

“Set Phasers to Love Me!”
Reimagining the Default Settings of Technology and Society

International Society for Technology in Education
Keynote

Ruha Benjamin
Princeton University
www.ruhabenjamin.edu
twitter: @ruha9

Denver, Colorado
June 28, 2016

Good morning! What an honor to be here today with so many incredible educators. The icing on the cake is taking the stage after Mr. Levar Burton—actor and education advocate extraordinaire. It took everything in me not to let my geek flag fly free, and write an entire talk about how much I love *Reading Rainbow*, *Star Trek*, and *Roots*. For your sakes, I decided to just title my comments using a line from Mr. Burton, “Set Phasers to Love Me!” which as you will see, is at the heart of what I want to share with you.

With that, let’s zoom our lens out this morning. For any professional community, it is easy to get so focused on our own narrow corner of the universe and the day-to-day tasks and priorities set by the institutions in which we work. And often quite difficult to step back and reflect on some of the bigger questions— “Why do we do what we do? For what purpose? To what ends? Could and should the way things are currently done, be different?” Professional momentum has a way of creating the impression of inevitability. And so I would like for us to use our time to think as broadly as possible about the purpose of education.

So, Big Picture: There should be little doubt that we are living in a time of crisis. Where most people in the world cannot look to hospitals for health, police for safety, politicians for competence, or schools for true education. If we happen to be among the small subset of the earth’s population for whom this is not true, we can easily observe evidence of the larger crisis if we choose to keep our eyes open. And what we see is a world at war with itself—not just literal battles, of which there are many, but all manner of social struggles over material and symbolic resources—in which the naturalized hierarchies between races, genders, classes, and countries are being questioned and confronted—*as they should*.

At the same time, the very idea of a solidaristic society is everywhere undermined or deemed “unrealistic.” This friends, is a CRISIS, the etymology of which means a “turning point.” In this context, how can we make our schools laboratories of democratic participation, rather than sites where inequality is reproduced? Where not only is the potential of each *individual* realized, but where we experiment with technologies of love, reciprocity, and justice?

Our role as educators, I am sure most of you would agree, is to incubate a better world in the minds and hearts of our students. And let’s face it: this potential is powerful, and even dangerous. Which is one of the reasons why, I believe, the teaching profession is always under such consistent and virulent attack, undermined at every turn in terms of autonomy, respect, and resources. Because teachers, if actually unified and empowered, can change the direction of history.

It is not scientific and technological development in and of itself we have to thank—and here I depart from Dr. Kaku. Rather it is the revolutionary potential of an awakened citizenry that demands more of itself. This awakening has and will come just as much from *poetry* as from a *petri dish*. But... because it is harder to profit off of a poem that touches peoples' souls than a product that touches their pocket books, we continue to devalue the arts and humanities... to our own detriment.

Schools are places where the next generation either comes alive with possibility, OR is crushed by the weight of odds stacked against them. And in many societies, these two processes co-exist: children living in parallel realities where some are nurtured and others are crushed. As we proceed, what I want to suggest to you, is that adopting technology without wrestling with this parallel, apartheid-like reality, ensures that 10, 20, 30yrs from now... the gap in educational opportunities and life outcomes will be even wider than today. To do nothing, is to choose the default settings of this failing system. And we should acknowledge from the outset that engaging these issues is not for the faint of heart. It is life long work, with no magic fixes.

The badass public scientist Neil deGrasse Tyson said it best: *“In science, when human behavior enters the equation, things go nonlinear. That's why Physics is easy and Sociology is hard.”* As a sociologist, I appreciate the props. And what I want to know from you is whether you're ready to dig in to some of these hard issues? Okay, so I've structured my comments loosely in four parts, which you can think of more as provocations rather than a traditional talk with a linear argument.

First, I'll briefly share some of the personal and professional stakes that motivate me to think about questions at the nexus of innovation and equity, and I will encourage us to take imagination seriously, as a locus of struggle and possibility. Then, I'll discuss my central proposition that when it comes to fostering equity in education, this requires we think not only about ACCESS to technology, but also about its DESIGN—who gets to participate in imagining and creating the world we collectively inhabit?

Third, building on this idea of designing alternatives to the status quo, I will unpack what it means for us to prepare our students to either *“play the game of life”* or *“hack the current system”*—metaphors that can help us distinguish between personal and collective empowerment. Finally, I will discuss five ways (using the acronym ALIFT)¹ in which we all routinely limit our thinking about innovation and equity and I will encourage us to work together to stretch our collective imagination beyond what seems “realistic.”

