Black Technology: Invention, Adaptation and Digital Life

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Abstract

The usual account of Black people's relationship with technology is a list of inventors. That list is real — the research behind this paper documents twenty-two verified patents — but it is the smallest part of the story. Drawing on a corpus of 109 entities and 183 evidence-graded claims (116 Verified), this paper treats Black technology as a full ecosystem: invention, skilled operation, engineering, enterprise, and cultural adoption. Six findings structure the argument. First, the operator is the missing protagonist: Pullman porters were required by company rule book to master 38 air-conditioning systems and 43 berth types. Second, twelve of the most-circulated invention myths were adjudicated against patent records — six exaggerated, four false, one unverifiable, one confirmed. Third, complete chains from invention to mass adoption are recoverable, from the electret microphone to the Super Soaker. Fourth, Chicago is documentable as an adoption laboratory at the level of specific gear. Fifth, eight technology-to-culture case studies show cultural transformation as institutional improvisation. Sixth, AI's Black history to date is one of auditing and institution-building — Gender Shades' 0.8% versus 34.7% error rates — rather than Black-designed systems. The paper closes with a candid account of what remains provisional or unknown.

1. Introduction

How have Black people invented, adopted, modified, distributed, and culturally transformed technologies? That is the central question of the research package behind this paper (CTL-DR-TECH-001), and its phrasing is deliberate. Most writing on Black technology answers a narrower question — who invented what — and stops

there. This package was built on the premise that the inventor list is the beginning of the ecosystem, not its sum. The investigation followed seven parallel tracks: invention and engineering; industrial labor; broadcast and recording; computing and digital life; artificial intelligence; adaptation mechanisms; and a dedicated myth-busting audit. Its corpus contains 109 entities, 183 evidence-graded claims, 41 patent records, 30 device histories, 117 timeline events, 25 verified relationships, and 8 technology-to-culture adaptation case studies, drawn from 138 sources.

The track distribution of the 109 entities already points toward the paper's thesis (Figure 2): the invention track carries 28 tag assignments, while the six remaining tracks — broadcast/recording, digital, labor, adaptation, AI, and myth-busting — carry 103 between them. Entities may carry multiple track tags, but the archive's weight clearly lies outside invention.

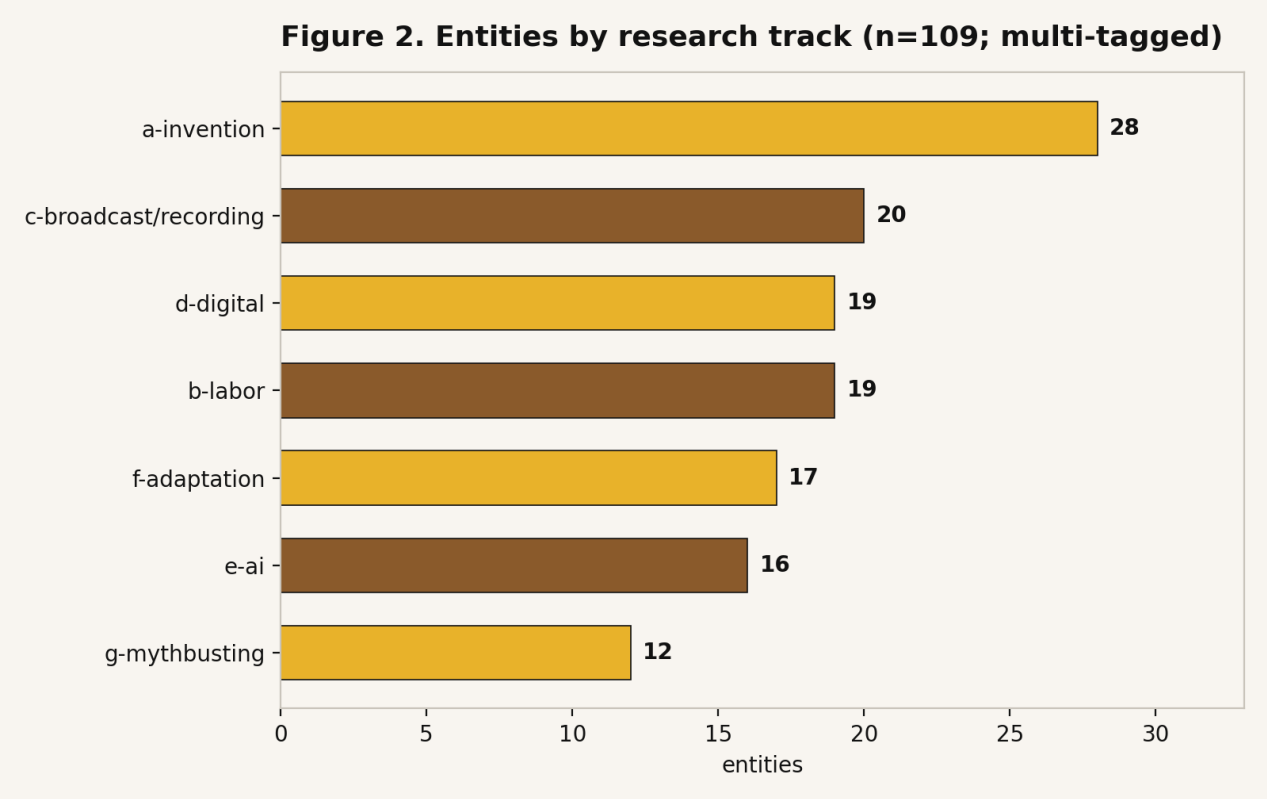

Figure 2. Entities by research track (n=109 entities; entities may carry multiple track tags): a-invention 28, c-broadcast-recording 20, d-digital 19, b-labor 19, f-adaptation 17, e-ai 16, g-mythbusting 12.

