

# I'm still standing

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## I'm still standing

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**T**he '80s are back. And not only because Elton John's upbeat 1983 single "I'm Still Standing" has been a frequent background to my train of thoughts lately:

*"I'm still standing better than I ever did  
 Looking like a true survivor, feeling like a little kid,"*<sup>1</sup>

In the midst of the current COVID-19 pandemic that has ravaged our society, these words hold true because I am a physical survivor: sick last March, I did not recover from long-term effects for months. But they also resonate with me because I am a single mother of two who has somehow navigated the academic ladder and made it to the ivory towers of academia as a tenure-track assistant professor of physics and astronomy—a rarity.

Celebrating the accomplishments of women in physics always comes with a bittersweet awareness—why so few? In 2020, astrophysicist Dr. Andrea Ghez became only the fourth woman in history<sup>2</sup> to be awarded a share of the Nobel Prize in Physics.<sup>3</sup> While women's work has always carried science forward, their contributions were rarely recognized. Edwin Hubble's discovery of the expanding universe built on Henrietta Leavitt's groundbreaking insight on Cepheid variables, work she did as a "human computer" at a time women couldn't even vote.<sup>4</sup>

One hundred years later, women faculty in physics remain rare. Most physics departments have incommensurate representation from historically minoritized and marginalized groups, and the current effort for a fix—recruitment—often does little for long-term changes in demographics and neglects chronic, systemic inequities. Progress is reportedly made, but the details matter and tell a worrisome story: in 2016, 23% of tenure-track hires were women, and 26% of all hires were women.<sup>5</sup> At those rates, change is not going to come.

The 2019 AIP report on Women in Physics and Astronomy concludes that "the percentage of women represented in physics remains consistent between completing undergraduate education and obtaining faculty employment, which indicates that there are no gender differences in attrition between these academic stages."<sup>5</sup> But as the AIP report notes elsewhere, women in physics "reported that their careers progress more slowly and that they received fewer career resources and opportunities" than men, and that they "were more likely to make career compromises for family reasons." In 2014, women held 10% of the full-professor positions, making clear that the issue is one of retention and institutional failure to address it. Oddly, the AIP calls this a "higher than expected" fraction.<sup>5</sup>

It would seem that higher education—with some esteemed institutions as old as a widespread belief in a geocentric universe—was not built to serve, or include, women, and still does not offer an equitable playing field. Parenthood, particularly, has an unequal impact on women's academic productivity, causing a gap that takes mothers about five years of work to

close.<sup>6</sup> Besides, men rarely face subtle and overt sexism most women *have* to endure to remain on and advance along the academic ladder.<sup>7</sup> It is safe to assume that all women either have a personal story or know several others with stories of discrimination, everyday misogyny, or, worse, workplace violence. In one instance, I had to resort to civil court for protection that I could not get from the campus police and the Title IX process. Sadly, academic culture is not the inclusive and diverse environment it brands itself to be.

"You reap what you sow" is a pervasive proverb many of us have internalized without questioning. We all love fairy tales, and this one rests on the prevalent belief of a just world: good wins over evil and the bad actors get what they deserve. The just-world hypothesis—originally postulated by social psychologist Melvin Lerner<sup>8</sup>—is a coping function that sadly leads to victim blaming: we all get what we deserve, good or bad. The victim's choice is seen as the problem, not the context. But the world is not just, and to handle that dissonance with reality, we must reexamine the systems that limit justice and work to actively prevent injustice. Let's not see women's career and other choices as the problem for their lack of representation.

The pandemic has exposed deep social inequalities and the precarity of women's careers, much of it due to the unequal distribution of caregiving between men and women.<sup>9</sup> Worldwide, women do at least two and a half times more *unpaid* care and domestic work<sup>10</sup> and spend three additional hours per day<sup>11</sup> on such tasks compared to men.<sup>12</sup> The pandemic lockdowns—the school and daycare closures, the shift to work-from-home, the jobs lost—have caused women to leave the workforce in droves.<sup>15</sup> NPR reports that "[t]he pandemic's female exodus has decidedly turned back the clock by at least a generation, with the share of women in the workforce down to levels not seen since 1988."<sup>16</sup> Many academics had the privilege of working from home, a double-edge opportunity with a heavy toll for parents—heavier for mothers<sup>17</sup>—who now tackled online teaching, research, childcare, and house chores in a continuous 24-hour cacophony.