PART ONE

One of the things that I experience on a routine basis during my research on biotechnology is how proponents of these fields don't limit themselves to things that are deemed “realistic.” As one journalist reporting on the \$3 billion-dollar California Stem Cell Initiative put it, “Imagine cardiac cells, beating in a petri dish, being used to form human tissue that might be used to replace damaged heart muscle.”² *Imagine*, indeed! Scientific inquiry, it turns out, is situated as much in the realm of imagination, as it is the realm of reason. And you saw that first hand with Dr. Kaku's talk on Sunday.

But let me ask you this—*why is that we can imagine growing heart cells from scratch in a lab, but not growing empathy for other human beings in our everyday lives, and even more, in our institutions?* For many, the idea that we can defy politics as usual and channel human ingenuity toward more egalitarian forms of social organization—that's utterly far-fetched! Our visions of the future are often animated by shiny, amazing new technology with hardly any mention of the quality of our relationships

with one another in those speculative visions. Instead, our collective imaginations tend to shrink when confronted with entrenched inequality and injustice, when what we need is just as much investment and innovation in our *social* reality, as we pour in to transforming our material reality. This is the kind of thing I have in mind when I say *our classrooms must become “laboratories” for social change*.

I first started thinking seriously about these issues when I was 14 years old. My family moved from Conway, South Carolina to the Marshall Islands in the South Pacific, because my parents were asked to serve on what was akin to the board of education for the Marshallese government. Soon after arriving, I discovered my main source of entertainment in half a dozen boxes containing my dad’s old VHS tapes, where I found recordings of every episode of *Star Trek: Next Generation*, and quickly got hooked as a life-long trekkie. (*I promise you, this is not a digression, so stay with me!*) Years later, I routinely encounter people in my research who profess that Star Trek and other speculative accounts of the future initially inspired their work. A few examples:

A recent news report about the US government’s Biological Office at the Defense Advanced Research Projects Agency, described it as “a small, secretive Pentagon outpost that has more than a whiff of Star Trek about it. Its mission: Invest in research that sounds like science fiction.”³ In February 2015, a Belgian entrepreneur who designed the first functioning hand held that measures all patient vitals and provides a complete echocardiogram reading, told CNN that “Star Trek was more than just a movie, it was a business plan.”⁴ Likewise, the CEO of a Houston-based company that’s working on similar non-invasive devices to regenerate bones and muscles, commented, “It’s not just science fiction anymore. All indications are that 21st century life sciences will change dramatically during the next several decades...”⁵

And as with most predictions coming out of the biotechnology industry, change is usually presumed to mean better than the present, but “better” for whom and by what measures, are questions that such forecasts rarely interrogate. So considering how yesterday’s fiction so often becomes tomorrow’s blueprint, I have slowly come to grips with the importance of imagination in the design of technology.

Now keep in mind that my introduction to the world of futurist technology in Star Trek took place in the Marshall Islands. Which for those who don't know much about it, was the site of US nuclear testing in 1954, where in the 1990s I got a close up view of the environmental, social, and public health catastrophe that still impacts peoples lives there today. On a number of occasions, I travelled from the Marshallese capital of Majuro, where my family lived, to visit neighboring islands.

The two that made the biggest impression on me was Kwajalein, a US army installation and manufactured suburbia, which was occupied almost entirely by military personnel and their families who enjoyed golf courses, Baskin Robbins, and a long list of amenities. And the neighboring island of Ebeye, where islanders who were forced off of Kwajalein to make room for the army base, now reside in a crowded shantytown that contains very little vegetation. What’s more, Ebeye residents require a special pass to travel to Kwajalein for work, and many of them barely subsist off of the small compensation for the nuclear fallout and military dislocation. Needless to say, the health of Marshallese suffer dramatically, both from the direct fallout of nuclear testing but also because of the deeply unequal social and economic conditions of their present lives—which explains the high rates of chronic and infectious diseases including a TB rate that’s 23 times that of the United States.⁶

In hindsight, I think my work as a sociologist of science, biotechnology, and medicine, stems from these early observations of how inequality is engineered. In many ways, the Marshall Islands is a metaphor for modernity, in which the health and wellbeing of some is predicated on the immiseration of others. In a world such as this, we can’t talk about engineering the *material* world without also discussing

the ongoing engineering of the social world, and without careful attention to whose version of the “good life” is being imagined and whose is being ignored and even devoured through such lopsided investments.

