The Unceasing and Incinerating Global Question: “Is Science Sexist?”

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OVERVIEW

Sexism is perhaps one of the most sensationalized issue concerning men and women today. It is considered as one of the most talked-about topics in the field of science where significant gender discrimination is being observed. According to Napikoski (2013), sexism means discrimination based on sex. Labeling science as sexist has been an unceasing and incinerating global debate that tends to separate men from women. It would simply mean gender bias that force women into subservient and restrictive roles in society. It also creates gender gap because of underrepresentation of most women in many fields of science including physics, medicine, engineering, computer science etc. Men also are being stereotyped in certain field of science including nursing, specialization in obstetrics and gynecology and others.

The substantial gender gap in terms of professional choice and access to opportunities including great discoveries still remain to be major issue in science discipline. In fact, female scientists are sometimes not treated equally compared to male counterparts. On the other hand, male nurses are also facing great disputes as they embark the journey of nursing profession. Although male nurses often face the challenges of gender discrimination, studies show that men play a significant role in administrative and elite specialty positions in nursing such as critical care, emergency and operating room nursing. Men in various professions have dominated the world of science, which has left an unceasing and incinerating global question: “Is Science Sexist?”

The unceasing issue about sexisms in science is considered as water under the bridge. Asking whether science is sexist or not still remains to be unanswered issue. Hence, this article provides discussion about this most talk-about topic in science discipline in order to answer the burning question about sexism. It will explore whether female are considered equals in a male-dominated field and vice versa. It will also illuminate the dark secrets of science in order to gain better understanding about women in science with their significant contributions and their evolving roles as advanced researcher and scientist. This article will not dwell on the detailed concepts of astrophysics, engineering and mathematics but rather will focus more on the most important issues about sexism in science. It will also provide brief discussion about the invasion of male counterparts in female-dominated profession - nursing. In addition, this article will hereafter use the term “Murses” to refer to male nurses for simplicity and originality. More so, basic understanding about certain jargons has been included in the article, which is necessary to gain wider- or deeper-focus about astrophysics in relation to sexism in science discipline.

DISCUSSION

Brief History of Sexism in Science

Science and stereotypes have been inextricably linked for centuries (Ramirez, 2013). Sexism in science has been one of the main arguments in early years. Women are being perceived as weak, irrelevant, and inferior individual. However, despite this gender discrimination, women from the earliest times have made significant contributions to the body and heart of science. Women in science together with their scientific endeavors and accomplishments have gained academic discipline in their own right. Historians have survived the journey in the jungle where gender inequality, bias in university admission, and role indifferences in society predominates.
For the previous decades, the rate of female school admission in the field of physics, engineering, computer science remains staggeringly low. Sexism in science is probably one of the most common reasons why women have low interests in this field. The impact of gender role in society creates gender discrimination that limits women from pursuing career in science. There are various reasons for the existence of gender gap in science, technology, engineering and mathematics (STEM) fields. Culture, norms, values, and beliefs including the concept of family and life complexities are key reasons why women are not being accepted to enter in universities that offer programs for scientific career development despite eagerness to become successful female scientist.

Sexism in science has evolved over time from the time of the famous historians to the people of twenty-first century. The transition of many women from the private sphere of the home to the public sphere of work has contributed to the breaking down of gender boundaries and the creation of challenges of new family roles for both women and men (Domosh, et.al. 2011). As-to-date, many universities and colleges around the world are seeking ways to increase diversity within STEM programs among female students. They aim to engage women in science by promoting support to all women and establishing mentoring programs. In fact, according to United States National Academy of Sciences (2007), “women make up an increasing proportion of science and engineering majors at all institutions, including top programs such as those at the Massachusetts Institute of Technology where women make up 51% of its science undergraduates and 35% of its engineering undergraduates.” However, despite efforts to recruit and retain more women, a stark gender disparity persists within academic science (Racusin et. al., 2012). Women are still underrepresented in many areas of science. In fields like physics, engineering and computer science, just 20 percent of students earning bachelor’s degrees are female (Stomberg, 2012).

This worldwide scenario became to be unresolved perennial issue of society. Sexism is always evolving over time. No one knows when sexism in science will last. It is part of culture among different individuals coming from diverse backgrounds.

**Women in Science**

Female scientific excellence has long been snubbed since the early civilization because of gender inequality. This dark secret in different domains of science (i.e. physics) has lead to gender discrimination, discovery bias, and misrepresentation. For instance, Bell-Burnell’s discovery of the pulsar stars (pulsating radiostar that release regular bursts of radio waves at short and regular intervals) in 1960s has triggered a worldwide controversy in the field of astrophysics. Jocelyn Bell-Burnell, is a famous Northern Irish Astrophysicist, hails from Belfast, Northern Ireland, UK. In an early age, she was a lowly female graduate student from Cambridge University who has passion in astronomy. Her fascination in stars has led her to build a personalized radio telescope, which was designed by his thesis advisor, Anthony Hewish together with Martin Ryle. While busy operating her radio telescope and analyzing the chart paper recordings, she have noticed strange radio pulses (energy source emitted by rapid spinning neutron stars) coming from a single point in the sky. She carefully and persistently recorded the strange radio pulsation for several cold nights.

