The Architecture of Conformity:

Neurodiversity, Universal Design, and the Hidden Cost of Neurotypical Systems in Education and the Workforce

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Abstract

This paper advances a philosophical argument that is simultaneously personal, institutional, and systemic: the environments we build, among them our campuses, our workplaces, and our performance cultures, have been designed, often without deliberate intent, around a narrow model of how minds work. For the estimated 15–20% [1] of the population whose cognitive profiles diverge from that model, participation in these environments costs far more than inconvenience [2]. It imposes a measurable and compounding cognitive burden that impairs performance, erodes health, and shortens careers.

Over eighteen months of interdisciplinary discussion within the Barton College Neurodata Analytics Consortium, four inquiries have braided together: the readiness of higher education institutions to welcome neurodivergent learners; the philosophical and practical case for Universal Design for Learning (UDL) as an alternative to episodic accommodation; the hidden “masking tax” paid by neurodivergent professionals forced to suppress their cognitive identities; and the emerging potential of neurodata analytics to distinguish harmful cognitive overload from productive engagement. Together, these inquiries cohere around a single organizing question:

what would our institutions and workplaces look like if we designed them, from the start, for the full range of human cognition?

We have written the paper in the spirit of philosophical inquiry that the P&R journal invites: Socratic in curiosity, interdisciplinary in evidence, accessible in form. It is offered as an invitation to a larger conversation.

Keywords: Neurodiversity, Cognitive Equity, Universal Design for Learning, Masking Tax, Cognitive Load, Higher Education, Neurodata Analytics, Neurotypical

Introduction: Why Are We Asking This Now?

Every institution encodes a theory of the mind. The lecture hall assumes that learning flows best from one speaker to many silent listeners. The open-plan office assumes that proximity breeds collaboration. The annual performance review assumes that productivity is consistently measurable, quarter over quarter, in broadly similar ways for everyone. These are not neutral design choices.

Philosophy has always been the discipline willing to interrogate assumptions that other fields take for granted. It was Socrates who refused to accept the comfortable consensus of Athens; it was Descartes who paused, in radical doubt, to ask what could actually be known. The question this paper asks is no less fundamental: on what theory of the mind are our dominant institutions built, and is that theory correct?

The Barton College Neurodata Analytics Consortium has spent over a year sitting with versions of this question. Its members come from neuroscience, cybersecurity, education, philosophy, data analytics, and lived neurodivergent experience. Critically, the majority of this paper's authors are themselves neurodivergent, and several are raising neurodivergent children. This is not a paper written about neurodivergent people from the outside. It is written from within,

by parents, practitioners, and academics who have navigated these systems personally and across generations. No single discipline produced what follows. The argument was assembled collaboratively from transcripts of biweekly conversation, refined through debate, and organized with the help of emerging AI tools that the Consortium itself studies. That last detail is intentional: we use technology to help us think about technology's relationship to human cognition.

The paper proceeds in four movements, each examining a distinct domain where the mismatch between neurodivergent minds and neurotypical systems produces real, quantifiable harm. It closes with a synthesis: a call for what we term cognitive equity, meaning the philosophical commitment to designing systems that work for the full range of human minds rather than for the statistical median alone.

A note on accessibility: This paper practices what it argues for. Key arguments are bolded within each section so that a reader who needs the synthesis quickly can find it in a single pass. The full text is available for those who want the reasoning behind the claims.

PART I

The Neurodivergent Campus: Institutional Strategies for Inclusivity

The Transition Problem

For many neurodivergent students, the move from secondary education to college represents the most dangerous cognitive transition of their lives. Content is not what makes it dangerous—the dismantling of scaffolding is.

Secondary schools, whatever their limitations, tend to be highly structured environments. Schedules are fixed. Deadlines are externally enforced. Teachers monitor progress and intervene. Neurodivergent students who struggle with executive function (planning, task initiation, task

completion, organization, and time management) can often succeed in these environments precisely because the environment does many of the executive tasks for them.

College withdraws that support almost overnight. Suddenly, a student who has never had to initiate their own study schedule, manage competing deadlines without reminders, or seek help proactively must do all of these things simultaneously. For neurotypical students, this transition is challenging. For many neurodivergent students, it is disastrous.

The underlying mechanism is executive function, the cluster of cognitive processes that govern planning, task initiation, task completion, working memory, cognitive flexibility, and inhibitory control. Executive function difficulties are common across neurodivergent profiles, and secondary school structures effectively compensate for them. College does not. The result is that a student's academic struggle is often misread as a motivation or intelligence problem when it is in fact an executive function problem, and one that the right scaffolding, including AI-assisted support tools, can address directly.

A compounding factor is the COVID cohort: students who were in middle school during the pandemic years had their social development and executive function development effectively halted at age 14. These students are now arriving at college with gaps that neurotypical peers feel acutely but neurodivergent students feel catastrophically. The transition problem is not improving on its own.