Computed from the tracks field in CTL-DR-TECH-001/entities.json.

Two structural findings define the package before any single inventor is named. First, the role distribution proves the thesis. Every entity was tagged with one or more roles — inventor, engineer, operator, entrepreneur, adopter, innovator, cultural

transformer — and the counts are instructive: only 30 entities carry the inventor tag, against 37 operators, 37 engineers, 31 entrepreneurs, 31 innovators, and 25 cultural transformers. The technology story is bigger than the inventor list. It lives in the Pullman porter who operated 38 air-conditioning systems, in the DJ who turned a turntable into an instrument, and in the engineer whose resistor made the pacemaker possible without inventing it. Second, the package subjected the most-circulated invention claims to a formal myth audit: twelve claims adjudicated against patent records and primary sources, yielding six exaggerated, four false, one unverifiable, and one confirmed. The package's strongest finding may be its stance — the frame is "what actually happened," not Black invention maximalism — and the red-team review confirmed the myth cases were drawn from live, circulating versions in school materials, Black History Month lists, viral videos, and marketing copy, including one claim the supposed inventor denied himself.

This paper distills those findings for a scholarly audience. Section 2 describes the evidence-grading methodology that governs every claim. Section 3 presents the findings: the operator as protagonist, the adjudicated myths, the verified patent record, recoverable invention-to-adoption chains, Chicago as an adoption laboratory, the adaptation mechanism across eight case studies, and the state of AI's Black history. Section 4 reports the limitations and gaps with the same candor the package required of itself.

2. Methodology

2.1 Evidence grading

Every factual claim in the corpus was graded on a five-level evidence scale — VERIFIED / SUPPORTED / PROVISIONAL / DISPUTED / UNRESOLVED — and the grade travels with the claim wherever it is cited.

- **VERIFIED** means the claim is confirmed by a primary source (a patent record, a government document, an institutional archive, or the practitioner's own first-person account) or by multiple independent sources with no material contradiction. A claim is Verified only if someone other than the claimant could check the underlying record.
- **SUPPORTED** means the claim is backed by secondary-source agreement — working journalists, scholars, or reference works converge on it — but no primary document was in hand during this research pass, and no contradiction was found.

- **PROVISIONAL** means the claim rests on a single source, on conflicting secondary accounts, or on evidence too thin to rule out alternatives. Provisional claims are held open pending further evidence and must not be quoted as established fact.
- **DISPUTED** means named sources or records contradict each other on a material point, and this pass did not resolve the conflict.
- **UNRESOLVED** means an open question that this research could not adjudicate — evidence is absent or the claim cannot be checked.

Each claim record carries the claim text, the evidence, the source, a primary-versus-secondary flag, the publication date, stated uncertainty, and any contradictory evidence found. Claims were not rounded up: of 183 graded claims, 116 earned Verified, 62 remain Provisional, 3 are Disputed, and 2 are Unresolved. No claim in this corpus landed at SUPPORTED; the package's evidence profile turned out to be bimodal, with claims either checkable against primary records or honestly thin. The large Provisional surface — sixty-two claims — is the package's most honest feature, and Section 4 maps it.

2.2 Roles and the adversarial track

Every entity was tagged with roles defined by observable tests: an inventor names the patent number or dated first reduction to practice; an engineer shows credentials, titles, or documented engineering practice; an innovator's prior art is identified and the change specified; an operator is documented running rather than designing or owning the technology; an entrepreneur founded companies or built distribution; an adopter's use is a documented turning point in diffusion; a cultural transformer changed a technology's meaning or social life, not just its mechanics. An adversarial track audited these assignments case by case, correcting the package's most repeated error class — terminology drift between inventor, innovator, and adopter. Madam C. J. Walker is recorded as entrepreneur, innovator, and cultural transformer, not inventor. Marley Marl is operator and innovator, not inventor of the sampler. DJ Kool Herc, Grandmaster Flash, and Grand Wizard Theodore are operators, innovators, and cultural transformers, not inventors of the turntable. Roger Linn — not Black — is retained in the graph as the inventor of the tools whose cultural transformation is the point, precisely so the story does not imply Black invention where none occurred.

The adversarial pass also normalized the schema across tracks, merged duplicate entity records (127 worker records into 109 entities), removed five myth verdicts attached to the wrong entities by surname matching, and disclosed that 22 of the 25

verified relationships carry a merge note — included under the verified-only instruction with evidence and sources present, but without the worker's explicit grade field.