So when I speak of “reimagining the default settings of technology and society,” this is not a rhetorical flourish. I want us to take seriously the notion that there are, in fact, competing imaginaries that are fighting over our collective future. The incredible filmmaker, Alex Rivera, put it best: “*The battle over real power tomorrow begins with the struggle over who gets to dream today.*”⁷ Which says to me that we must wrestle with the unevenness of imagination in educational innovation, recognizing that the power to make our dreams come true — “to boldly go where no woman has gone before!” — is distributed in radically unequal ways.

For instance, most of you are familiar with this story as it made international headlines last year. On Sept 14th, 14yr old Texas teenager Ahmed Mohammad, shown here, arrived at school excited to show his teacher a project he had been working on over the weekend. Using a small circuit board, power supply and digital display, he designed and housed a clock inside his pencil case. But rather than appreciate his ingenuity and resourcefulness, by the time his 6th period class rolled around, the school principal and a police officer arrived to arrest Ahmed, accusing him of making a hoax bomb. He was suspended from school, his fingerprints taken, and was reportedly interrogated by five different officers.

As many commentators have pointed out, it is doubtful Ahmed would have ever been arrested for his homemade clock if his name were say “Adam.” And while everyone from Mark Zuckerberg to President Obama have expressed support, the story is indicative of a much broader pattern that rarely has such a happy ending. It illustrates that *the social and political milieu can either foster or stifle innovation*—Islamophobia in this case dampening a young inventor’s ambitions. When fear and discrimination run amok, as they do in every corner of the world, this doesn’t just harm those who are directly targeted, but *all* of us who are denied the fruits of knowledge that “The Ahmeds” of the world are eager and ready to share.

Let’s remember that for many young people, “technology in schools” looks more like this (photo of metal detectors)—where a certain vision of who they are and what they are capable of is embedded in the very architecture of the place that is supposed to nurture their potential. And kids aren’t stupid! As they get in trouble for fighting, they see the politicians who govern their lives glorify wars over resources and ideology. We should stop to ask—where are the “Zero Tolerance Policies” for Congress? A deep-seated hypocrisy which, if not exposed through education and the building of an active citizenry, will continue to persist.

As it stands, the default settings of our society undermine the potential and brilliance of oppressed youth. Exhibit A: Last week it came to light that when you run a simple Google Search and type in “three black teenagers” the images that pop up on your screen are dramatically different than when you search for “three white teenagers,” we are presented with mug shots for black youth and something that looks like a Gap ad for white youth, which ultimately reinforces popular stereotypes about black criminality and white innocence.⁸ This is part of a larger process that analysts call “algorithmic discrimination”—lets remember, algorithms are a series of instructions written and maintained by programmers that adjust based on human behavior, and are thus seeded, through and through, with biases and assumptions.

For example, researchers found that “Google’s online advertising system showed an ad for high-income jobs to men much more often than it showed the ad to women.”⁹ “The Princeton Review’s prices for online SAT tutoring shows that customers in areas with a high density of Asian residents are often charged more... From retail to real estate, from employment to criminal justice, the use of data mining,

scoring and predictive software, is proliferating... And when software makes decisions based on data, like a person's zip code, it can reflect, or even amplify, the results of historical or institutional discrimination."¹⁰

The good news is that those who study algorithmic discrimination assure us that it is possible to design these programs from scratch to be aware of such racist and sexist biases.¹¹ The key here is that, it takes time to do this, which runs counter to the rush to innovate ethos of marketing campaigns. So as *citizens* (not simply consumers), it is in our interest to actually demand slower, and more socially conscious, tech development.

PART TWO

When we think about what it means to integrate technology in education, I want us to move beyond questions of "access," however important, and to think carefully about questions of design—*by whom and to what ends?* Whose imagination is at the heart of new technology? We need to develop, in ourselves and in our students, a kind of *socio-technical literacy* that can penetrate the shiny advertisements being sold to us.

Which brings us to the next story, to help us reflect further on whose interests and values get integrated in the design process. Now that I live in a region of the US with much longer and colder winters than where I grew up, I jump at every opportunity to soak in sunshine whenever I travel. So during a recent visit to California, I ended up on this bench located across from one of my favorite outdoor markets, hoping to lie in the sun for a few minutes before carrying on with the business of the trip.

