EDITORIAL
Reimagining Neuroscience Education: Teaching "Life" as a Step Towards Social Justice

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> Education must not simply teach work–it must teach Life – W.E.B. Du Bois, 1903

Education is a pillar of social justice. The historian, sociologist, and activist W.E.B. Du Bois understood this well. Over a century after he wrote these words, committing to a pedagogical practice that does not reduce our lives or social worth to labor, productivity, or (capital) accumulation remains of the utmost urgency. When entering the classroom or lab, there is no escape or break from the (oft-unjust) social world. Therefore, teaching "Life" equips students to grapple with the fact that knowledge and social life, including the politics of living, are inseparable.

Still, you may wonder, "What does that mean for neuroscience?" An undergraduate neuroscience student asked me a similar question during a guest lecture. The course professor assigned my book, *Conviction* (Rollins, 2021a), and invited me to give a guest lecture to the class. During my visit, this brave student admitted that they initially questioned the professor's choice in reading the book: "Why would an undergraduate neuroscience class need to read this?" they queried. I mulled over that question for a while because I suspected that many neuroscientists also questioned why neuroscience should engage with (social scientific or humanist) knowledge, traditionally outside the field. My attempt to address this question sits at the heart of my 2023 Faculty for Undergraduate Neuroscience (FUN) Workshop.

WHY THE SOCIOLOGY OF RACE MATTERS

Neuroscientists should read this article for at least three reasons. First, I hope this article serves as an invitation for *reflection*. We must fully know, explore, or teach aspects of (neurobiological) Life by engaging with sociological aspects of power and inequality. I invite readers to reflect—seek out and sit with—sociological concepts or "jargon" they are unfamiliar with. This talk is not just an introduction to race/racism, and readers should not expect a definitive answer to "what should be done." Such simplicity minimizes the long and richly generative history of critical approaches to race/racism and the enduring struggles for justice that we continue to witness.

Second, this article is an invitation for *discussion*. Similar to reflection, discussion requires some personal introspection. The emphasis here, however, is on pushing the audience to think about taking action. It calls for neuroscience to not only discuss what racism is or what it looks like in their field, but also to address how academia has failed to fully tackle it. Neuroscientists are urged to discuss with colleagues (especially those in the humanist and social scientific disciplines) how their institutions can better recognize and counter inequality and race/racism through teaching, service, and research. The article stresses the need for critical interventions that are open to scrutiny and welcome improvement when necessary.

Finally, the article highlights the importance of a plan for moving toward social justice. Thus, it invites readers to *imagine* a different kind of neuroscience–one that asks critical questions about racial injustices both within and outside the lab and creates space for speculation. Achieving this vision will require a critical race perspective and the cultivation of a new sense of speculation. Neuroscientists are urged to envision a new kind of neuroscience education, embracing Du Bois's lesson about teaching Life and demonstrating the productivity of a scientific framework of social justice.

Yet, the challenge of imagination is that it requires both critical reflection and discussion, too. As we envision what neuroscience should be, it is essential to simultaneously reflect on and discuss how the practices of empirical science and the celebration of scientific ingenuity may overlook or rationalize systems of power and inequality in society. To put this in a question form: *How do we make sense of the "progression" of biological sciences towards a "race-neutral" or "racial justice" stance, on the one hand, and the continual instances in which the success of these scientific innovations are contingent upon, remake, and deepen social inequality, on the other?*

TOWARDS SOCIAL JUSTICE

Building on and hoping to fuel these instructions further, my talk sought to reframe this energy into action that can help push us toward a more antiracist vision of neuroscience that starts with our teaching. I focused on three areas: the need to talk about race, the need to rethink how to discuss scientific racism, and the need for collaborative steps toward antiracist neuroscience.

