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Getting girls in STEM & the dangers of forgetting that Science is Art - someone made it up

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Girlapproved

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Abstract

Encouraging girls to participate in STEM is a hot topic that has captured the concern of the world's academic, business and scientific communities. The intention is noble, however the strategies being deployed are reinforcing the very bias society seeks to eliminate. If we wish to advance our evolutionary journey as a species, a shift from "feeling sorry for *disadvantaged* girls" to "fearing STEM without girls' reformation" is imperative. This piece discusses the rise to an initiative to redesign culture: Girlapproved.

Keywords

Girls, Girlapproved, STEM, STEAM, Science, Art

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Getting girls in STEM & the dangers of forgetting that Science is Art - someone made it up.

Heidi Therese Dangelmaier & Camilla Herman

Encouraging girls to participate in STEM is a hot topic that has captured the concern of the world's academic, business and scientific communities. The intention is noble, however the strategies being deployed are reinforcing the very bias society seeks to eliminate. If we wish to advance our evolutionary journey as a species, a shift from “feeling sorry for *disadvantaged* girls” to “fearing STEM without girls’ reformation” is imperative.

Living in Conflict

Heidi Therese Dangelmaier & Maria Ianne



When we promote girls to study science and tech so that they can “keep up with the boys,” we are idolizing the male mind and the science he created. By putting science on a pedestal, we inadvertently discourage (and suppress) females from challenging the accuracy of a male-conceived paradigm of intelligence, truth and progress. I learned this the hard way as a female who believed that studying science was purist form of human endeavor.

I am a scientist and inventor who has created dozens of globally successful products for the world’s largest corporations from *Sega, Procter & Gamble, Nokia, to Walmart*. My innovations range from video games, social media apps, consumer goods, to mass fashion. Thirteen years ago, I left the scientific community to start an initiative to redesign culture. I broke up with male scientists and technologists, and choose a global team (1000+ strong) of young adult female artists as my collaborators. Instead of working in a sterile laboratory I opted to use the live consumer market as my workshop.

My journey to “TEAM GIRL” started in my twenties. I had made it to the top of a male dominated field. I won a full Phd scholarship to Princeton in Quantum Physics and Artificial Intelligence, collaborating with the worlds' most brilliant minds. In conventional metrics, I had risen to aspirational heights for females, but my reality was the opposite. I soon discovered that could not participate in science without oppressing my innate perceptual and intellectual capacities.

Sitting in class I found myself pondering questions I was criticized for posing, such as *“Is the design of the lab rats’ cage causing the animals to be depressed, negatively impacting the accuracy of the studies?”* *“Why do technologists rate artificial intelligence on how much data gets transmitted rather than whether the intended meaning was successfully exchanged?”* My inquiries would be answered with a reminder that this is neither the design nor the philosophy

department. I received many concerned invitations to career counseling, lest I be pursuing an ill-suited professional path.



**Super
Objective
Truth**

*Heidi Therese
Dangelmaier
&
Maria Ianne*

I was faced with a dilemma. Do I stop challenging accepted science, avoid conflicts, and get more papers published? Do I lie about my observations and silence my curiosity? Or, do I choose truth and be ostracized from the academic community? It was in the height of that predicament that the boldest EUREKA I have ever had struck me: *what if I am not the problem?* What if science was instead? What if, by nature of my gender, I can innately detect valuable information that my male counterparts were not capable of perceiving? And, what if my thoughts

are not subjective and irrational, but universal truths about nature and reality that are outside the current language of science?

I started to speculate if science was optimized around men's experience of reality? Was "his" concept of objective reality only true if "he" was the instrument doing the experiments? Could there be measurable parts of nature that his "subjective" instrument and his scientific paradigm excluded? And what if this missing intelligence was pivotal to human stability and progress?

The questions I asked irritated my professors. In isolation, I was a lonely "bit" of data - a statistically insignificant sample set. But, what if the **only** reason I was an anomaly was because I was the **only** girl in the room. For a claim in science to be objective it must stand the test of peer validation. How could I empirically prove that my thinking was logical and intelligent when none of the males around me perceived the world as I did? What I needed was a peer review board of girls!