But I quickly realized that I couldn't lie down, because whoever designed this bench put armrest dividers at regular intervals. And while there are a number of possible reasons for the armrests, my first guess was this was a deliberate attempt to deter homeless people from using the bench to sleep. And as it turns out, with a little digging I found that benches are only one part of a global phenomenon of "discriminatory design": I came across single occupancy benches in Helsinki. Caged benches in France. And the best example I've come across is this metered bench, where the user actually has to pay to sit down.¹² And while this particular design was originally created by a German artist to get us thinking about precisely these issues of the privatization of public life, different cities around the world have actually adopted the idea as a way to deter what they consider loitering in public areas.

As one US government representative said with respect to so-called loiters at bus stations: "*You're not a customer, and our customers come first.*" A statement that would seem to sum up the ethos of many decisions and policies that govern public life, including those in the educational arena. At the heart of discriminatory design is an attempt to create a technological fix for social crises. Whether the crises relates to homelessness, or healthcare, education or public safety, rather than address the underlying social and economic conditions that produce a problem, we design short-term responses that too often locate the problem inside "kinds" of people, like the so-called "loiterer" or, to bring the point closer to home, the "problem student".

With respect to technology in education, the way that we frame questions, the places we go looking for the answers, to the people we consult in the process, who we imagine will benefit from our designs -or- get in the way, are crucial for us reflect on. Another way to put this is to ask: whose voices are missing when decisions are being made about technology in education? Without thoughtful

consideration, it is likely that current forms of inequality based on race-ethnicity, gender and sexuality, class, disability, and nationality, will be (un)wittingly built in to the design of new tools and practices.

PART THREE

How, then, do we prepare our students to engage with these default settings? Do we equip them simply to succeed as individuals, “playing the game” of life? Or, do we teach them how to work together to change the underlying codes that structure their lives and reproduce inequity? And finally, what should be the role of technology in this process? For starters, I want to propose that the common understanding of what counts as technology is far too limited. So that, when we talk of educational innovation we often have material technologies in mind...

But what about the default settings—those unspoken rules and norms that mediate our interaction with one another and the world around us? These social codes include the elaborate systems of stratification that we call class, race, and gender, which were originally designed—not as markers of personal identity—but as tools of classification and control. *What do I mean by this?* I’ll share just a few quick examples of the way that gender ideologies are, at their core, technologies that attempt to hold women in place.

Example #1: Michael Robertson, the Inventor of MP3, was trying to explain the over-representation of men in Silicon Valley, and in trying to justify the status quo, tweeted, “*science tells us men and women are biologically different including their brains and skills.*” Here we have a classic form of biological determinism that allows men to justify their domination over women, with the help of science no less. Never mind those those producing the science up to now have been overwhelmingly male... As it turns out, sexism never let a pesky thing like tautologies slow it down! Example #2: Brittney Mueller, a first time speaker at a premier tech marketing conference, was about to get on stage when, a male attendee reassured her, “*Don’t be nervous! You’re hot! No one expects you to do well.*” Here we have sexism’s most popular prophylactic—patronizing compliments with a dash of humor.

And a final example: in an attempt to respond to the low numbers of women in the tech sector, IBM decided to call its new campaign: “Hack a Hairdryer”, relying on tired gender stereotypes of women as uniquely preoccupied with appearance.¹³ “*Sorry IBM,*” wrote one of many respondents, “*I’m too busy working on lipstick chemistry and writing down formula with little hearts over the i’s to Hack a Hairdryer.*” This last example alerts us to the fact that even our purported solutions to counteract inequality may themselves be seeded with sexism. And its important for us to come to terms with the fact that these are not simply aberrations in an otherwise well-functioning system that we can simply patch up with a good program.

Rather—sexism, racism, and class domination are coded in to the very operating structure of our society. So that our efforts to embed new values in to this system will require we work overtime and with as much diligence as those who propagate tools of exclusion and marginalization. As educators, this means we can’t simply prepare our students to “succeed” in the world as it is—playing and winning at the game of life. We have to develop and hone new social technologies that will help transform the status quo. Here I’ll give you a sense of what I have in mind.

In the social sciences, there’s this concept you may be familiar with, called code switching. This is a term used to describe something many people do to some degree, as we navigate different social and cultural spaces by changing the way we speak and interact to fit in—*social lubrication* we might call it, that we learn to do from a very young age. This code-switching is one of many ways in which we “play

the game” of life—garnering respect and advancing in school and work life (that for many of us tends to be a predominantly middle-class white and masculine settings) all while maintaining connections to community, friends, and family outside of work. But accepting this as “just how it is”, the concept of code-switching tends to hide something rather crucial: which is that not all codes were created equal because not all social milieus can exert the same power, rewards and *consequences*, over those that conform and those that do not.