On most days, I feel lucky, not necessarily accomplished. Some of those feelings come from humble awareness of the opportunities I had in life—my family supported me, greatly valued education, and did the impossible to send me to college in the U.S. I feel lucky not necessarily because of the well-known imposter syndrome<sup>18</sup> that plagues women and underrepresented minorities the most—at some point in grad school, I stopped comparing myself to others and my life got better. I was lucky because, when I decided to have kids while pursuing my PhD in physics, my advisor was extremely supportive. And I was truly lucky because the university had a campus childcare center, gave priority to students, and subsidized the cost based on income. My short-lived marriage ended in a divorce the year before my PhD defense, and without that free daycare, I would not have graduated while barely supporting two toddlers on my own.

The choice of *if* and *when* to have kids is personal and should remain a woman's choice. Nevertheless, the ten-

ure-track clock often coincides with the biological reproductive constraints only women face, making women academics face the challenges of motherhood as junior faculty. This creates a “maternal wall,” particularly disadvantaging single mothers.<sup>19</sup> I have an unusual academic career track also in that I did not pursue postdoctoral studies, a typical stepping stone in academia. It was financially impossible to cover two daycare bills as a single mother on a postdoc salary. I applied for faculty positions with teaching emphasis and was lucky to teach at two very prestigious colleges, which opened doors toward my first tenure-track position.

Faculty positions often come with a somewhat mistimed help offering for parents: dependents’ tuition remission. In my experience, parents need help the most when their kids are very young, childcare facilities scarce, the spots filled, the costs astronomical, and faculty salaries the lowest. Given women are the primary caregivers,<sup>19</sup> the shrinking number of colleges in the U.S. with childcare centers<sup>20</sup> is an alarming trend with greater impact on mothers’ careers.<sup>21</sup> Therefore, talk about removing barriers for women in academia is woefully incomplete if campuses do not move towards affordable childcare and other family-friendly policies.

The thrill of my success to land a tenure-track position was crushed by workplace harassment, hopelessness in fighting it, and the futility of the Title IX process. I discovered that the system currently in place to purportedly protect victims of discrimination and harassment serves to protect institutions and perpetrators from lawsuits and accountability. Curiously, Title IX<sup>22</sup> complaints are often handled by human resources, creating a brazen conflict of interest. Without a means to adjudicate these issues independent of institutional interests, we are just going to be pretending the system is just.

These issues certainly distract from the job of teaching and doing physics, which I love, but the fight for structural change must become an integral part of what it means to teach and do physics, for without it we only reproduce more of the same.

I am happy and fortunate to write this from a department where I feel supported. Nevertheless, without a shift in the dominant culture, accompanying protections for our rights, and policies aimed at material change, we might be just one crisis away from further turning back the clock. The sole existence of anti-discrimination laws<sup>23</sup> does not offer protection when they are mostly not equitably enforced. And, to create workplaces that work for women<sup>24</sup> too, affordable childcare should be as common as the campus commons.

The late Supreme Court Justice Ruth Bader Ginsburg summed it best:

“Women will have achieved true equality when men share with them the responsibility of bringing up the next generation.”<sup>25</sup>

We are not there yet, but we are still standing, against all odds.