2.3 Source base

The package drew on 138 sources: 42 primary and 96 secondary. Primary sources include USPTO patent records, Congressional Record tributes, municipal landmark reports, union and institutional records, and practitioner interviews — Frankie Knuckles in his own 1995 interview, Marley Marl describing his own trigger-sampling method, DJ Pierre describing the $40 TB-303, Grandmaster Flash on the Quick Mix Theory, and Grand Wizard Theodore on the origin of scratching. Secondary sources include peer-reviewed history and scholarship, trade and music press, and reference works used only where corroborated or flagged. The patent record served as the circuit breaker against source laundering: a patent number can be checked independently of any journalist's retelling, which is what made the myth audit possible.

3. Findings

3.1 The operator is the missing protagonist

The strongest documented case in the labor track comes from the Pullman sleeping car. Rail historian Arthur Dubin, writing in Trains magazine in November 1969, recorded that Pullman porters were required by the company's elaborate rule book to operate 38 different air-conditioning systems and to "make down" 43 distinct berth types — converting day coaches into sleeping berths nightly across 43 configurations committed to memory. The porter's training school taught heating and air-conditioning control as formal curriculum. These were high-skill technology operators, not background labor, and the company's own rule book is the evidence.

The pattern repeats wherever the archive has been checked. At U.S. Steel's Gary Works, a firsthand worker memoir documents Black cranemen operating overhead cranes — equipment so production-critical that slowing the cranes stopped the whole mill. In Chicago's packing plants, Rick Halpern's peer-reviewed history records Black killing-floor workers wielding cleavers and knives on overhead drag-line disassembly systems with recognized skill. At NACA, the West Area Computers calculated flight data by hand with slide rules and mechanical calculators; Dorothy Vaughan learned FORTRAN as IBM mainframes arrived and retrained her unit as

programmers, while Katherine Johnson, hired in 1953, worked on the Shepard, Glenn, and Apollo 11 missions. Mary Wallace, hired by the Chicago Transit Authority in 1974 as its first female bus driver, completed a fifteen-day training program and ran her first State Street route for a thirty-three-year career. An official IBEW post documents Black electricians wiring Sears Tower, O'Hare Airport, and Soldier Field through firms like Taylor Electric.

The role counts formalize the point: 37 of 109 entities are operators, equal to engineers and exceeding inventors (30). The technology story, as the archive keeps showing, is carried more often by people who ran the machine than by people who patented it. The largest gap in the package is precisely the unfamous — Black engineers and technicians inside industrial Chicago firms, whose employer archives remain unmined (see Section 4).

3.2 Invention myths collapse under patent-record scrutiny — the real achievements do not need them

The myth audit adjudicated twelve of the most-circulated claims against patent records and primary sources. The verdicts:

Circulated claim	Subject	Verdict	Documented reality
Invented the traffic light	Garrett A. Morgan	Exaggerated	Patented a specific three-position signal (US 1,475,024, 1923); traffic signals predated him (Lester Wire, 1912)
Invented the gas mask	Garrett A. Morgan	Exaggerated	Patented a specific safety hood (US 1,113,675, 1914); breathing apparatus predated him (Haslett, 1849)
Invented the light bulb / carbon filament	Lewis H. Latimer	Exaggerated	Patented a carbon-manufacturing process (US 252,386, 1882); Edison's and Swan's work precede him
Invented peanut butter	George Washington Carver	False	Developed peanut products; peanut butter predates him; he held no patent for it
Invented the hot comb	Madam C. J. Walker	False	Entrepreneur who built a hair-care empire; the hot comb predates her (confirmed by the National Museum of African American History and Culture)

Circulated claim	Subject	Verdict	Documented reality
Invented the clock / first American clock	Benjamin Banneker	Exaggerated	Built a striking clock c. 1753, documented via Thomas Jefferson; the priority claim is unprovable
Invented the Internet	Philip Emeagwali	False	Won the 1989 Gordon Bell Prize for CM-2 price/performance; the "father of the Internet" claim was contradicted on the record by Gordon Bell himself
Invented caller ID, touch-tone phones, fiber optics	Shirley Ann Jackson	False	No invention claim is supported; she is the first Black woman MIT physics PhD, a former NRC chair, and a National Medal of Science recipient — real honors that need no invention attached
Invented the pacemaker	Otis Boykin	Exaggerated	His precision resistors (US 2,972,726, 1961) were used in pacemakers; he did not invent the device
"Black Edison" / invented the third rail, etc.	Granville T. Woods	Exaggerated	Dozens of real railway-telegraphy patents; some circulating attributions are inflated
Origin of "the real McCoy"	Elijah McCoy	Unverifiable	His 50-plus patents are real (US 129,843 lubricator, 1872); the phrase's etymology has no evidence either way
Invented the Super Soaker	Lonnie G. Johnson	Confirmed	US 4,591,071 (1986); the control case proving the method confirms true stories too

One further denial is documented beyond the twelve: Henry T. Sampson Jr., widely credited online with inventing the cell phone, denied the claim himself while alive. His actual patent, US 3,591,860 (1971, with George H. Miley), is for a gamma-electric cell — power technology, unrelated to telecommunications.