This is what makes the work of Columbia University professor, Dr. Chris Emdin, so relevant to our conversation: his Science Genius program utilizes the power of hip hop music and culture to introduce youth to the beauty of science.¹⁴ Rather than force students to turn what they value off, when they enter the classroom, the classroom changes to meet them on their cultural turf. Through this, not only are they valued as whole people—for who they are in and *outside* of school. But now, through Emdin’s incredible work, we’re all learning about the many pedagogical principles embedded in hip hop music and culture, which can enhance the work of teachers in a number of different ways.

And while most of the research on code switching has tended to focus on ethnoracial codes and to a lesser extent economic class codes, we could easily brainstorm a list of the ways that many women tend to code-switch when they move from a setting that’s predominantly female to one that is not. From the change in body language, a decrease in assertiveness, to an increase in apologies—these are all the ways girls learn from a young age to perform gender and are penalized for not doing so.

The point is that when we move through different social worlds, each with their own unspoken rules of interaction—these are not really parallel universes, but stratified ones! “Stratified”, because judgment and scrutiny of speech, and dress, and competence are often directed against those who have least power by those who have more. Which is why, for example, in our current rape culture, the burden continues to fall on women rather than men to prevent rape—and *you’ll notice*: the “don’t rape me” training we impart is often in terms of telling women to quote “stop asking for it” in coded language, that is, with their dress, speech, and body language. Instead, we should be training men, which I am particularly invested in as a mother of two sons—to stop misreading these supposed codes.

Cultural codes, in short, are not neutral, nor are all codes created equal. They reflect particular values and interests and forms of social organization that allow some people to impose their values and pathologies on others. And, to be successful, we are told, we must master the dominant codes, learning in short, to play the game of life... a game in which the rules have been created by others. Let me pause for a moment and break down what I mean by these competing metaphors, ‘gaming’ versus ‘hacking’. These, as you know, are two widespread ways in which people engage with technology in a literal sense, and I want to use them figuratively to illustrate two possible ways we can prepare our students to approach life more broadly.

The first mode of engagement, gaming, is typically characterized by *recreation, competition, and consumption*—that is we use and play with but don’t create the technological platforms and social systems that we set out to game. The second mode, hacking, is typically characterized by *mastery, collaboration, and creativity*—that is to hack a system one needs in-depth understanding of how it works, what are its strengths and weakness, and a vision for how it could be better.

These insights allow us to potentially subvert the system that we’ve come to understand and make it do something it wasn’t meant to do! This, to me, makes it a potent metaphor for intervening in unjust social systems. Now keep in mind, there is nothing inherently wrong with the qualities on the left side of your screen (recreation, competition, and consumption); there is a time and place for all three. But too

often these become the defining features of what it is to live a good life, and in that way they confine us to our own “needs and wants”, and cause us to forget that good living actually requires more of us—courage, sacrifice, and purpose, most of all!

When we begin to re-write codes rather than simply code-switch, we can set out to embed new values and new social relations in to the world. Whereas the idea of code-switching is about fitting in and “leaning in” to play a game created by others... what we really need right now is for more people to *stretch out* the arenas in which we live and work to become more inclusive and just. I’ll share two examples of why this matters so much, by referring to the content of video games and blockbuster films:

So first, when we look at the world of video games itself, and examine the connection between violence, gender and race, one study found that ‘the majority of African American female characters, a full 86%, are props, bystanders, or participants, but never competitors. Nearly nine out of ten African American females are victims of violence in these games, making them far more likely than other groups to be victimized. And more than half of the African American characters, male and female, are quote “unaffected” by the violence exacted upon them, with only a fraction exhibiting both pain and physical harm.’¹⁵

Now, we might be tempted to minimize or dismiss how violence and stereotypes in these virtual worlds impact us, but to do that we’d have to ignore the fact that the line between virtual and physical worlds has been completely blurred. And the fact that, from the moment that we wake up in the morning to the time we go to sleep, so many hours are spent in virtual realities, so that what people think and feel in so-called “real” life directly impacts and is impacted by... these screen-mediated social relations.