The Consortium has observed this pattern repeatedly, including through the direct experience of parent members whose neurodivergent children have navigated or are navigating this transition. The data from the literature confirm what these accounts suggest: neurodivergent students who were high-achieving in structured secondary environments frequently struggle or disengage in the first year of college. Intellectual deficit does not explain the pattern, but the sudden absence of cognitive infrastructure does.

Current Approaches and Their Limits

Most higher education institutions respond to neurodivergent students through a disability services model: students self-identify, documentation is reviewed, and accommodations are granted on a case-by-case basis. Common accommodations include extended test time, distraction-reduced testing environments, and note-taking support.

This model has real value. It has helped many students who would otherwise have failed. But it has structural limits that this paper argues are philosophical rather than incidental:

- It is reactive, not proactive. Students must fail or struggle before the system responds.
- It is episodic, not systemic. Each accommodation is a local patch on a system that remains fundamentally unchanged.
- It places the burden of disclosure on the student. Neurodivergent students, particularly those from communities where neurodivergence carries stigma, may never self-identify and therefore never receive support.
- It treats neurodivergence as a deficit to be compensated, rather than a cognitive profile to be respected.
- Neurodivergent students of higher socio-economic status are more likely to get accommodations and support.
- The systems put in place are primarily centered on complying with government regulations for accommodations, rather than centered on serving students, and therefore put forth the minimum effort required.
- Many higher education institutions struggle, both from an employment standpoint and a financial standpoint, to find qualified support staff for these functions.

A philosophical institution would ask not "how do we accommodate this student?" but "what assumptions embedded in our design are causing this student to struggle?"

A Consortium member's direct experience at a major state university illustrates the problem precisely: her neurodivergent son has documented accommodations for extended testing time and distraction-reduced environments. To use them, he must independently identify all seven of his courses' exam dates, navigate a separate accommodation portal, match each testing window to the correct course, and ensure the timing is calibrated to each class's session length, all without any prompt or reminder. "One of the reasons he has the accommodation in the first place is because of his executive functioning. And yet he was asked to do all of that." The accommodation exists, but the system designed to deliver it requires the very skill it is meant to support. Cases like this are the norm rather than the exception.

A further equity dimension should be acknowledged: neurodiversity support programs in higher education take several distinct forms, each with different access and cost profiles. Autism-specific programs—the most numerous category of standalone programs—now exist at ~129 institutions nationwide, concentrated at private and research universities, but with wide gaps across the South and Mountain West [3]. Colleges designed specifically for students who learn differently, such as Landmark College and Beacon College, include comprehensive academic support in their tuition rather than billing for it separately [4,5]. By contrast, many mainstream colleges offer comparable support only through optional programs that charge fees on top of regular tuition [4]. Federally funded TRIO Student Support Services programs, by contrast, serve low-income and first-generation students with disabilities at more than 2,800 campuses at no additional charge—but their scope is narrower and eligibility is restricted by income and first-generation status. The students who most need structured support are least likely to be enrolled at schools that can fund the first two categories.

Toward the Neurodivergent Campus: Institutional Readiness

The Consortium's discussions point toward a more ambitious model: the institution that actively designs for neurodivergent success, not merely accommodates it. This requires what we call institutional readiness, a deliberate and self-aware posture that asks, at every level of design, whether the structure serves **all** learners.

Concrete strategies the literature and Consortium experience support include:

- Dedicated cohort programs that provide structured community and peer support for neurodivergent students from day one.
- Faculty development programs that build awareness of neurodivergent learning profiles and the assumptions embedded in conventional pedagogy.
- Proactive outreach during the transition period, rather than waiting for students to seek help.
- Integrating neurodata tools that can provide Tier 1 cognitive support at scale, including AI-enabled support systems such as AI faculty avatars that can engage students asynchronously.

Philosophical question: What does an institution owe a student whose mind does not fit the institutional model the institution was built for?

PART II

Cognitive Architecture and the Neurodivergent Campus: From Accommodation to Universal Design

Redefining Cognitive Architecture

The term "cognitive architecture" originates in computational cognitive science, where it refers to the theoretical framework modeling the mind's core components: perception, memory, action,

reasoning. Within that domain, the term serves a specific purpose: it describes a generic mind closely enough to reproduce some of its functions in software.

The Consortium proposes a second and more urgent use of the term. Cognitive architecture, in our usage, refers to the totality of internal and external structures that shape how a neurodivergent individual processes, learns, and performs. This includes:

- Internal factors: the unique neurophysiology of the individual—including ADHD, autism spectrum, dyslexia, and other variations in how the brain processes information—shaped by genetics, development, and experience.
- Environmental factors: the physical, social, and policy environments in which learning and work take place.
- Acquired structures: the coping strategies, self-regulation techniques, assistive tools, and relational supports that a neurodivergent individual builds over a lifetime.

One Consortium member offered a memorable metaphor: cognitive architecture is the "harness," meaning all the things needed to connect other things so that functioning is possible. "What that harness is," they noted, "will be shaped by lived experience. Whether it was childhood trauma—big T or little t—or how you've been raised, or the support you have... which is why it's hard. And why it's different for everybody."