The package corrected its own entity records during synthesis: Morgan and Latimer now carry Verified "did NOT invent" claims, Jackson's record carries the False adjudication alongside her real honors, and Sampson's carries his own denial — no inflated wording survives in the graded claims. Second, the true stories are stronger than the myths: Jackson's actual career needs no invention attached; Emeagwali's 1989 Gordon Bell Prize is a genuine achievement in parallel computing; Walker's

empire, built by an entrepreneur who was not an inventor, is the more important business story. Third, the Super Soaker confirmation matters methodologically: the audit was not designed to debunk, and the one case it fully confirmed — a NASA and Air Force engineer whose 1986 patent became a mass-cultural object — shows the method working on a true story.

3.3 The verified patent record

Twenty-two of the package's 41 patent records are Verified against patent numbers and dates. Read in sequence, they span 165 years of continuous Black invention, from X-patents that predate the modern numbering system to digital-era computing:

Thomas L. Jennings's dry-scouring patent (US X3306, granted March 3, 1821) and Henry Blair's seed planter (US X8447, October 14, 1834) survive as X-patents — the originals were destroyed in the 1836 Patent Office fire, but the grants are documented in patent lists. Norbert Rillieux's improvement in sugar-making (US 4,879, December 10, 1846) covers the multiple-effect evaporator that transformed sugar refining. Elijah McCoy's improvement in lubricators for steam-engines (US 129,843, July 23, 1872) automated the manual oiling of locomotive moving parts — the device that made Black firemen's lubrication labor automatic. Jan E. Matzeliger's lasting machine (US 274,207, March 20, 1883) mechanized shoe lasting. Lewis H. Latimer's three patents — US 247,097 (1881), the carbon-manufacturing process US 252,386 (1882), and US 255,212 (1882) — document his real contribution to electric lighting, which was manufacturing process, not the bulb itself. Sarah E. Goode's cabinet bed (US 322,177, July 14, 1885) is among the earliest patents granted to a Black woman.

Garrett A. Morgan's two verified patents anchor the early twentieth century: the breathing device or safety hood (US 1,113,675, 1914) and the three-position traffic signal (US 1,475,024, 1923) — specific, documented inventions whose popular attributions overreach them. Percy L. Julian's cortisone preparation (US 2,752,339) and Bessie Blount Griffin's portable receptacle support (US 2,550,554, April 24, 1951) extend the record into chemistry and assistive technology. Otis Boykin's electrical resistor (US 2,972,726, February 21, 1961) is the precision component that went into pacemakers and guidance systems. James E. West and Gerhard M. Sessler's electroacoustic transducer — the foil-electret microphone (US 3,118,022, January 14, 1964, Bell Labs) — was licensed into virtually all modern microphones. George R. Carruthers's image converter for detecting short-wavelength electromagnetic radiation (US 3,478,216, November 11, 1969) put his instruments on the Moon. Sampson's gamma-electric cell (US 3,591,860, July 6, 1971) is verified as power technology. Emmett W. Chappelle's luciferase assay for ATP (US 4,014,745,

with G. L. Picciolo and colleagues) came out of NASA research. Valerie L. Thomas's illusion transmitter (US 4,229,761, October 21, 1980) is a concave-mirror three-dimensional projection device — real and documented, but not holography, and the package says so. Mark E. Dean's IBM computer-system innovation (US 4,437,092, March 13, 1984) and Lonnie G. Johnson's squirt gun (US 4,591,071, May 27, 1986) close the sequence. Marian Croak's voice-over-IP patent (US 7,599,359) carries the record into the network era.

The verified grants span from the 1820s to the 1980s, but they are not evenly spread (Figure 1): the 1880s contribute five verified patents — the densest decade in this corpus — followed by four in the 1980s, while eight of the twelve represented decades contribute a single verified patent each. The concentration reflects what this research pass verified, not a claim about the pace of Black invention.