How to Talk about Race

First, I stressed the need to understand fully the social construction of race in neuroscience. Many neuroscientists today acknowledge and even embrace that race is a social and not a biological concept. There seems, however, to be much confusion and disagreement about what race as a

social construct means or should mean for the mind and brain sciences (Kaiser Trujillo et al., 2022). Indeed, race is not (neuro)biologically determined, but the effects of race are real. As a classroom intervention, this starts with teaching race as a *social process.*

Race "is a socio-political practice, a system of power that has been historically woven into and made culturally visible through the constructed interdependence between supposed obvious phenotypes of difference and the political governance of society based on unequal interest and values" (Kaiser Trujillo et al., 2022). But instead of memorizing definitions of race like this, I teach the social construction of race as a set of characteristics in my classroom. As a social process, these characteristics capture how race is a) always political, b) not a biological (genetic) characteristic, c) produces tangible social, economic, and psychological harms, d) changes across time and space, e) works through power relations, and f) structures our social actions, made through our daily experiences.

Scientific Racism Today

Second, I emphasized the need to call out today's scientific racism. Recent evidence suggests that EEG technologies do not work well on coarse or curly hair types (Parker and Ricard, 2022). This finding underscores the need to reimagine how we construct neuroscientific technologies in the first place, which may omit the lived experiences of the "other"—those individuals who do not fit nicely into our concept of "normal." Another example comes from the reliance on face recognition tasks. It has become clear that facial recognition software and technologies can reproduce racist stereotypes and revitalize existing systems of oppression (Benjamin, 2019a; Nkonde, 2019). Neuropsychological research on implicit racial bias that uses facial image stimuli suggests that race effects in neural processing underpin racial bias for adults and children (Golarai et al., 2021; Kubota, 2024). These data stimulate new questions and concerns about the unsuspecting ways that the use of facial recognition tasks in all neuropsychological research may tacitly encode racial meanings/bias into the findings. How can we be sure that the scanner is not detecting neural signatures for racial bias instead of our targeted emotional or behavioral response, or what if such targeted neuropsychological states are also race-related?

Even innovative attempts in neuroscience to prioritize ideas like neuroplasticity can be subject to misrecognizing the tacit production of racism. This research aims to help demonstrate how social inequality, specifically poverty, impacts brain development. Yet, as Pitts-Taylor (2019) argues, studies exploring the intricate relationships between neurobiology and poverty may enhance deterministic-like rationales and policies, undermining the intention of many of its researchers.

We should celebrate that modern neurobiological studies refute the idea that race gives rise to different or lesser neuro-phenotypes (Pitts-Taylor, 2019; Rollins, 2021a). Such models, however, do not eliminate the potential for scientific racism. Pitts-Taylor (2019) warns of the dangers of "biosocial determinism." This form of determinism eschews equating biology to destiny but it can help elevate (neuro)biological explanations for social problems over sociopolitical explanations. Poverty only becomes a scientific target when and if researchers can measure its impacts through brain function and morphology. "Biosocial determinism," therefore, flattens the diverse or intersectional meanings of social concepts (e.g., class or poverty), making them useful only when tied to biological processes; this, Pitts-Taylor notes, is what makes these models ripe vessels for the reproduction of inequality and racism.

In my research, I have observed that scientific racism persists today due to a failure to acknowledge how social inequality influences life experiences. Although the neuroscientists I spoke with avoided using race as a predictive factor in their work, their studies on antisocial behavior failed to incorporate the various ways that systemic racism can impact people's risk for antisocial behavior. It is important to consider how our society determines who is more likely to be labeled a criminal, the presence or absence of policing and surveillance, interactions with the justice system, and ways violence shapes routine experiences. Undoubtedly, all these factors *should* be examined as potential factors when determining risk for behavior. Yet, researchers often view their intricate functions as too complex to put in neurobiological models of antisocial behavior. In this sense, such neuroscientific thinking may further preserve hierarchies of race and racism "through the sheer omission of lived experience" (Rollins, 2021a)—an empirically rooted misrecognition of the social and cultural shaping of embodied risk, experience, or life.