Virtual worlds represent and shape our imagination, including what we value and desire, and what we fear and hate. So the fact that the lives of Black women continue to be valued less and our deaths considered less tragic on the screen, both reflects and reinforces devaluation in everyday life. Example #2: You might recall that on the opening weekend of the movie *Hunger Games*, many fans took to Twitter in order to express their disappointment and disgust that one of the characters they had come to love in the book version didn’t match their imagination: that their beloved Rue was not quote a “blond haired white girl”, with whom they could relate innocence. This set off a string of vehement tweets from fans, with one saying, “*call me racist but when I found out Rue was black, her death wasn’t as sad.*”

As long as we pretend young people are immune to the racism embedded in every aspect of social life, then we’re ensuring more of the same. As long as we pretend that colorblindness is a solution in a world saturated with racial meaning, then we’re ensuring more of the same. And unless we, in this room, are proactive in addressing the racist messages about human value that persist in and outside the classroom, then the default setting young people will internalize some version of “white is good”, “black is bad”, and everyone else falls somewhere along this pole.

PART FOUR

For all these reasons and more, it is urgent that we not simply empower our students to succeed in the world as it is, but rather begin to imagine and design alternatives to the current system. To do this requires some degree of *Mastery*—that is understanding how the current social order works; *Collaboration*—that is, collective action and not simply individual goodwill; and *Creativity*—that is, making sure that our plans for change are infused with a rigorous imagination so we don’t just create a shiny new version of the same old thing.

To that end, I want to suggest Five Ways that we may consciously or inadvertently restrict our imagination and that of our students, when it comes to social change. Naming these missteps, I want to suggest, is necessary if we want to do and be better. For the sake of time, I will breeze through these rather quickly, with the understanding that each point could comprise a talk of its own.

The first way we restrict our imagination of how to engender social change is an “Ahistorical” Fallacy, which is the tendency to project forward in time without the temporal corollary—a careful reflection on historical precedents and processes. Too often the contours of our thinking with respect to technology, mirror the hyperbolic rhetoric of marketing campaigns, “breakthrough”, “cutting edge”, “breath-taking”, and “miraculous”, all leading us to overlook continuities as we train our attention on all that appears novel.

Some of these historical continuities, I should point out, are no doubt empowering—as with the many ways women of color have contributed to STEM fields. Most of our students don't know that before computers were machines, they were people—and that NASA couldn't have made it to space without its pool of “human computers,” including mathematician and programmer Annie Easley, pictured here, whose work has influenced everything from solar technology to the Centaur rocket.¹⁶

But some of these patterns are discouraging, and yet we shouldn't shy away from them. Kiera Wilmot—a Florida teenager who was handcuffed, expelled, and sent to a juvenile facility initially charged for a felony in 2013, all for a science experiment that caused a small explosion in her school. Many in the scientific community pointed out that (1) scientific accidents are part of science and that (2) Kiera would not have been as harshly treated had she not been in a school with Zero Tolerance Policies that essentially feed the school-to-prison pipeline. As it relates to the ahistorical fallacy, we must resist the urge to assume the passage of time equals social progress. Just because people like Annie Easley have broken barriers, doesn't mean students like Kiera Wilmot will be able to reach their full potential. In fact, the broken glass ceiling of a previous generation may very well turn into violent shards in the bloody eyes of this generation. And so *the only way forward is not to presume we will necessarily move forward without struggling for it*. Time is nonlinear, and social change is not given.

The second way we may limit our imagination of how to engender social change is a “Legalistic” Fallacy when we assume that reforming policies and laws is sufficient to shaping the context of science and technology for the greater good. Despite the formal gains women have made in terms of workplace discrimination, we can still have someone like Nobel Prize Winner Tim Hunt say: “*Let me tell you about my trouble with girls. Three things happen when they are in a lab. You fall in love with them. They fall in love with you. And when you criticize them, they cry.*”¹⁷ He then went on to propose “single-sex” science labs so that women and men might work separately. But thank goodness for the way that social media allows us to re-write outdated codes expressed by such luminaries. Here's a great caution sign that made the rounds: “no falling in love or crying permitted” in the lab. And this #DistractinglySexy hashtag went viral, pointing out the absurdity of Hunt's statement with women in STEM tweeting, “Oh, don't mind me. I'm just distractingly sexy.”

The point is that official policy change has to go hand in hand with much deeper transformation of social and cultural norms—no easy task, but I do think primary and secondary schools are in a better position to contribute to this than, say, human resource officers or even diversity trainers, who attempt to intervene at a point in which such norms have already become solidified. Whether we think of ourselves in these terms or not, educators are cultural workers, on the front lines of either reproducing the world as it is or empowering our students to create it as it can and should be.