If cognitive architecture is constructed from experience and environment as much as from neurology, an implication follows that institutions rarely confront. Every institution that shapes those environments is already in the business of shaping cognitive architecture, whether or not it has ever described its work that way. The only open question is whether it does so deliberately.

A Systems View: Capacity, Buffers, and Feedback

To approach a systems view, it helps to examine how other design principles have encountered similar problems, and what they did when faced with undeniable issues. When designing plans for the U.S. Air Force, engineers started with cockpits that fit the “average” pilot. But around 1950, facing an accident rate it could not explain, the Air Force measured 4,063 pilots on ten body dimensions in order to find the man its cockpits had been built around. Gilbert Daniels, the researcher assigned to the analysis, reported that not one of the 4,063 fell within the middle 30 percent on all ten dimensions [6]. The “average” pilot did not exist. Because no such person existed, the Air Force abandoned fixed dimensions and required adjustable seats, pedals, and harnesses instead—and the accident rate fell. Todd Rose has since made this episode the standard illustration of how human variation actually behaves [7], and it is an important point to consider.

Cognitive variance behaves the same way. A course written for the median student assumes a learner of average working memory, average processing speed, average tolerance for ambiguity, and average capacity to sustain attention across a ninety-minute block. Those distributions are wide and they correlate only loosely with one another; the population sitting near the middle of all of them at once is far smaller than the design implies. We are still building fixed cockpits and asking why some pilots crash.

Human factors engineering supplies the vocabulary for what happens next. That literature treats attention as a limited resource drawn from partially separable pools, with performance degrading once demand exceeds available supply [8]. Instructional design uses a parallel construct: the total load a task places on working memory combines what the material inherently demands, what the presentation format adds on top of it, and what the learner invests in building durable understanding [9]. Only the second of those is a design variable. When an institution holds presentation fixed and lets load vary across learners, it has not made a neutral choice. It has

decided that whoever has the least headroom will absorb the difference. It also neglects the effect of the load across a course load where tasks increasingly deplete the limited resources over a full week, compounding the problem.

Operations research states that transfer more precisely. In any production system, variability that has not been eliminated must be absorbed somewhere, and only three things can absorb it: inventory, capacity, or time [10]. Educational and workplace systems are bound by the same constraint. Since cognitive variability cannot be designed away, some buffer must carry it. Current practice pushes that buffer onto the individual, who pays it in time by working nights to finish what peers finished by dinner, in capacity by masking, or in health. Universal design relocates the buffer into the system, where it can be sized on purpose and funded once. The accommodation model does not remove the buffer from the student at all. It conceals who is (still) paying for it.

Control theory adds the timing argument. As currently practiced, accommodation is a feedback loop with a long lag. A student must struggle visibly, disclose, assemble documentation, wait for review, and then receive a correction that arrives weeks or a full term after the disturbance that prompted it. Any control engineer would predict the result. Loops with large delays overshoot, oscillate, and frequently destabilize the very system they were installed to steady. Where stability matters, engineers either shorten the loop or design so that the correction becomes unnecessary. Universal design is the second strategy.

Quality engineering offers a final lesson. Genichi Taguchi argued that robust design does not attempt to remove the sources of variation, which is usually impossible and always expensive, but instead reduces the system's sensitivity to them [11]. Read through that lens, the accommodation model is uncomfortable to look at. It treats each instance of cognitive difference as a defect requiring individual correction, which is the least efficient response available to it.

Designing a course, an assessment, or a workplace so that outcomes hold across a wide range of cognitive profiles is the robust alternative. Once the accounting includes attrition, appeals, grievance processes, and staff time, it is also the cheaper one.

None of this replaces the moral argument with an engineering one, and it is not offered as a substitute for the philosophical case the rest of this paper develops. The claim is narrower and harder to dismiss. **Universal design does not depend on institutional generosity. It follows from ordinary design principles that these same institutions already apply, without controversy, to their buildings, their networks, and their budgets.**

Universal Design for Learning: The Philosophical Alternative

Universal Design for Learning (UDL) is an educational framework, developed over roughly three decades, that asks institutions to build flexibility and accessibility into learning experiences at the design stage rather than retrofitting accommodations afterward [12]. Its lineage runs directly through the architectural universal design movement, whose founder argued that environments usable by the widest range of people without adaptation are simply better environments [13].

The analogy to physical architecture is instructive. A building designed from the start with ramps, automatic doors, and accessible restrooms serves everyone better than a building that adds a ramp to the side entrance after the fact. An afterthought ramp is usually inferior, frequently placed by a loading dock, and it marks whoever uses it. A ramp integrated from the beginning is just part of the building.

UDL applies this logic to learning: offer multiple means of representation (how content is delivered), multiple means of engagement (how students are motivated and supported), and multiple means of action and expression (how students demonstrate mastery). A student who cannot demonstrate understanding through a timed written exam may demonstrate it brilliantly through oral explanation, project-based work, or collaborative synthesis.