Re-imagining Neuroscience Education for Social Justice

If racism is everywhere and an expected part of everyday life and science, as I contend, what can, and what should we do? Shortly after the summer of 2020, I wrote a piece in *Nature Social Behaviour* titled "Towards an Antiracist (Neuro)science," insisting that a new kind of politic of science is needed to move towards social justice. Drawing upon that talk, my Workshop keynote, I delineated four positions that summarized the lecture's main takeaways and, hopefully, offered initial directions to chart a new path toward social justice through teaching.

Teach the Social Construction of Race as a Process.

My call to teach race is not an invitation to make every research question about racial identity or to transform neuroscience into a new racial science. Instead, consider this call a request to revisit neuroscientific pedagogies to demonstrate why, when, and how scientific explorations remain a productive site of racialization (Duster, 2003). The aim here should be to show our students how and when our understanding of identity (race) becomes inseparable from societal determination and allocation of resources, power, and life chances (racism).

One significant challenge is to educate our students on how race operates even when the concept is not explicitly mentioned. How do we make sense of those moments in which race is not "there"—said, mentioned, or alluded to, but

it is felt and experienced as a material form of inequity? Race can operate in the "absent presence" (M'charek et al., 2014) when researchers misread its socially constructed nature as evidence of it being unreal, a myth, or inconsequential to science and society or confined its significance (its violence) to past "pseudoscientific" explorations. The absent presence of race is also realized in those moments when applications of neuroscientific knowledge—when utilized in social spheres—operate as a prescriptive yet unobserved property of scientific racism.

Recent calls to "ban" race from neuroscientific publications are another example. Simply removing the term race from scientific journals diverts attention away from the way racial meanings are readily reformulated into seemingly more neutral variables, policies, or actions. Similarly, calling out evidence of obvious racist applications of brain data will only provide a partial, if not misleading, intervention for neuroscience. Consider the example above in which "biosocial determinism" can lead to both the rejection of race as a variable in neuroscience and a lack of attention to racism. Furthermore, think about how effortlessly we visualize racialized stereotypes of "criminals" or "terrorists," those we perceive as impoverished, uneducated, or "illegal," and the stereotypes of intelligent, law-abiding, or ordinary citizens. These ideologies are not the results of neurobiological mis-programming but enduring legacies of historical, legal, and sociocultural shaped realities in the US (Duster, 2003; Muhammad, 2010; Obasogie, 2013). Therefore, (mis)readings of the social construction of race leave neuroscientists ill-prepared to combat scientific racism, at the least, and unacknowledged contributors to racial inequality, at the worst.

Teach Updated Critiques of Scientific Racism.

Reimagining neuroscience education necessitates re-engaging with the meaning of scientific racism and troubling the way we empower descriptions like "racist scientist," "intentional prejudice," "implicit bias," and/or "pseudoscientific research" as the most salient indicators of scientific racism. Scientific racism does not need to be deliberate, nor is it a mere interruption in what is otherwise deemed a natural and neutral progression of knowledge (Pitts-Taylor, 2019; Karkazis and Jordan-Young, 2020; Rollins, 2021a; Kaiser Trujillo et al., 2022; Ricard et al., 2023). *Scientific racism can be intentional or inadvertent; it is, above all, the operation of scientific authority to establish, reconstitute, and justify, systemically, racial discrimination, violence, and inequality.* We must teach our students that scientific racism, like systemic racism, operates as an intricate system of oppression that relationally produces and rationalizes seemingly inevitable hierarchies of power.

No doubt forms of social hatred, abuse, and exploitation can lead to and fuel racism, but racism, too, constructs, helping shape the specific sets of material relations, ideologies, and technologies, fueling new and old forms of racial violence as appropriate, necessary forms of knowledge, governance, and sociality. As Ruha Benjamin (2019a) reminds us, we must "retool" our teaching on racism to help students understand that it is not accidental, an individual property, or an aberration. Instead of only approaching racism as an atypical by-product of purposeful bigotry, Benjamin (2019b) argues that "racism is productive. Not in the sense of being good, but in the literal capacity of racism to produce things of value to some even as it wreaks havoc on others."

