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The Cement Spiral

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I returned to my all-degree alma mater just as Canada's Genetic Non-Discrimination Act¹ was about to be passed by Parliament. This Act prohibits genetic discrimination in employment and insurance, both cited as important reasons why women at high risk of *BRCA* gene-related breast or ovarian cancer do not pursue genetic testing,² along with lack of knowledge of genetic risk and availability of counselling.^{3,4} As usual I put on my ritual running shoes and set off for an always slower than previous jog through campus. I save for last the campus's most important edifice, at least for me.

The medical school was new when my class entered through its doors. The building was designed for class sizes twice as large as mine, to contribute to the predicted vast increase in the number of doctors required to care for the imminent explosion in an aging Canadian population. None of my classmates could have predicted that class sizes, rather than doubling, would be cut in half by provincial funding cutbacks not long after we left. I gasped up the front steps like an exhausted Rocky when he first started training. At the top I noticed the cement spiral that was firmly planted in front of the main entrance when I was in first year. The cement spiral was the centre of our expensive training and the centre of my first social justice protest.

Kitty-corner to both our medical school and our Provincial Legislature buildings, a gleaming glass building was being built for the province's increasingly less-than-public hydro-electric company. The lucrative construction contract was granted without tender to one of the largest donors to the premier's recent election campaign. The week preceding my first social justice protest, the press pummeled the premier and his friend. The morning of my first social justice protest I learned that the edifice, in which we had the privilege to learn medicine, would be "officially" be opened at two o'clock by that increasingly less than socially just premier. This idealistic medical student could not resist an attempt to inhibit the "official" opening of our higher-purpose edifice under snow clouds of corruption.

I stared from the upstairs windows of the physiology laboratories' corridor down onto the cement spiral. The twists of its cement represent a DNA molecule, reaching up to

the bright genetic future that medicine was pursuing. It was hard to see the cement twists that day because the DNA had been covered with a semitransparent plastic sheath, tied tightly in place with a red ribbon. I assumed the sheath was meant to keep the snow off because it had been snowing hard for 3 days, as evidenced in the metre-thick layer of snow blanketing the soccer field in front of the cement spiral. Suddenly I had the "how" of my protest and ran to the front door of the lecture theatre that I usually avoided. I had to catch my class before it was dismissed for lunch.

As soon as the professor exited the 235-seat not-half-full lecture theatre, I dashed to the front of the still-yawning class and asked for volunteers to stop the premier from officially opening our medical school. Cheers accompanied the many classmates bounding down the steps. Approximately 50 of us put on our winter coats and marched with purpose across the soccer field to the end most distant from the cement spiral. There I made two snowballs and handed them to classmates. These eager snowman builders proceeded to roll the snowballs into two snowman-size snowballs that soon were too heavy for them to push. Other classmates joined in, eventually sitting on each other's shoulders to push forward enormous snowballs. When the snowballs approached the steps to the sheathed cement spiral, it took almost all of us to push them up. Next it was necessary to position them into the "anatomically correct position," as determined with arm motions through those same physiology laboratories' corridor windows.

The after-lunch lecture was presented to even fewer students than usual because almost all of us were looking down with anticipation from the aforementioned windows. Just before two o'clock, four men in black trench coats circled the sculpture. The men scratched their heads. Looked at each other. Talked to each other. Then one of the black-coats grabbed his head, aghast, and talked rapidly into his hand.

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A few minutes later, a large truck arrived, and eight men with shovels disembarked. The men went hard at our snowballs, urged on to go faster by the black-coated representatives of our premier. The shovellers did their best but made little progress. When two o'clock came and went, we high-fived and hugged each other. There were of course taunts of "Take that, Mr. Premier." "Take it and shove it, Mr. Premier."

About half an hour later, a large tractor chugged up, spewing huge diesel fumes and carrying enormous chains. The left snowball was chained to the tractor first. It was then dragged to the centre of the soccer field. The tractor returned and repeated its pull. Then the men with the shovels transformed into men with brooms and vigorously swept the steps and surfaces around the cement spiral until pristine. It seemed only seconds later that a black limousine pulled up.

The black-coated men again spoke into their hands, and after a few minutes one of them opened the limo door. The premier surfaced to boos he couldn't hear through the thick and permanently closed windows through which we jeered. His picture was quickly taken amid a nervous circle of security men as he smiled and cut the red ribbon with extra-large scissors. Other quick pictures of the premier and the now-naked spiral's cement were taken before the premier was ushered back into his limo to go across the road to his office.

Thirty-seven years later, I stop before the naked DNA spiral. The cement now represents to me the spiraling-out-of-control applications of DNA screening of embryos and fetuses and the discrimination that results from this screening. Although I applaud that Canada has finally legislated a Genetic Non-Discrimination Act (2017),¹ this Act does not address the genetic discrimination that DNA screening of embryos and fetuses insidiously fosters for Canadians living with genetic conditions that could have been prevented by preventing their birth. This genetic discrimination ultimately fosters discrimination against all Canadians with "characteristics" different from "ideal."⁵⁻⁸ The rapid expansion of "non-invasive prenatal testing"⁹⁻¹² beyond the criteria in the SOGC Committee Opinion^{13,14} has occurred without extensive ethics research or input from persons living with disabilities. Genetic discrimination is also fostered by new applications of pre-implantation genetic diagnosis for purposes such as germ-line nuclear transfer (misnamed "mitochondrial replacement therapy")¹⁵⁻¹⁷ and CRISPR (clustered regularly interspaced short palindromic repeats),¹⁸ as well as front-page DNA strategies argued to create an improved human race.¹⁹

Improvement in the human condition does not require genetic manipulation. What is required is improvement in

social determinants of health, including education, nutrition, housing, social inclusion, and laws, as well as a change in the way Canadians see and accommodate person with disabilities.^{5,20,21} Rather than just applauding the Canadian government's anti-genetic discrimination legislation that hides the DNA of Canadians from prying eyes of employers and insurers, we must work for antidiscrimination legislation that will address the context and purpose of genetic screening of embryos and fetuses. For we all have DNA variations and phenotypic differences that contribute to making all Canadians richer. We must embrace each other as all being "more than the sum of our scripted genes"²⁶ and acknowledge that all of us are less when our worth is determined by genetics: as an employee or insurée, as a person worthy of birth or a person worthy of accommodation. A new generation of obstetricians and gynaecologists should engage in social justice protests to make Canadian society more tolerant, accommodating, and respectful of difference.

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