Landmark College, cited repeatedly in Consortium discussions as a pioneering institution, has implemented UDL as a systemic philosophy rather than a supplementary program. Critically, students at Landmark are not required to demonstrate mastery in a single modality. The institution asks: what is the underlying learning objective? And it then builds multiple pathways to demonstrate that objective. The result, as Consortium members have observed through personal contact with the institution, is that students who have been told they cannot succeed in higher education discover that the barrier was never their cognitive capacity. It was the narrowness of the assessment design.

The Dartmouth experience offers a complementary data point. A Consortium member whose neurodivergent son enrolled in a Dartmouth program using universal design principles reported a striking outcome: the student noted that he did not think he needed some of his accommodations, because everyone was receiving them. That sentence is the UDL argument in miniature. **When accessibility is designed in rather than bolted on, it stops marking students as other. It becomes table stakes for everyone.**

Self-Awareness as a Learnable Skill

One dimension of UDL receives less discussion than it deserves, and the Consortium has elevated it from its own conversations. That dimension is internal self-awareness: the capacity of a neurodivergent learner to observe their own cognitive state, understand its signals, and respond adaptively.

One Consortium member who teaches neurodivergent learners described this as foundational: “Your brain is going to lie to you. And you are not your brain.” This observation, grounded in polyvagal theory and contemporary neuroscience, points to a skill that can be taught: the capacity to notice one’s own nervous system state, to distinguish between a brain that is

overwhelmed and a brain that is engaged, and to respond with self-compassion rather than self-judgment.

Institutions committed to UDL can build this capacity into their programming as a core academic skill rather than a therapeutic intervention. The philosophical payoff is significant: a learner who can observe and narrate their own cognitive processes is a learner who can advocate for the accommodations they need, communicate to peers and instructors what is happening for them, and develop the metacognitive awareness that correlates with long-term academic success.

Philosophical question: What assumptions about a student's self-awareness as a learner are embedded in our institutional expectations — and how might early, intentional investment in self-knowledge (through something like a freshman seminar on learning) change educational trajectories and outcomes?

PART III

The Masking Tax: Assessing the Performance Cost of Conformity

What Is Masking?

Masking, also called camouflaging, refers to the conscious or unconscious suppression of neurodivergent traits in order to appear neurotypical. It is a survival strategy, developed in response to social environments that penalize difference. It includes:

- Suppressing stimming behaviors (repetitive movements that regulate the nervous system) in professional or academic settings.
- Forcing sustained eye contact despite the cognitive cost.
- Mirroring others' communication styles and social scripts to avoid standing out.
- Concealing the accommodations, strategies, and tools that enable functioning.

- Performing competence in ways that drain cognitive resources that would otherwise go toward actual work.

Masking is not vanity. It is a survival mechanism for environments that have signaled, explicitly or implicitly, that neurodivergent expression is perceived as unwelcome, othering, or not tolerated. Survival does not make it costless.

The Tax: Cognitive Load and Its Consequences

The Consortium uses the term "masking tax" deliberately. A tax is an extraction: resources taken from one purpose to pay for another. The masking tax is the cognitive and biological resources diverted from learning, problem-solving, creativity, and performance into the maintenance of neurotypical appearance.

The research literature increasingly supports what neurodivergent individuals have reported from lived experience: sustained masking is exhausting, and its consequences compound over time. They include:

- Elevated baseline cognitive load: the neurodivergent professional who is always monitoring their outward presentation has fewer cognitive resources available for their actual work.
- Accelerated mental fatigue: the energy budget is depleted faster, leading to earlier onset of the performance degradation that fatigue produces.
- Burnout: the chronic accumulation of masking-related depletion, which can manifest as sudden and complete cognitive and emotional collapse, sometimes described as "autistic burnout" but occurring across neurodivergent profiles.
- Long-term health consequences: sustained stress-system activation, associated with chronic masking, correlates with the cardiovascular, immunological, and psychological outcomes we associate with chronic stress.

The cybersecurity workforce, a particular focus of Consortium member Rick Doten, offers a case study. Security operations require precisely the kind of intense, sustained, pattern-recognition cognitive work that many neurodivergent individuals perform exceptionally well. The irony is that the cultures of many security teams simultaneously prize neurodivergent cognitive strengths and enforce neurotypical behavioral norms, extracting a masking tax from the very people whose abilities they need most.

The masking tax begins before the job interview. AI-driven resume screening systems, which the Consortium has termed “the Great Firewall of HR,” filter on presentation rather than capability. Candidates whose self-presentation does not conform to neurotypical templates are eliminated before a human reviewer ever sees them, regardless of the underlying cognitive strengths for which the organization is trying to hire. Higher education is not the only place the pipeline narrows. It constricts at the moment a neurodivergent individual first tries to enter the workforce.