Teach the Politics of Science.

Neuroscience, like any form of knowledge, is not apolitical. Acknowledging the politics of science implies that neuroscience education wrestles with and conveys how technologies and knowledges of the brain are deeply implicated in, a coproducer of (Jasanoff, 2004), social (in)equality and political order. To acknowledge the entwined relationship between science and politics is to reckon with the plasticity of knowledge and its inextricable relationship to social power, especially the use of knowledge in the management, regulation, disciplining, and normalization of social groups to advance or preserve the aims, security, or health of society (Foucault, 1980). Thus, we should clearly outline to students the "unenviable task" (Duster, 2006) that lies ahead: How to develop interventions for the ever-amendable manifestation of racism in neuroscience without endowing race with a false sense of (neuro)biological worth or neglecting how the translation of unracialized neuroscience knowledge and technologies may still revitalize racialized structures of inequality in society?

Increasing representation as a response to the magnitude of racism will not be enough to address its structurally embedded function in society. The struggle for a more just society "involves more than a mere altruistic interest in an alien people," Du Bois (1899) tells us. This is not to minimize the continued struggle to increase historically marginalized populations in research (Epstein, 2007; Reardon, 2017). It is, however, a challenge for neuroscientists, especially tenured faculty, to use their accumulated scientific and social capital to go beyond increasing demographic representation. Instead, help lead the way in remaking diversity, equity, and inclusion (DEI) policies that help actualize the equity, inclusiveness (and justice) portions of the oft-used acronym. Given recent US Supreme Court rulings on race-based admission policies in higher education and the continued attacks upon DEI frameworks, this challenge is even more urgent now.

Teach Students to Dream.

Returning to Du Bois's lessons, I reiterate that to "teach Life" is to help students understand the potential and limits of knowledge systems that are made through and will grapple with systems of racism, sexism, transphobia, ableism, and capitalism. Importantly, teaching "Life" encourages our students to imagine.

Racism works through a kind of social imagination itself. To capture the true impact of racism, we must reassess it as a set of everyday practices that articulate future kinds of hegemonic social relations (Benjamin, 2016). Racism, as Hall (2021) puts it, works as a mechanistic tarot that "fixes" seemingly natural attachments between biology and specific bodies and identities. Therefore, racism is a technology (Benjamin 2016, Chun, 2009) that obfuscates, as it

normalizes, the racial violence/deprivation of everyday life. We must recognize when and how this force blends into and shapes our sense of neutral and virtuous modes of governance, perceived rights and duties, and so-called objective ways of knowing (Roberts and Rollins, 2020; Rollins, 2021a; Hatch, 2022).

The 2023 Workshop was themed "Re-imagining Neuroscience Education." I tried to convey a sense of "reimaging" that recognizes the intricate challenges of scientific racism today while fully embracing the possibility of a different kind of neuroscience that is more equitable, justice-oriented, and socially responsible. To paraphrase Ruha Benjamin again, "Imagination is a battlefield" (Benjamin, 2024) in which the struggle for a new kind of science, technology, and society is forged. The classroom, and even more the power to imagine, to even be in a space where asking questions about a different kind of science, is a revolutionary act that will help transform the (bio)ethical bonds of accountability between neuroscience and society (Rollins, 2021b). Imagining helps us gain confidence and direction to contest how particular sites of knowledge construct truths—racial truths, and, yes, neurobiological truths too—that reconstitute existing power relations in society. I close with the powerful words from Robin D.G. Kelley on the necessity of dreaming—the boundless, more visionary cousin of imagining—as a piercing yet transformative intervention. As Kelley (2002) instructs, "We must tap the well of our own collective imaginations, that we do what earlier generations have done: dream...Without new visions we do not know what to build, only what to knock down. We not only end up confused, rudderless, and cynical, but we forget that making a revolution is not a series of clever maneuvers and tactics but a process that can and must transform us."

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