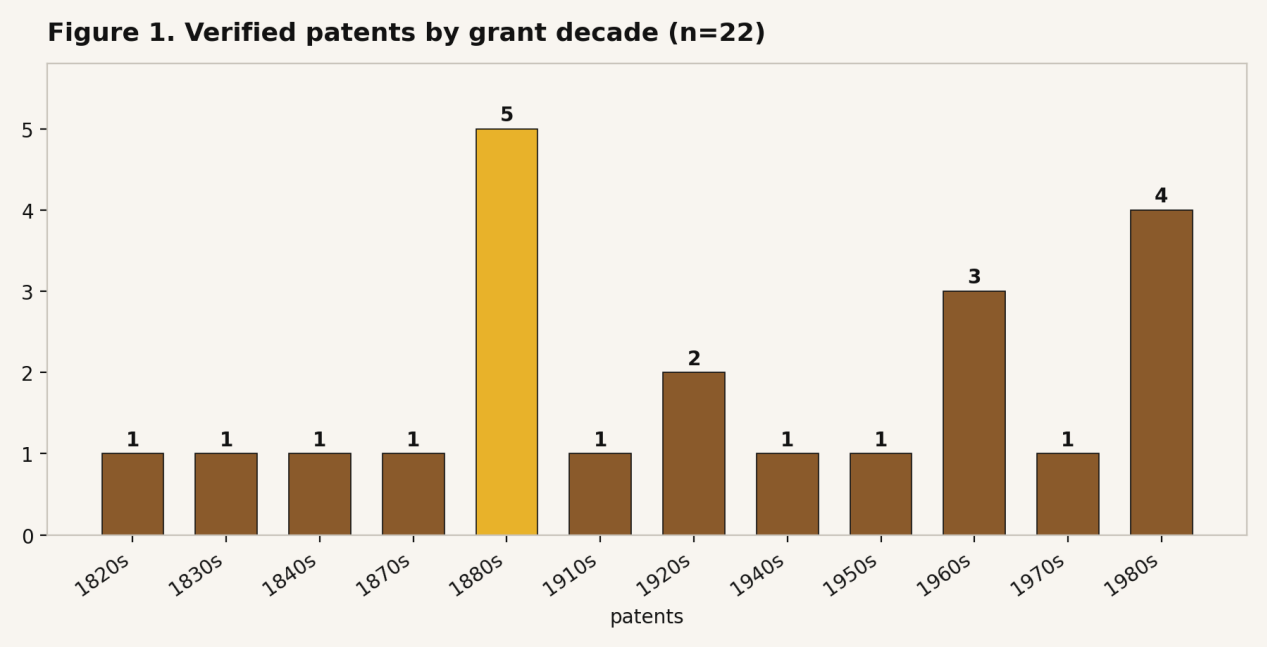

Figure 1. Verified patents by grant decade (n=22).

Computed from the grant_date field of records with verification='Verified' in CTL-DR-TECH-001/patents.json.

Nineteen further patent records are graded Provisional — six worker-graded, thirteen defaulted where no grade was supplied — and this paper makes no "patented by" claim on their basis. They are listed in Section 4.

3.4 Four chains, recovered end to end

The package's method is tested by whether it can reconstruct the full path from invention to cultural adoption. Four chains survive that test.

The electret microphone. James E. West and Gerhard Sessler invented the foil-electret microphone at Bell Labs (US 3,118,022, 1964); the design was licensed into virtually all modern microphones, including every mobile phone — a Verified chain from laboratory patent to institutional licensing to studio and everyday adoption.

The Super Soaker. Lonnie Johnson, a NASA and Air Force engineer, patented the squirt gun (US 4,591,071, 1986); Larami manufactured it; it became a mass-cultural object. This is the control case: the package's method confirms true stories as readily as it collapses false ones.

The TR-909 into house music. Roland's Japanese engineers built the TR-909; Derrick May sold his to Frankie Knuckles circa 1984 — Knuckles's own 1995 account has May calling from Detroit to say he was coming down, and Knuckles was at the Power Plant when the machine arrived. Knuckles wired it into the club mixer and, in his words, "every record I played that night had a 909 running underneath it." The drum-machine-under-disco technique seeded early Chicago house production. The chain is Verified via artist interview, with Eddie Fowlkes corroborating that May sold the machine to pay rent.

The safety hood. Garrett Morgan patented the breathing device (US 1,113,675, 1914); its documented use in the Lake Erie rescue is on the record; later gas-mask development was done by others. The patent is Verified; "invented the gas mask" is graded Exaggerated — the chain is honest in both directions.

3.5 Chicago is an adoption laboratory — at the level of gear

Forty-five of the package's 109 entities carry a Chicago connection, and the evidence for Chicago's role is specific rather than atmospheric. On November 3, 1929, Jack L. Cooper — a vaudeville performer turned Chicago Defender theater critic — premiered The All-Negro Hour on WSBC, the first radio program with an exclusively Black cast, on time he had bought outright on the station's "ethnic appeal" operation. Cooper played gramophone records over the air on his own phonograph — gospel and jazz, among the earliest record-playing on American radio — added Black community news, launched Search for Missing Persons in 1938 to reunite Great Migration families, and by 1947 controlled 40 hours a week on four Chicago stations: ownership-by-accumulation without a license. He was inducted into the National Radio Hall of Fame in 2012.

On April 1, 1963, Chess Records owners Leonard and Phil Chess bought the 1,000-watt WHFC-1450 AM and relaunched it as WVON, "Voice of the Negro," with an all-Black on-air staff — the Good Guys, including Herb Kent, E. Rodney Jones, and Pervis Spann. WVON fused hit-testing for Chess and Motown (Berry Gordy test-pressed records there), vernacular companionship, and civil-rights switchboard: Martin Luther King Jr. used it as a bully pulpit, and after his assassination WVON DJs took loudspeakers onto trucks to calm the West Side. The launch and the roster are Verified in the Congressional Record.

In recording, the City of Chicago's Chess Records landmark report documents engineer Ron Malo's dual echo chambers in the basement of 2120 S. Michigan and the vertically integrated record factory at 320 E. 21st Street — eight-track recording to vinyl master discs to nickel-plated stampers to pressed, jacketed, shipped records, with in-house label printing, all under one roof, able to put a record in shops within 24 hours of performance.