The third way we may inadvertently restrict our imagination when it comes to social change is an “Individualistic” Fallacy when we assume that the world simply reflects individuals’ intentions, whether good or bad. In the case of the tech sector, there is a never-ending proliferation of self-help advice of the kind, “Five Ways Women in Tech Can Beat the Odds.”¹⁸ Top on the to-do list according to this article-- “Be assertive, Not aggressive.” Oh Really? We’re still pretending that there is a qualitative difference between assertiveness and aggression, rather than recognizing that those in power code behavior that threatens their status and authority as “aggressive”. And if we’re going to fall in the individualistic trap, lets at least flip the script, and focus on the right individuals.

To that end, I propose a new set of Self-Help Headlines, *Five Ways Men In Tech Can Combat Sexism*. #1: Be *Less Aggressive, More Cooperative*. And here I am only partly joking, because YES: the preoccupation with self-help lists at both ends of the line of power overshadows the great importance of institutional policies and cultures to shape people’s experiences. Even so, when we do start talking about the responsibility of individuals to address inequality, too often we expect those who are harmed by current arrangements to conform. But rather than grooming people who have been actively kept out of STEM to be “less susceptible to discrimination” (sounds absurd, but that’s the subtext), how about we expect those who currently monopolize power not to implicitly or explicitly discriminate.

The fourth way we may inadvertently constrict our ideas of social change is a “Fixed” Fallacy” about what our measure of progress should be. That in a prior era, the physical inclusion of women and people of color in arenas that, up until then, had been reserved for white men of a certain class and religion, was certainly a step forward. But it should go without saying our aims should evolve. Yes, we should care about numbers! But the content and quality of what happens in STEM fields are vital for us to consider.

Along these lines, I’m inspired by the work of Dr. Nettrice Gaskins, who runs a STEAM lab in Boston—where she’s not simply training her students, shown here, to enter the STEM pipeline.¹⁹ But together they are fashioning their own pipes to irrigate futures of their own making. What’s more, she is contributing to a model of culturally situated education in which students bring their passion and insights to the table. They become creators not just consumers of ideas and technologies produced by others. In this way, we can imagine alternatives that push past “fixed” notions of progress, and in the process, cultivate a kind of intellectual agility and creativity in our students. The point is not simply for students to have jobs, but to also have purpose.

The fifth and final way we may limit our imagination of how to engender social change is a “Tokenistic” Fallacy. This is the assumption that the presence of women and people of color in influential positions is enough evidence of progress. *One bright bulb does not an Enlightenment make!* In fact, what we know from the social sciences, is having token individuals in high profile positions may actually serve as an excuse not to engage in more fundamental transformation. Perpetual placeholders as it were.

Which is why organizations such as Black Girls Code are so vital in offering opportunities for young people to gain programming skills. But even founder Kimberly Bryant admits, this is a drop in the bucket! After all, the goal is much bigger than expanding the gender and race diversity on a company’s pie chart. Instead, the point is to give all those who are routinely coded as “less proficient” in STEM, the “chance to become the masters of their technological worlds.”²⁰ These young people are not simply individual players learning to win at the game of life. But are learning to work together to design alternatives to the status quo that will impact us all.

Coming full circle back to Ahmed, and the many people whose contribution to science, medicine, and technology, are stifled, ignored, and shut down... the clock is ticking! Thinking from the margins—with those who have been historically harmed and pathologized in the name of progress, forces us to remain vigilant about the ways that technology can increase social divides. And the need to put structures in place for individuals to be granted more agency and room to participate is vital. With that, I want to leave you with a final thought taken from the Baha’i Writings, which serves as a center of gravity, because it reminds me what stands at the heart of this endeavor we call education:

“Children are the most precious treasure a community can possess, for in them are the promise and guarantee of the future. They bear the seeds of the character of future society which is largely shaped by what the adults constituting the community do or fail to do with respect to children. They are a trust no community can neglect with impunity. An all-embracing love of children, the manner of treating them, the quality of attention shown them, the spirit of adult behavior toward them -- these are all among the vital aspects of the requisite attitude. Love demands discipline, the courage to accustom children to hardship, not to indulge their whims or leave them entirely to their own DEVICES (*get it!*). An atmosphere needs to be maintained in which children feel that they belong to the community and share in its purpose.”²¹

With that, let’s finally move passed the idea of love as some sappy sentiment we find in romantic comedies and Valentines Day. *Love is, in fact, the most powerful technology at our disposable*—with its ability to reshape human relations as we know it. Let us recommit ourselves to turning it “on” often and in abundance, in service to humanity.