Beyond her initial pioneering work, she made the biggest mistake of her professional life – she invited her thesis advisor to come over and take a closer look about her discovery. They both started to struggle with double-checking the radio telescope and its related equipment and tried to rule out all possible sources (i.e. satellites, radar etc.) of this unknown, remarkable, and mysteriously new signal. Bell-Burnell and Hewish called it as “Little Green Man 1 (LGM1).”

When it was the time for the publication of the LMG1 Hewish’s name was listed first, Bell-Burnell’s second. Hewish gave talks around the world about his discovery of the mysterious celestial...
object. Thus, The Royal Swedish Academy of Sciences announced a Nobel Prize in physics in 1974, which cited Anthony Hewish together with Martin Ryle for their greatest astronomical discovery in the twentieth century without including Bell-Burnell as a co-recipient. Hewish’s decisive role about the discovery of pulsar made a worldwide controversy. Many prominent astronomers expressed outrage at this omission (Westly, 2008).

Despite the controversy, Bell-Burnell continues her fascination about astrology. She discovered another strange, pulsating signal on the other side of the cosmic haystack after finding the first pulsar. With her persistence and determination, she had discovered two more pulsating signals in January 1968. These discoveries illuminate windows of opportunity for Bell-Burnell. Her findings were published in March of that year to the scientific community. Since then, Bell-Burnell is recognized as a woman scientist who made greatest astronomical discoveries of the twentieth century despite the barriers she has faced in her journey as astrophysicist.

Vera Cooper Rubin is another famous female physicist that was once ridiculed. She is an American astronomer known for postulating dark matter. She gained her bachelor’s at Vassar College and attempted to pursue advance studies at Princeton University. Unfortunately, she did not receive graduate catalog because women are not allowed in graduate astronomy program. Instead, she opted to enroll for her master’s at Cornell University where she found her academic advisors, Philip Morrison, Richard Feynman, and Hans Bethe respectively. She finished her Doctor of Philosophy (Ph.D.) degree at Georgetown University where she left an idea that galaxies are clumped together, rather than being randomly distributed through the universe.

In 1950s, she presented her ideas about the motions of galaxies. Her observation about the creation of universe may be linked to vibrations sparticles (a super particle with higher vibrations of string), thus, making up dark matter. According to Byrd (2012, page 204), “dark matter has thus been recognized as an ingredient of structures at all levels – from galaxies to galaxy groups and clusters.” It is responsible for holding galaxies together.

Rubin’s ideas about dark matter have been a subject of scrutiny by many famous male scientists. Her ideas about dark matter and the universe were not pursued seriously by other famous male scientist. Unceasing and heated global debates about her work was one of the most talk-about topics in the astronomical community. Even astronomers and astrophysicists have pleaded with Rubin for her to stop doing research about dark matter. Her work and postulation has been continually laughed, criticized and ignored until 1970s.

Today, Dr. Rubin’s preposition has been the subject of intense discussion among the famous scientists worldwide. Many scientists including astronomers and astrophysicists are now convinced by Dr. Rubin’s theory about dark matter. Finally, they have considered the contributions of Dr. Rubin in the field of physics. Many scientists worldwide have also mentioned her theory, which may eventually win her the Nobel Prize. In fact, most top scientists around the world are now gathered in Geneva, Switzerland to work with the world’s largest and most expensive research to date – The Large Hadron Collider (LHC).

Since 1998, the European Organization built LHC for Nuclear Research (CERN). Many scientists around the world consider LHC as “one of the greatest engineering milestones of mankind” because of its large, complex and expensive experimental research facilities. The search for the elementary particle, known as “Higgs Boson” or “God Particle,” has gained recent fame worldwide because of its potential to explain the creation of universe. Such understanding could re-run the events that happened even before the Big Bang. Currently, scientists have proved the existence of proposed “Higgs Boson” with a five-sigma level of certainty. This new discovery could lead us understand the complexity of phenomenon in the universe.
These real-world examples illuminate the evidence of this dark secret of bias in science. Women have made significant contributions to science despite issues on gender role differences. They have stood and endured the pains of empirical search for truth. For that reason, they have discovered their unlimited potentials and have proved their capabilities in doing scientific advances.

**Murses in Nursing Science**

When most think of the profession of nursing, the majority will immediately think a “woman's job” or a field that is predominantly dominated by female presence (Mal, 2010). He also emphasized that nurses today are only approximately 5.4 percent of the nursing workforce.

The world has a history of a nursing workforce shortage. This shortage was originally perceived to be within the context of an overall high number of yearly hospital admissions that is associated with higher rates of morbidity and mortality, high healthcare costs and healthcare expansions. However, despite the nursing shortage, gender discrimination is still prevalent within nursing profession (Kouta and Kaite, 2011). For this reason, a multidisciplinary approach is needed to solve this gender issue.

