black heritage.

The last featured principle is materially inscribed in the infrastructure of the United States. The preserved fingerprints found in Charleston's historic bricks, impressions left by enslaved men, women, and children during the brickmaking process, mark some of the earliest Black American engineers (R-RIGHTS, n.d.). Brickmaking required sophisticated knowledge of clay composition, kiln construction, heat calibration, structural durability, and architectural production. These were acts of applied material science and structural engineering embedded within the plantation economy. Yet history rendered these engineers invisible, crediting slaveholders rather than the Black people whose expertise quite literally built the American South. Sankofa teaches us that looking back is never an exercise in nostalgia; it is preparation for what lies ahead. If the fingerprints pressed into Charleston's bricks remind us that Black engineering has always shaped this nation's infrastructure, then they also compel us to ask how that legacy is being carried forward. To "go back and get it" is to retrieve ancestral knowledge not as artifact, but as guide. It insists that the past serves as a compass for navigating the present and designing the future.

At the same time, we publish this issue at a moment of profound technological acceleration and political tension. Artificial intelligence, machine learning, and advanced computational systems are reshaping medicine, education, labor markets, and warfare. While these tools hold transformative potential, they also reproduce bias, amplify surveillance, and intensify inequities when developed without critical ethical frameworks (Benjamin, 2024). Simultaneously, national and global retrenchments against diversity, equity, and inclusion initiatives threaten to narrow the very pathways NSBE was founded to widen (Santos et al., 2025).

These forces converge most visibly in the militarization of engineering labor. Across geopolitical contexts, renewed wartime postures and expanding defense investments once again position engineers at the center of weapons development and technological warfare. Fueled by a record $2.6 trillion global defense budget (Magnuson, 2026), the engineering sector is being reshaped by the Department of War's "AI-first, wartime-speed" agenda, which mandates the rapid conversion of technical expertise into militarized innovation (Holland & Knight, 2026). Defense startups such as Allen Control Systems are now tripling their engineering workforces to accelerate autonomous weapons production, exemplify how contemporary technical labor is increasingly tethered to kinetic warfare (Defense One, 2026). In this climate, the question is no longer whether engineers shape the future, but which futures they are being asked to build.

Yet, this future is not being built solely in think tanks or on conference floors; it is being forged in the laboratories, code repositories, and project management meetings where NSBE professionals operate every day. The

undergraduate chapters that birthed the organization feed directly into a vast and powerful alumni network. This became the technical workforce that designs our digital infrastructure, tests the limits of material science, and manages the complex systems shaping our world. If students are the visionaries who imagine what is possible, then NSBE professionals are the engineers and technologists who translate that vision into practice, navigating the ethical tensions of their industries in real time. Their daily labor is not merely a job; it is the material enactment of NSBE's founding commitment to cultural responsibility. This special issue, therefore, speaks not only to the student organizers who carry on the legacy of the "Chicago Six," but also to the practicing engineers who are, at this very moment, bending the arc of technology toward liberation. They are the ones who must ask, with the deepest stakes: what future am I building today?

NSBE's history reminds us that engineering is never neutral. It is always shaped by values, incentives, and power structures. As Black engineers and scholars, we inherit not only technical expertise but also ethical responsibility. The question before us is not merely what we can build, but what we should build and for whom. In this moment, we must assert the right to imagine and construct technologies that heal rather than harm, liberate rather than dominate, and expand Black thrival rather than constrain it.

The articles in this special issue reflect that commitment. Contributors explore culturally responsive STEM education, critical race perspectives on artificial intelligence, Afrofuturist design frameworks, and the integration of African and non-European knowledge systems into scientific practice. Together, these works challenge dominant narratives of innovation and offer alternative blueprints for technological futures grounded in equity, community, and diasporic consciousness. We hope after engaging with these works that you will walk away from this special issue with three primary takeaways.

First, that Black existence in STEM is not a diversity add-on to someone else's future, but a generative force shaping multiple futures at once. From the amplification of Black voices in AI systems to the recovery of Garvey's Black Star Line as liberation technology, this issue demonstrates that Black people have always been engineers. They innovated under constraint, engineered survival against genocidal odds, designed a culture that is copied worldwide, and imagined worlds beyond oppression. The future of STEM is not inclusive when it merely "adds" Blackness; it is transformed when Black epistemologies and diasporic consciousness redefine what counts as knowledge, progress, and innovation.

Second, imagination is not escapism. Rather, it is infrastructure. Whether through Afrofuturist AI, Afro-HILL curricular design, communal design thinking, or culturally responsive research programs, the authors show that speculative thinking, storytelling, algorithmic critique, and community-based experimentation are sites of technological authorship. To imagine equitable futures is to prototype them. To design alternative systems is to refuse

inevitability. The scholarship in this issue demonstrates that practicing Sankofa with an Afrofuturist imagination is a rigorous intellectual practice and a necessary engineering skill.

Third, that Black engineers and scholars possess not only the capacity to build liberatory technologies, but the authority to determine their moral direction. In an era of AI expansion, geopolitical militarization, and DEI retrenchment, Afrofuturism offers an ethical compass. The scholars in this special issue are engineering belonging, imagination, and communal possibility. *Girls STEM Institute: Impacting Black Girls' Self-Efficacy and Interest in STEM Careers* and *Creating Liberatory STEM Spaces for Black Girls through an Afro-HILL Framework* confront decades of entrenched gender inequities in engineering (Cross et al., 2021), focusing not on refining bomb trajectories, but on cultivating confidence, identity, and critical consciousness among Black girls in STEM. This work asks us to consider not just what technologies can do, but what futures they normalize. It challenges us to redirect technical skill toward collective thrival rather than domination or destruction.

Afrofuturism refuses narratives that confine Black existence to historical suffering or marginal inclusion and insists that the future is not predetermined. The future is designed and design is never neutral. In that process, Black engineers are not peripheral to innovation; they are world-builders shaping the moral and material contours of what comes next. NSBE members have long understood that engineering expertise cannot be separated from racial consciousness or collective responsibility. That clarity was captured powerfully in 1994, when NSBE's Jason Lee reminded us: "What is the white man's worst fear? A black man or woman with an education and pride in himself and his people" (Levander, 1994). Guided by Sankofa, we look back not to linger, but to gather our strength, and with that strength, we engineer our thrival.

Editors: Derius Galvez

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