## References

1. Elton John, Lyrics to “I’m Still Standing,” AZLyrics.com (2021).
2. Carol Stabile, “Dr. Andrea Ghez, Only the Fourth Woman to Win the Nobel Prize for Physics, Shows the Rarity of High-Achieving Women in Science,” Ms. (Jan 19, 2021), accessed June 26, 2021.
3. “The Nobel Prize in Physics 2020,” NobelPrize.org, Nobel Prize Outreach AB 2021 (June 26, 2021).
4. The Center for Astrophysics | Harvard & Smithsonian Communications, “150 years later, her star is still rising,” *The Harvard Gazette* (July 5, 2018), accessed June 26, 2021.
5. A. M. Porter & R. Ivie, “Women in Physics and Astronomy, 2019,” Technical report (AIP Statistical Research Center, College Park, MD, March 2019), <https://www.aip.org/statistics/reports/women-physics-and-astronomy-2019>, accessed June 26, 2021.
6. A. C. Morgan, S. F. Way, M. J. D. Hoefer, D. B. Larremore, M. Galesic, and A. Clauset, “The unequal impact of parenthood in academia,” *Sci. Adv.* 7 (9), eabd1996 (Feb 24, 2021).
7. R. Colwell, “Women scientists have the evidence about sexism,” *The Atlantic*.com (Aug 30, 2020), accessed June 26, 2021.
8. M. J. Lerner, *The Belief in a Just World: A Fundamental Delusion* (Plenum Press, New York, 1980).
9. U.S. Bureau of Labor Statistics, “American Time Use Survey” (June 25, 2020), accessed June 26, 2021; Graph of “Average hours per day parents spent caring for and helping household children as their main activity”; Graph of “Percentage of the population engaging in selected household activities, average per day by sex”; Data: Table 9. Time adults spent caring for household children as a primary activity by sex.”
10. “Women in the Changing World of Work, Facts You Should Know: Unpaid Work,” UN Women (2017), <https://interactive.unwomen.org/multimedia/infographic/changingworldofwork/en/index.html>, accessed June 26, 2021.
11. G. Barker, A. Garg, B. Heilman, N. v/d. Gaag, and R. Mehaffey, *State of the World’s Fathers: Structural Solutions to Achieve Equality in Care Work* (Promundo-US, Washington, DC, 2021), p. 3.
12. See Frederici<sup>13</sup> on how devaluation of domestic, reproductive, and other feminine labor were explicit aspects of the newly emerging capitalistic world order, propagated via narratives of witches and by burning alive the women who didn’t comply (also see Mies<sup>14</sup>).
13. S. Federici, *Caliban and the Witch: Women, the Body and Primitive Accumulation* 2nd ed. (Autonomedia, Brooklyn, NY; 2014).
14. M. Mies, *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour* (Zed Books, London, UK, 1986).
15. A. Hsu, “Millions Of Women Haven’t Rejoined The Workforce —And May Not Anytime Soon,” NPR (June 4, 2021), <https://www.npr.org/2021-06-03/millions-of-women-havent-rejoined-the-workforce-and-may-not-anytime-soon>, accessed June 26, 2021.
16. P. Gogoi, “Stuck-At-Home Moms: The Pandemic’s Devastating Toll On Women,” NPR (Oct 28, 2020), <https://www.npr.org/2020/10/28/928253674/stuck-at-home-moms-the-pandemics-devastating-toll-on-women>, accessed June 26, 2021.
17. T. Deryugina, O. Shurchkov, and J. E. Stearns, “COVID-19 Disruptions Disproportionately Affect Female Academics,” National Bureau of Economics Research (Jan 2021), DOI: 10.3386/w28360.
18. P. R. Clance and S. A. Imes, “The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention,” *Psychother. Theor. Res. Pract.* 15 (3), 241–247 (1978) and A. Minello, “The pandemic and the female academic,” *Nature* (April 17, 2020), accessed June 26, 2021.
19. U.S. Bureau of Labor Statistics, “Table 9. Time adults spent caring for household children as a primary activity by sex, age, and day of week, average for the combined years 2015–19,” American Time Use Survey (June 25, 2020), accessed June 26, 2021.
20. J. New, “Percentage of colleges with child care centers shrinking,” *Inside High. Ed* (Sept. 2, 2016), accessed June 26, 2021.
21. E. Eckerson, L. R. Cruse, M. Sykes, E. Noll, B. Dault, and L. Talbourdet, *Child Care for Parents in College: A State-by-State Assessment* (Institute for Women’s Policy Research, Sept. 1, 2016), accessed June 26, 2021.
22. “Title IX and Sex Discrimination,” U.S. Department of Education, Office for Civil Rights (June 2021).
23. “Laws & Guidance,” U.S. Equal Employment Opportunity Commission.
24. “Women In Academia (Quick Take),” Catalyst.org (Jan 23, 2020), <https://www.catalyst.org/research/women-in-academia/> accessed June 26, 2021; “Workplaces that work for women” is the motto of the non-profit organization Catalyst.
25. “When daughters are cherished as much as sons: 11 powerful quotes from Ruth Bader Ginsburg,” USA Today (Sept. 19, 2020), <https://www.usatoday.com/story/news/politics/2020/09/19/ruth-bader-ginsburg-quotes-supreme-court-metoo-equality/5837815002/>, accessed June 26, 2021.