One Consortium member's personal account puts a timeline on the cumulative cost: “For me, the actual task of masking so early on, especially from college forward—it was thirty-some years later before burnout actually hit. And I started to really unpack just how much being somebody that I wasn't became such a detriment.” The masking tax does not declare itself immediately. It compounds quietly, across decades, until the account is empty.

The Philosophical Paradox

The masking tax reveals a paradox at the heart of high-performance professional culture: we want the outputs of neurodivergent cognition while demanding the performance of neurotypical outward presentation.

Organizations that recruit neurodivergent talent for their pattern recognition, systems thinking, hyperfocus, and creative problem-solving, and that then require those

same individuals to conform to open-plan offices, back-to-back meetings, and neurotypical communication norms, are in effect paying for a Ferrari and insisting it be driven on a road built for bicycles.

The philosophical question this raises is not merely pragmatic (though the pragmatic case for reducing the masking tax is overwhelming). It is about dignity: what does it mean to welcome someone's mind while refusing to welcome the whole person? And who, ultimately, bears the cost of that contradiction? It is almost always the individual and never the system.

The Consortium notes that masking is not confined to professional settings. It operates in higher education with equal force. The neurodivergent student who masks their way through four years of college may graduate, but arrives in the workforce already depleted. Those academic years most likely went to chronic cognitive extraction rather than to authentic learning.

A Broader Frame: Neurotypicality as Social Construct

It is worth pausing to examine the premise underlying the masking tax: that there is a stable, biological category called "neurotypical" against which neurodivergent individuals are measured. The Consortium questions this premise. Neurotypicality, on closer inspection, is less a neurological reality than a social agreement: a cluster of behaviors and cognitive styles that a given culture, at a given moment, has decided to treat as normal. As one Consortium member put it: "What's considered neurotypical is what society deems neurotypical. Somebody said so, and they had the power to move it forward." Neurocognitive diversity is a more accurate description, but not commonly used among educators and parents. For this reason, we kept both neurodiversity and neurotypical in this paper's title—not because we embrace the terms, but because they are necessary for a layperson's recognition.

Reframing this has significant implications. If neurotypicality is a moving social target rather than a fixed biological standard, then masking is not a burden unique to neurodivergent

individuals. It is a universal human experience. We all adapt our presentation to context. The difference is that for neurodivergent individuals, the distance between their natural cognitive expression and the demanded performance is greater, the adaptation more consuming, and the cost more severe.

The concept of modalities is useful here: the idea that each of us moves through different cognitive and behavioral modes depending on the situation—a parent mode, a professional mode, a social mode. These modes are, in a meaningful sense, masks. The neurodivergent individual is not the only one who masks. As Billy Joel wrote in "The Stranger" (1977): "We all have a face / That we hide away forever / And we take them out and show ourselves / When everyone has gone." [14] What varies is the (physical, mental, and emotional) cost of wearing them.

"The human right to not be your brain," a phrase that emerged in Consortium discussion, gestures at what is at stake. Mindfulness traditions, polyvagal theory, and contemporary neuroscience all point toward a similar insight: that the capacity to observe one's own cognitive state, rather than be consumed by it, is a learnable and liberating skill. It is also, the Consortium argues, a right, and one that our current institutional and professional architectures systematically deny to neurodivergent individuals by demanding constant performance of a self they are not.

Philosophical question: What is the true cost of conformity, and who actually pays it?

PART IV

Navigating Cognitive Load: Neurodata Analytics and the Promise of Data-Informed Interventions

The Distinction That Matters: Mental vs. Physical Fatigue

Conventional performance management tracks outputs: tasks completed, hours worked, targets met. It treats the worker as a relatively stable input whose capacity is a given. Because it treats

capacity as fixed, the model fails neurodivergent individuals for a reason that is obvious once stated and yet is almost never stated. Mental fatigue and physical fatigue have different causes, follow different time courses, and respond to different interventions.

A neurodivergent individual who has spent eight hours in a meeting-intensive environment may be physically rested but cognitively depleted. Although they are not tired in the ordinary sense, they may need to stop because the cognitive work of masking, social processing, and sensory management has drawn down a resource that does not replenish easily inside the workday. A manager who observes performance degradation at 3pm and concludes "they're not working hard enough" or "you just need a cup of coffee" has misread the situation entirely. This distinction matters beyond the workplace: a student who has spent a full day navigating four courses, each with different professors, formats, and implicit expectations, may appear disengaged by late afternoon not because they lack motivation, but because their cognitive resources have been depleted by the cumulative cost of switching between modes. Mental fatigue also affects capacity and output—a factor that traditional attendance and participation metrics entirely miss.

Neurodata analytics, the application of data science tools to the measurement and interpretation of cognitive and neurological signals, offers a possible route to making this distinction legible to people and systems that currently cannot see it. The reframe matters. Where conventional metrics record underperformance, a load-aware measurement may instead reveal over-processing, which is a different phenomenon calling for a different response. We should be careful with the strength of that claim. It is a hypothesis about what better measurement would show, and it is not yet a finding. Section 4.3 sets out what would have to be true before we could assert it.