In electronic music, the gear-level documentation is unusually complete. Jesse Saunders's "On and On" (1984) was made on a Tascam 4-track with a Korg Poly 61 and a TR-808 — the 808 used, a Saunders interview explains, simply because it was the only drum machine he had access to. Knuckles's TR-909 arrived from Derrick May circa 1984. Phuture's "Acid Tracks" (Trax, 1987) came from a secondhand TB-303 bought for about $40 — a failed bass-guitar practice aid misused, by live knob-twisting, into the squelching voice of a global genre — over TR-707 and TR-727 drum patterns, with Ron Hardy breaking the track at the Music Box and Marshall Jefferson producing the release. Larry Heard built "Can You Feel It" in one live pass on a Juno-60 and TR-909, bounced by hand between two consumer cassette decks — no multitrack. Marley Marl's pre-digital workflow — firing an 808 trigger pulse into separate samplers around the room, keeping drum sounds on a striped reel-to-reel as a sound library, his 1986 "The Bridge" in his own words "all trigger music" — documents a full proto-sampler practice years before the MPC. On August 17, 1970, Don Cornelius premiered Soul Train on WCIU-TV Channel 26, Chicago — a Black-owned production that went national on October 2, 1971 and ran 1,117 episodes to 2006.

The red-team review is explicit: Detroit techno's parallel adaptation was not researched this pass, and Chicago's story must not stand in for Detroit's.

3.6 Adaptation is documentable, not mystical

Eight case studies trace the specific mechanism for each technology-to-culture pair, always distinguishing the cultural transformer from the inventor:

1. **Radio to Black broadcasting.** Cooper's 1929 time-brokerage model — buying airtime to create Black radio where no Black-owned station existed — and WVON's 1963 format consolidation turned a white-owned, white-addressed medium into Black community infrastructure.
2. **Turntables and mixers to DJ culture.** Clive "Kool Herc" Campbell's August 11, 1973 Merry-Go-Round at 1520 Sedgwick Avenue (two copies of the same record, back-cued to loop the break); Grandmaster Flash's Quick Mix Theory, clock theory, punch phrasing, and homemade felt slip mat, documented on "The Adventures of Grandmaster Flash on the Wheels of Steel" (1981); twelve-year-old Theodore Livingston's discovery of the baby scratch in 1975; Knuckles's reel-to-reel re-edits extending disco breaks for the Warehouse floor.
3. **Drum machines and synthesizers to house music.** Misuse-as-invention: the $40 TB-303, the TR-909 wired into the club mixer, Hardy functioning as A&R by debuting acetates on the Music Box floor.
4. **Television to Black media.** Cornelius's parallel distribution (a sponsored local slot, his own production company) and Robert L. Johnson's cable play — a $15,000 loan plus $500,000 from John Malone, launching Black Entertainment Television on January 25, 1980 as a two-hour weekly block on the Madison Square Garden Sports Network, expanding to a full-time channel in 1983, with BET News anchored by Ed Gordon in 1988.
5. **Computers to digital production.** Marl's trigger-and-curation method, then Roger Linn's Akai MPC60 (1988) pushed past its design brief by DJ Premier, Hank Shocklee, Prince Paul, Pete Rock, Dr. Dre, J Dilla — who switched quantization off entirely — and Kanye West, whose chipmunk-soul era ran on the Ensoniq ASR-10.
6. **The internet to independent publishing.** Omar Wasow's BlackPlanet (September 1, 1999, with Benjamin Sun's Community Connect) — the Black social network that the MySpace founders were quoted in Businessweek as studying for a "general market version"; VerySmartBrothas (2008), the blog Damon Young and Panama Jackson built into a $1 million Ecco book deal and a Univision sale; Henry Louis Gates Jr. and Donald Graham's The Root (January 2008), explicitly modeled on the Defender and the Amsterdam News.
7. **Social platforms to cultural distribution.** The hashtag as assembly point: Alicia Garza's July 2013 Facebook post and Patrisse Cullors's appended

hashtag, which became #BlackLivesMatter and moved hundreds to Ferguson in 2014; April Reign's January 15, 2015 #OscarsSoWhite tweet, trending worldwide by lunchtime, followed by the Academy's January 2016 reforms; fourteen-year-old Jalaiah Harmon's September 25, 2019 Renegade choreography, popularized uncredited on TikTok until a February 2020 New York Times profile corrected the record — followed by a UTA signing and a performance at the 2020 NBA All-Star Game in Chicago.

8. **AI to cultural knowledge systems.** Auditing and institution-building rather than model authorship: see Section 3.7.

The mechanism, in short: excluded from ownership, Black practitioners rented the medium by the hour, misused the instrument against its manual, or built parallel distribution — and reprogrammed the technology's address until the rented hours, the misused gear, and the parallel venues became institutions.

3.7 AI's Black history is critique and community-building — not Black-designed systems

The most empirically grounded result in the corpus is Joy Buolamwini and Timnit Gebru's 2018 Gender Shades study: commercial gender classifiers from IBM, Microsoft, and Face++ failed darker-skinned women 20 to 34 percent of the time while approaching perfection on white men — 0.8% versus 34.7% error rates in the most-cited comparison — with training sets 77 percent male and over 83 percent white. Buolamwini's own face went undetected unless she wore a white mask. Raji and Buolamwini's 2019 "Actionable Auditing" follow-up found the same flaws in Amazon's Rekognition, which misclassified Michelle Obama. The audits were shipped back to the vendors and correlated with product moratoria — Amazon's one-year police-sales pause in 2020 — and with federal bills including the Algorithmic Accountability Act. Causation is deliberately held at correlation: the sources say "in part," and the package grades the audit-to-pullback link Provisional.