Inspired by the prospect of mapping an undocumented frontier of human perception and intelligence, I began experiments under the name Girlapproved. It felt long over-due for females to test and measure their intellectual capacity on their own terms. In order for us to effectively test theories of unique female capacity, we had to recognize and then disassemble any language, methods and paradigms of thought that had been created by men alone. This process empowered us to declare a new standard of scientific inquiry that accounted for types of intelligences that have

SCIENCE

#SomeDudeMadeItUp and maybe he did not get it all correct. Science is set of rules created to describe nature. It is not nature itself it is a collection of beliefs, formalized laws, computations that is proposed, voted in, marked and deployed - and in this case by men.

historically been excluded, such as female intuition. Much like men of science had for thousands of years, I set out to find passionate peers, a sisterhood of scientific inquisition.

I launched the Girlapproved Experiment by posting advertisements in New York City art schools. *Are you a girl and worried about where culture is going? Are you being taught things that do not feel correct? Do you have ideas on how to fix problems that worry you? Do you want to help re-invent a future you would rather live in?* Unlike the men of enlightenment who exercised elitist-exclusively in regulating which males participated in scientific inquiry, I let in girls of all educational backgrounds, ethnicities, countries of origin, and socio-economic positions. Any girl who was compelled to join was accepted.

Generation Truth | Beyond a Man Made Paradigm of Intelligence

Heidi Therese Dangelmaier & Maria Ianne



INTRODUCING THE YOUNG FEMALES OF GENERATION TRUTH

The ad responses started as dozens, quickly multiplied into hundreds, then thousands. In every sector of society were pockets of young females who did not see their belief systems reflected in their environments. Beneath the public face of culture, I was witnessing a global

movement of young females ready to opt out of any pre-existing system that was forcing them to conform and forfeit beliefs that violated their sense of truthfulness and self. These girls trusted what their internal compass told them, even when it contradicted their education. I called them Generation truth. A borderless nation that was drawing a new line of personal accountability, a healthier benchmark for females at large. These girls felt a duty to something larger than just themselves and were not willing to lie to earn the approval and prizes granted by the upper echelons of authority and power.

So where does art enter this conversation? That's BIG EUREKA #2 - the moment we woke up and realized that science, math, technology, and the culture it drove, are, in fact, all art. By art we mean "art-i-fact" - a product of a human ingenuity. One of the core learnings of our early experiments was that everything we are taught through education systems and culture as 'true' was, in fact, made up. Culture, politics, medicine, education, national holidays, the American dream - the whole dang enchilada is art(ifact).

This reckoning did not come easily. It took hundreds of experiments to scrape away deep cultural conditioning, break out of ingrained constructs, and finally think for ourselves. The men who created the building blocks of human thought are so revered in our culture that their ideas seemed beyond reproach - sacred. But no belief, idea, or truths descend fully formed, from the heavens above. If we remove all the pomp and circumstance, all these ideas come down to a bunch of super smart, inspired guys who brainstormed, conceived, and executed on their inspirations. Everything we think of as "true" is man-made.

Unfortunately, females have been so busy trying to measure up, fit in, lean in, and prove ourselves to men, particularly in science and tech that we forgot to ask ... *Do we agree with his ideas? Are his results even correct? Is this the best we can do, or just his best? Why would we as*

females believe that man understood nature and reality better than us? Why should we be measured by a ruler we never created?

Man- Made Education

Heidi Therese Dangelmaier & Maria Ianne

And how could girls ever know their natural intellectual and creative potential if what matters was “made up” without our participation?

The birthright of being born a Girl is larger than an invitation to curate



and participate in man’s creation: it is an invitation to imagine and manifest our greatest potential. It is our responsibility, as a united front of females, to explore the fundamental questions of our existence. It is our duty to realize the potential of our own instrument, and to contribute our findings, just as man did, to driving the frontiers of knowledge and human evolution.

What message should we use to get more girls into STEM? Teach them that culture is one big art project and **no one** owns the rulebook. Tell them that it is their birthright to question all

that came before. Remind them they have free will, and have not only a right, but an obligation to trust their instrument. Teach them to exercise personal integrity in all they do. Emphasize compassion - most people are good and do the best with the tools they have access too. Give them permission to change anything they want, because it's now their turn to play master-creator and design the world they want to live.