Emerging Tools and the Consortium's Work

Cognitive load measurement tools that combine physiological and behavioral signals are beginning to make some of these distinctions visible. Technologies in this space aim to estimate cognitive state in something close to real time and to separate engaged performance from harmful overload. Their present accuracy at that task is an open question, and Section 4.3 takes it up directly. Separately, AI-enabled support tools are showing early promise as executive function scaffolds: helping neurodivergent learners and workers manage planning, task initiation, and organizational demands so that less capacity is consumed by the overhead of keeping up and more remains for the work itself.

The potential scale is worth stating carefully, because the strongest evidence available to us is testimony rather than measurement. One Consortium member, herself neurodivergent, reports that AI assistance recovered roughly five hours per day previously lost to executive function paralysis. We include that figure as first-person testimony and not as data. It rests on a single self-report, without a baseline period, a defined measurement protocol, or a comparison condition, and we would not accept it as evidence from anyone else. What it does supply is a hypothesis worth testing at scale: if AI assistance reliably lowers the executive function tax on a daily basis, it should also reduce the conditions that generate masking and accelerate burnout. Whether it does so is an empirical question that the Consortium has not yet answered.

Consider a student-athlete balancing a full academic schedule with practices, travel, and games. When that student reports mental fatigue, conventional systems see absence, missed deadlines, or declining grades—outcomes rather than causes. A data-informed approach would recognize what coaches are beginning to track with physiological monitoring tools: fatigue is measurable before it becomes failure. The same principle applies to any student carrying a high cognitive load—whether from neurodivergence, work obligations, caregiving responsibilities, or

the cumulative effect of constant social and academic mode/code-switching. Data can shift the response from reactive accommodation to proactive support.

The term ‘mode’ here refers to the behavioral and cognitive context a person occupies—academic, professional, parental—rather than to learning modalities like auditory or visual instruction. ‘Mode/code-switching’ describes the full range of contextual shifts people make throughout the day, each carrying its own cognitive cost.

If these tools prove out, the implications for neurodivergent workers and learners are considerable. Each of the following is written conditionally on purpose:

- A student whose cognitive load data shows sustained overload during final exam week may not be failing at all, and may instead be a candidate for a specific, data-informed intervention.
- A security analyst whose cognitive load spikes during team meetings but stabilizes during solo analysis tasks is probably not a person who draws energy from group settings. That pattern is information about the environmental conditions under which the analyst does their best work.
- An employee or learner whose burnout trajectory is visible in longitudinal cognitive load data before they consciously experience burnout can receive support before the crisis point.

The Consortium continues to explore AI-enabled support tools—including intelligent tutoring systems and on-demand academic coaching interfaces—as instruments that can provide cognitively appropriate support at moments when neurodivergent learners are most stretched. The goal is not surveillance but scaffolding: meeting the learner where their cognitive state actually is, not where the syllabus—or courseload—assumes they should be.

Measurement Before Inference

Everything in the preceding section rests on a premise that has not been established: that cognitive load can be measured well enough to act on. Before the Consortium recommends that any institution build programs on these tools, we owe readers a candid account of how far the measurement science has actually come. There are three problems that need to be addressed. An additional challenge is that neurodivergence varies so substantially from person to person that producing a single valid measurement model may prove exceptionally difficult. Many factors shape cognitive capacity and information retention at any given moment: energy levels, physical state, the cumulative cost of prior masking, and the environmental demands of the day. The "spoon theory" framework, commonly used in autistic and chronic illness communities [15], captures this intuitively: each person begins the day with a finite number of spoons, and every demand—social, cognitive, sensory—draws from that reserve. Any measurement model that ignores this within-person variability will systematically misclassify individuals.

The first is construct validity. Cognitive load is a theoretical quantity rather than an observable one, and every instrument that claims to measure it is in fact measuring a proxy. Systematic reviews of the physiological literature report that these proxies respond to workload but disagree with one another, and that a measure sensitive to load in one task often fails in the next [16,17]. When several instruments claim to capture the same construct and return different answers, at most one of them can be right. Any claim resting on a single proxy inherits that uncertainty whether or not it acknowledges it.

The second problem is inference from groups to individuals. Load models are typically calibrated on aggregate data and then applied to a particular student or employee, a move that is valid only under assumptions the data rarely satisfy. Work across psychology has repeatedly found that structure observed at the group level does not reproduce at the level of the individual [18,19].

For a population defined by divergence from the population mean, this is not a technicality. A model calibrated largely on neurotypical participants and then applied to a neurodivergent individual is being asked to extrapolate precisely where it is weakest.

The third problem arrives when a continuous estimate becomes a decision. Any threshold that converts a load estimate into a flag generates false positives and false negatives, and their relative frequency depends on the base rate of the condition being detected at least as much as on the quality of the instrument [20]. Detectors that look accurate in validation produce mostly false alarms when the target condition is rare. The two error types also carry asymmetric costs. A false positive that triggers an offer of support costs a wasted conversation. The same false positive entering a personnel file costs someone a career. Deployments should therefore be designed around that consequence structure rather than around headline accuracy.