The institutional history runs parallel. Gebru and Rediet Abebe founded Black in AI in March 2017 over "an alarming absence of black researchers," holding the first workshop at NeurIPS that December; in 2021 the group publicly refused Google funding over the company's treatment of Gebru, Margaret Mitchell, and April Christina Curley. After Google pushed Gebru out in December 2020 over her large-language-model ethics paper, she founded the Distributed AI Research Institute (DAIR) in 2021 as community-rooted AI research outside Big Tech. Ruha Benjamin's Race After Technology (2019) supplied the field's critical vocabulary.

What is absent is as important as what is present. No verified Chicago Black AI lab or model-building program was found. No peer-reviewed study was found measuring how LLM training data misrepresents Black history or culture specifically — bias is documented at the facial-recognition level, not the knowledge-representation level. Claims about LLM training-data effects on Black culture are asserted in the literature but unaudited. The FutureSum AI "Latimer" LLM project's public status, architecture, and training-data sourcing are Unresolved as of September 2026. No verified Black-community data trust or consent framework for AI training data exists — only positions. The cultural transformers of AI, to date, are not the inventors of the models; they are the people who made the models answerable.

4. Limitations and gaps

A paper built on evidence grading has to show where the evidence runs out. Sixty-two claims in this corpus are Provisional, three are Disputed, and two are Unresolved — and the gaps cluster in five zones that the package mapped explicitly.

Zone 1: Industrial Chicago's Black technical workforce — the largest gap. The package documents Black operators at Pullman, Gary Works cranemen, and the NACA computers, but employer-level archival evidence for Black engineers, technicians, and skilled workers in industrial Chicago itself remains thin. Missing: Black machinists in Chicago WWII defense plants; workers at the Pullman Works car-building plant; telephone operators on Illinois Bell switchboards; CTA "L" and streetcar motormen (only Mary Wallace, bus, 1974, is documented); railroad telegraph operators; Black women keypunch and data-processing operators (general Smithsonian evidence on keypunch labor exists but is not race-specific); truck drivers, teamsters, and longshoremen. The agenda is an archival pass on Pullman, U.S. Steel, and Western Electric/Hawthorne Works personnel and engineering records, Illinois Bell employment records, CTA records, and telegrapher rosters.

Zone 2: Patent-record precision debt. Nineteen patent records are Provisional pending patent-office confirmation, and this paper makes no "patented by" claim on their basis. The open items: Marjorie Stewart Joyner's permanent-wave machine (conflicting numbers across sources — US 1,683,530 vs. 1,693,880 vs. 1,683,515); Walter Lincoln Hawkins's plastic cable-sheathing patent numbers, unidentified; Granville Woods's specific numbers, titles, and grant dates, unverified, with secondary counts varying; Frederick McKinley Jones's refrigeration patents, where sources conflict on grant dates and which patent is the breakthrough; Henry Blair's 1836 cotton-planter patent, unresolved (the X-patent records were destroyed in the 1836 fire); Norbert Rillieux's possible earlier 1843 patent, unverified; Patricia Bath's

US 4,721,359, needing grant-date and title confirmation; Jesse Russell's digital cellular base-station patent numbers, unconfirmed; Lloyd Quarterman's personal patents, unidentified, with his Met Lab/Argonne contributions lacking institutional confirmation; Gerald Lawson's personal patents, unidentified; Marian Croak's US 7,715,368 text-to-donate association, needing confirmation; Otis Boykin's heart-stimulator control unit — no specific US patent number found, flagged as the package's most important unresolved patent attribution; and George Washington Carver's US 1,541,478 and US 1,632,365, with grant dates conflicting across secondary sources. A direct USPTO verification pass is required before any public "patented by" language on these records.

The verification picture in full (Figure 3): of the 41 patent records, 22 are Verified and 19 — nearly half — remain Provisional. This is why this paper makes no "patented by" claim on the basis of the Provisional nineteen, and why the zone above itemizes them rather than folding them into the record.