Thank you so much for your attention.



Image Source: “A Love Supreme: Reflections on Why We Continue to Teach.”²²

-
- ¹ I adapt these fallacies from a textbook by Desmond and Emirbayer (2009) *Racial Domination, Racial Progress*, which I use for my undergraduate course, “Racial is Socially Constructed: Now What?”
- ² For more about the CA Stem Cell Research Initiative see Benjamin, Ruha (2013) *People’s Science: Bodies and Rights on the Stem Cell Frontier*. Stanford University Press: <http://www.sup.org/books/title/?id=20585>
- ³ Nather, David (2015) “Inside the Pentagon’s biotech strike office.” Available: <https://www.statnews.com/2015/11/24/darpa-biotech-infectious-disease/>
- ⁴ Prisco, Jacopo (2015) “Scanadu: The medical Tricorder from Star Trek is here.” Available: <http://edition.cnn.com/2015/02/12/tech/mci-scanadu-tricorder/>
- ⁵ NASA press release, Feb 7, 2014: <https://www.nasa.gov/press/2014/february/nasa-technology-to-help-develop-noninvasive-medical-treatments/>
- ⁶ For more about these disparities see the film, *Unnatural Causes*, and the episode on the Marshall Islands titled “Collateral Damage”: http://www.unnaturalcauses.org/episode_descriptions.php?page=6
- ⁷ For more on Alex Rivera, visit: http://m.colorlines.com/archives/2015/01/icymi_alex_rivera_talks_people_of_color_and_sci-fi_futures.html
- ⁸ Helm, Angela Bronner (2016) “‘3 Black Teens’ Google Search Sparks Outrage.” *The Root*, Available: <http://www.theroot.com/articles/news/2016/06/three-black-teens-google-search-sparks-outrage/>
- ⁹ Miller, Claire Cain (2015) “When Algorithms Discriminate.” *New York Times*, Available: http://www.nytimes.com/2015/07/10/upshot/when-algorithms-discriminate.html?_r=0
- ¹⁰ See Kirschner, Lauren (2015) “When Big Data Becomes Bad Data.” *ProPublica*, Available: <https://www.propublica.org/article/when-big-data-becomes-bad-data>
- ¹¹ For more on algorithmic discrimination, see boyd, Levy, and Marwick. 2014. “The Networked Nature of Algorithmic Discrimination.” In *Data & Discrimination: Collected Essays*, edited by Gangadharan and Eubanks, pp. 43-57. For more about the Data and Society research institute, visit: <http://www.datasociety.net>
- ¹² For more about the work of Fabian Brunsing, visit: <http://www.fabianbrunsing.de>
- ¹³ For more about “Hack a Hairdryer”: <http://thinkprogress.org/economy/2015/12/09/3730107/ibm-hack-a-hairdryer/>
- ¹⁴ For more about the work of Dr. Chris Emdin, visit: <http://chrisemdin.com/science-genius/>
- ¹⁵ Glaubke, Miller, Parker, McCrae, and Espejo (2001) “Fair Play? Violence, Gender and Race in Video Games.” Available: <http://files.eric.ed.gov/fulltext/ED463092.pdf>
- ¹⁶ For more about Annie J. Easley, visit: <http://www.nasa.gov/feature/annie-easley>
- ¹⁷ On Hunt’s comment: <https://www.theguardian.com/science/2015/jun/12/tim-hunt-trouble-with-girls-in-science-comment>
- ¹⁸ Link to article: <http://time.com/money/3719366/ellen-pao-women-tech/>
- ¹⁹ For more about the work of Dr. Nettrice Gaskins, visit: <http://baa-steam.tumblr.com>
- ²⁰ Quote from Black Girls Code website: <http://www.blackgirlscode.com>
- ²¹ For more about the Baha’i Faith, visit: <http://www.bahai.org>
- ²² Brendon, Reese, Henry, Rogers, Reed, and Roy-Pace (2015) “A Love Supreme: Reflections on Why We Continue to Teach.” *Perspectives on Urban Education* Vol. 12(1), Podcast Available: <http://www.urbanedjournal.org/archive/volume-12-issue-1-spring-2015/love-supreme-reflections-why-we-continue-teach>