For these reasons the Consortium holds that neurodata claims should meet the standards expected of any measurement system entering consequential use. Before adopting a tool, we would ask four things of it:

- Reliability and validity evidence drawn from a sample that includes neurodivergent participants, rather than a general-population sample assumed to generalize.
- A stated comparison condition, so that improvement is measured against something specific rather than asserted.
- Per-individual calibration, with per-individual error rates disclosed to the person being measured.
- A documented consequence structure naming which decisions the output may inform and which decisions it may not.

Holding this line has a cost. It slows adoption, and it will occasionally mean declining a tool that would have worked. We think the trade is worth making. A field that oversells

cognitive measurement now will spend the following decade defending itself rather than building, and the people who would pay for that failure are the same people this work exists to serve.

The Ethics of Neurodata

The promise of neurodata analytics carries corresponding ethical obligations that the Consortium takes seriously and that a philosophical treatment of this topic cannot ignore.

Cognitive data is among the most intimate data a person can generate. Whether neurodata becomes an informative tool for individual support or a tool of institutional control is not a technical question; it is an ethical one. It depends entirely on who owns the data, who controls access to it, what decisions it informs, and whether the individual whose data is collected benefits from its use.

The Consortium proposes that any ethical deployment of neurodata in educational or workplace settings must satisfy at minimum these conditions:

- Informed consent that is genuine (not buried in onboarding paperwork) and revocable.
- Individual ownership: the data belongs to the person who generated it.
- Benefit directionality: data use must primarily serve the individual, not the institution or employer.
- Interpretive humility: cognitive data is probabilistic and contextual rather than deterministic. It should inform human judgment and never replace it.
- Individual-level warrant: no inference about a specific person drawn from a group-calibrated model without evidence that the model holds at the individual level.
- Disclosed error rates: the person being measured should be told how often the system is wrong and in which direction, in terms they can act on.

- Restricted use: cognitive data barred by written policy from hiring, promotion, discipline, and termination decisions, rather than left to institutional discretion.
- Expiration: cognitive data should have a retention limit, since a load estimate from three years ago describes a person who no longer exists.
- Secure storage: cognitive data is among the most sensitive personal information a person can generate. It must be stored with strict security protocols, limited access controls, and clear written policies governing who may view it, under what conditions, and for what purposes, along with clear and permanent deletion policies when consent is revoked.

A neurodata program that meets these conditions could transform the experience of neurodivergent learners and workers. One that does not will become a sophisticated mechanism for discrimination wearing the vocabulary of care, and it will be harder to challenge for being well intentioned.

Philosophical question: How does a shared system that centers universal design for learning honor its obligation to all cognitive beings — and how do we ensure that the data we generate serves human flourishing rather than institutional convenience?

PART V

Synthesis: Toward a Philosophy of Cognitive Equity

The Common Thread

Four domains have been examined in this paper: higher education access, universal design, the masking tax, and cognitive load. Each points to the same underlying condition: our dominant institutions were designed for a statistical median that excludes a substantial minority of the people who inhabit them.

This is not an accusation. It is a description of how institutions work. They encode the assumptions of their designers, and designers have historically been drawn from a relatively narrow cognitive and demographic range. The result is systems that work reasonably well for people who resemble their designers and progressively less well for those who don't—the biases are baked in.

What is new is our capacity to see this clearly. Neuroscience has given us the tools to understand cognitive diversity as a biological reality, not a behavioral failing. Data analytics gives us the tools to measure its effects. Philosophy gives us the tools to ask what follows from that understanding.

Cognitive Equity as a Philosophical Commitment

The Consortium's discussions have converged on a thesis that is at once simple and radical: true inclusivity is achieved not by changing the individual to fit the system, but by redesigning our institutional, pedagogical, and workplace architectures to celebrate and support cognitive variance. This is not a call for lowered standards or reduced rigor. It is a call for different architecture, one that treats cognitive variance as a feature of human diversity to be designed for rather than a deviation to be corrected.

The Consortium proposes cognitive equity as the organizing principle for what follows. We define cognitive equity as the commitment to designing educational and professional environments in which cognitive difference is neither a disqualifier nor a source of invisible tax, but instead a recognized, valued, and incorporated dimension of human diversity. Not an afterthought, and not seen as "other".

Cognitive equity does not require that all minds perform identically. It requires that our systems stop extracting disproportionate cost from the minds that differ from the design

assumption. It requires that we ask, at every point of institutional design: who is this for, and who does it exclude?

At its core, this is a philosophical argument rather than a policy one. It asks us to revise a foundational assumption about what it means to be capable, to be intelligent, to be worthy of inclusion. It asks us to extend to cognitive diversity the moral intuition we have extended, with difficulty and still incompletely, to other forms of human difference: that difference is not deficit.