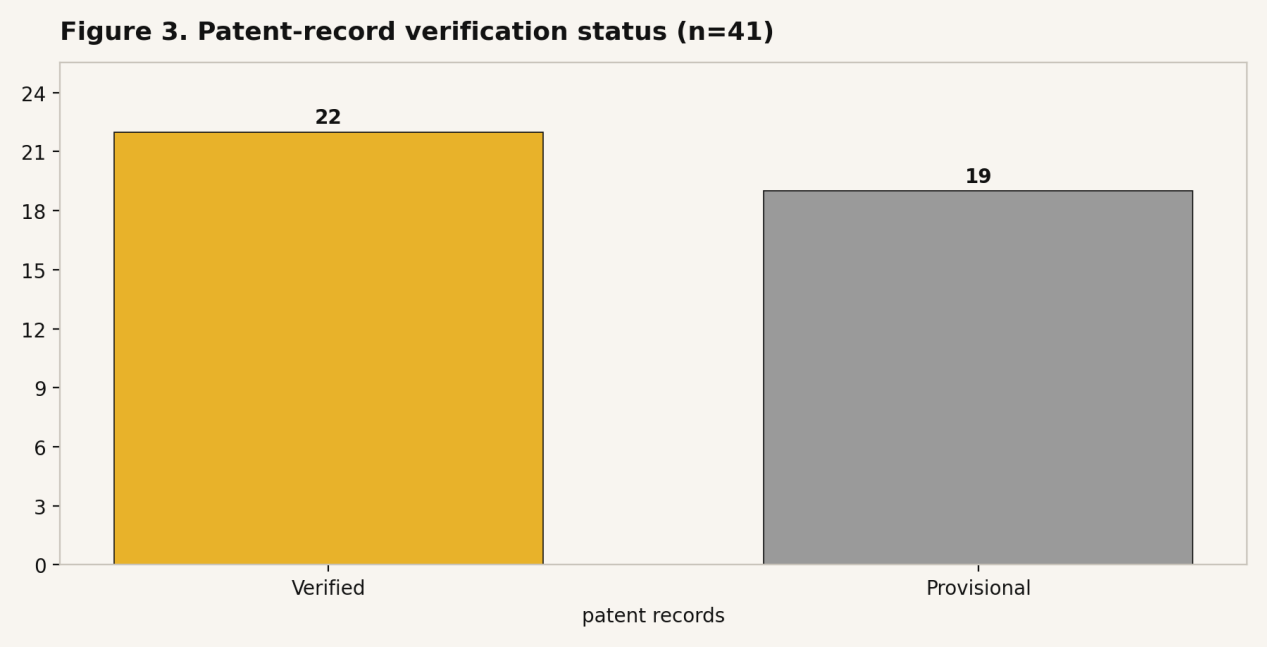

Figure 3. Patent-record verification status (n=41): Verified 22, Provisional 19.

Computed from the verification field in CTL-DR-TECH-001/patents.json.

Zone 3: Broadcast and studio engineering — the invisible technicians. No named chief or transmitter engineer was found for WVON (1963–) or WJPC — the single largest named-person gap in the broadcast track. Chess's lacquer-cutting engineers are unnamed in the sources found; Ron Malo's start year at Chess is Disputed (~1959 vs. ~1961); Ron Hardy's Den One setup (two turntables, mixer, reel-to-reel) is single-sourced with specific models unverified; the Bridgeport

pressing-plant name variant "Music Products" versus "Musical Products" is unresolved; and gear-chain attributions for specific records ("Your Love" TR-707 claims, the "No Way Back" Discogs speculation) are Unresolved. Hardy's editing technique is itself contested: an associate's first-hand testimony says Hardy made edits on a tape deck with the pause button, against the standard razor-splice legend. The agenda: FCC records, Broadcasting yearbooks, station personnel files, Chess session documentation, and engineer oral histories.

Zone 4: Digital-era primary evidence — the thin middle. No verified "first Black website" or "first Black person online" exists; both are treated as Unresolved, and any public claim in that class must be suppressed until primary evidence exists. Founding dates for the Universal Black Pages, BlackVoices, and the BDPA are not directly verified from primary sources. No verified Black-founded mobile-app or mobile-hardware company was identified this pass. Chicago digital-production specifics beyond No I.D., Kanye West, and Knuckles are thin — DJ Rashad, RP Boo, and the footwork producers' DAW-era practices were not researched. Early-web artifacts (AfroNet, NetNoir, Popandpolitics) need Wayback and archival confirmation of their dates. Omar Wasow's BlackPlanet co-founders are not verified and are not named.

Zone 5: AI — claims outrunning evidence. No verified census of Black AI researchers, engineers, or lab leads at Chicago institutions was found. No peer-reviewed study was found measuring how LLM training-data misrepresents Black history or culture specifically. No verified Black-community data trust, cooperative, or consent framework for AI training data exists. The Latimer LLM's public status, architecture, and training-data sourcing are Unresolved as of September 2026. Black in AI's 2024–2026 membership scale is not verified. The causal weight of the bias audits versus other pressures (the 2020 protests, internal activism) in the vendor moratoria is contested; the sources say "in part," and the package holds it there. AI claims will age fastest — Gender Shades is dated 2018 — and the package recommends a re-grade pass in twelve months.

Three further cautions from the adversarial review. First, the 22 relationships carried with merge notes — included under the verified-only instruction with evidence and sources present, but without the worker's explicit grade field — are the softest inclusion in the corpus; they should be re-verified before any public graph visualization. Second, "first Black X" claims were audited and the unsupported ones dropped; the firsts that remain are sourced to specific records. Third, no photographs, recordings, advertisements, or screenshots are rights-cleared in this package; none are claimed as cleared. The package also notes that it does not let Chicago's story stand in for Detroit's, that its inventor track skews

famous while the unfamous remain under-documented, and that "cultural transformer" is a modern analytic label anchored to period mechanisms — time-brokerage, sound-system wiring, parameter misuse — rather than vibes.

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