What Changes If We Take This Seriously

The practical implications of a genuine commitment to cognitive equity are significant. Some are immediately achievable; others require sustained institutional will. The Consortium offers the following as a non-exhaustive map of what change could look like:

Higher Education

- UDL implemented as institutional philosophy, not add-on program
- Dedicated neurodivergent cohort support
- AI-enabled Tier 1 support tools available to all students; proactive transition support
- Faculty development that addresses neurodivergent learning profiles as a standard competency

Workforce

- Environmental flexibility (remote work, asynchronous communication, sensory accommodations) recognized as performance infrastructure, not perks
- Neurodivergent-aware management training
- Reduction in mandatory masking through explicit cultural norm-setting
- Cognitive load data used to inform working conditions, not surveil performance

Research and Publications

- Accessible formatting as a standard (not a concession)
- Interdisciplinary and practitioner voices included alongside academic voices
- Lived experience research treated as valid evidence
- AI-assisted tools for cognitive accessibility in publication and consumption

The Consortium itself models one version of this: a group that brings together academic researchers, cybersecurity practitioners, parents, educators, and individuals with lived neurodivergent experience, finding a richer set of questions in their disciplinary and cognitive diversity than any single field could generate alone.

Conclusion: Why This Matters

Socrates famously claimed to know only that he knew nothing. What made the profession philosophical rather than merely self-deprecating was its use as a starting point for inquiry instead of an end. The Consortium's questions about neurodiversity and institutional design are offered in the same spirit: not as settled conclusions, but as rigorous questions that we believe the field needs to be asking.

We know that neurocognitively diverse individuals exist in substantial numbers in our educational and professional institutions. We know that those institutions were not designed with them in mind. We know that the cost of this mismatch is borne by individuals who already navigate a more difficult path. And we know, now, that we have philosophical, empirical, and technological tools with which to begin repairing the mismatch.

What we do not yet know is whether institutions have the will to use those tools. That is a question this paper cannot answer. But it can make the question harder to ignore.

The Barton College Neurodata Analytics Consortium will continue its biweekly inquiry. We invite readers to join the conversation: researchers, practitioners, students, parents, policymakers, and anyone who has ever felt that a system was not built for the way their own mind works.

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Appendix A: Key Terms and Frameworks

Universal Design for Learning (UDL): An educational framework that builds flexibility and accessibility into curriculum and assessment design from the outset, offering multiple means of representation, engagement, and expression. Contrasted with episodic accommodation models.

Masking / Camouflaging: The conscious or unconscious suppression of neurodivergent traits to appear neurotypical. Associated with elevated cognitive load, accelerated fatigue, burnout, and long-term health consequences.

The Masking Tax: Consortium terminology for the cognitive and biological resources diverted from productive work into the maintenance of neurotypical appearance. Analogous to a productivity tax paid involuntarily by neurodivergent individuals in non-inclusive environments.

Cognitive Architecture: As used by this Consortium: the totality of internal neurological profile, environmental conditions, and acquired adaptive structures that shape how a neurodivergent individual processes, learns, and performs. See also: “harness” metaphor (Part II).

Cognitive Equity: The Consortium’s proposed organizing principle: the commitment to designing educational and professional environments where cognitive difference is neither a disqualifier nor a source of invisible tax, but a recognized and valued dimension of human diversity.

Neurodata Analytics: The application of data science and measurement tools to cognitive and neurological signals, for the purpose of understanding and supporting cognitive performance. Includes physiological monitoring, behavioral data, and AI-enabled support systems.

Polyvagal Theory: A neurobiological framework (Stephen Porges) describing the autonomic nervous system's role in social engagement, self-regulation, and stress response. Referenced in Consortium discussions as a lens for understanding internal self-awareness as a learnable, teachable skill.

Executive Function: A cluster of cognitive processes including planning, task initiation, task completion, working memory, cognitive flexibility, and inhibitory control. Frequently affected in ADHD, autism, and other neurodivergent profiles; critical for the college transition.

Appendix B: A Note on Process and Authorship

This paper emerged from eighteen months of biweekly conversation within the Barton College Neurodata Analytics Consortium. The consortium meets every two weeks to discuss neurodiversity, neurodata, analytics, and related topics from a range of disciplinary and experiential perspectives.

The paper topics were identified through a process that itself models the consortium's approach to AI: collected Zoom transcripts from prior meetings were processed by Gemini (Google's large language model, for which Barton holds an institutional license) using a prompt designed to surface paper topics suitable for the Philosophy and Reason journal. The resulting topic suggestions were then reviewed, debated, selected, and refined by consortium members in a subsequent meeting. AI organized; humans decided.

The paper outline was developed from the transcript of that meeting by a collaborative AI-human process—again, using AI for organization and human judgment for substantive direction.

All arguments, framings, interpretations, and philosophical positions in this paper represent the views of consortium members, not of any AI system.

The Barton College Neurodata Analytics Consortium meets every other week. Inquiries and collaboration invitations are welcome.