Paterson, et. al. (2011), studied the male nursing students as they progressed to the program. The researchers have utilized phenomenological approach to illuminate understanding about the lived experience of male nursing students as they learned to care as murses. They have used paradigm case narratives and interviews as their data collection methods. Data analysis was characterized by four major strategies that include analysis, synthesis, criticism, and understanding of the phenomenon. Data from interviews were transcribed to generate interpretive commentary and find meaning. The researchers found out that gender issues in learning to care was shaped by personal experiences, the expectations of a predominantly female faculty and nursing staff, and their evolving understanding of the ways of caring that are gender based.

Interaction or proper communication and role modeling are important factors necessary to enhance therapeutic relationship. These strategies are considered to be effective in providing equal learning opportunities to murses. Thus, gender gap between murses and female nurses are being addressed.

**Job Opportunities in Science**

Many efforts have gone into addressing the gender gap in science. Physics is a field where women are still outnumbered. CERNis an international organization where exactly 15,000 people (at least on September 11, 2012) were working. The vast majority, about 11,200 scientists are so-called “users” paid by their home institute and coming from 69 different countries (Gagnon, 2012).

There is a significant increased of women in science. In 2008, females make up only 15.6 percent of the workforce at A Toroidal LHC Apparatus (ATLAS) collaboration but hold an unequal share of high-paid positions. Four years later, women have increased in number, which accounts for 19.9%. According to Gagnon (2012), half of these women are 36 years or younger, whereas only 33% of all men in ATLAS belong to this category. She have emphasized that “some countries have many female physicists while others have very few. Some hire more women then there are women from this nationality, which seems to indicate that these countries are less successful at attracting them to the field.”

To further corroborate the above statement, the study of Racusin et.al. (2012) have illuminated gender bias in terms of employment opportunities. The researchers utilized randomized double-blind study (n=127) to explore whether science faculty exhibit a bias against female students that could
contribute to the gender disparity in academic science. The resumes were identical save for the fact that one had a male name at the top and one had a female name (Henderson, 2012). The professor assessed each individual applicant’s competency and employability level. Mediation analyses revealed that professors evaluated female job applicants as less competent compared to their male counterparts. Males are considered hirable than females, even though their credentials were identical. Males’ salary offers are also higher compared to female counterparts.

Sexism also exists in terms of employment opportunities. Some employer prefers men rather than women or vice versa. While the situation for women in ATLAS is improving on all fronts, a worldwide study launched by the American Institute of Physics involving 15,000 physicists revealed that there is still a substantial gender gap in terms of access to opportunities. The survey showed that female physicists are invited speakers less often than their male colleagues. They get fewer opportunities to travel abroad, fewer resources (grant money, office space, and hired staff) and fewer students to supervise. They are also less likely to serve on important committees, thesis committees or conference organizing committees. This held for all women, from developing countries as well as very developed countries. The differences were statistically significant in all cases given the large pool of respondents (Gagnon, 2012). Hirsch (2011) stressed that “It’s important for institutions to value their women, let their women know that they are valued and to put supports in place that allow ambitious, talented women to contribute as best they can.” Valuing individual will help them discover their infinite potentials. These potentials are necessary to achieve best outcomes.

CONCLUSION

Science is a quest for understanding, a chase for knowledge development, and a search for truth. It takes persistence, passion, and a beautiful mind to understand the incinerating questions of mankind. Viewing the unceasing issue about sexism in science as water under the bridge tends to hinder both men and women from sharing their expertise in science. The opportunity to lay down a platform of shared knowledge about scientific inquiry helps understand the epistemological underpinnings of empirical search for truth. For this reason, asking whether science is sexist is not the main question. The attitudes, intimate issues, retention and motivation influence, professional presence of females in science and men in nursing and the different gender role perceptions about the limited potentials of women are issues that should be addressed.

Furthermore, gender discrimination, racism, and other unethical behavior hinders man from discovering their vast array of infinite potentials which are very important factors in answering their ambitious queries about the world we live in. Many men and women from different places and different backgrounds have made significant contributions to science. They have been a role model and act as leaders in their respective fields. Burnell (2010) said that “one of the things women bring to a research project, or indeed any project, is they come from a different place, they’ve got a different background. Science has been named, developed, interpreted by white males for decades and women view the conventional wisdom from a slightly different angle — and that sometimes means they can clearly point to flaws in the logic, gaps in the argument, they can give a different perspective of what science is.” She also emphasized that in science, “nothing is static, nothing is final, and everything is held provisionally.”

The above statements illuminate modern worlds of physics. Comparing men and women is like comparing one kilogram of lemons and one kilogram of oranges. Both share under the same classifications of citrus but with unique taste and distinct aroma and texture. Their roles in society maybe different as perceived by public domain but their quantity and their benefits are the same. If you reconcile this situation to quantum mechanics and general relativity, both will only reveal one-dimensional oscillating lines called “strings”. These “strings” are components of our body, which are identical with the world we live in. All of us are made of energy vibrations, which still considered as one of the major mysteries of science today.
Nevertheless, I think the gaps in the argument are purely perspective rather than descriptive. Sexism in science is just a mere perception of an individual who is influenced by fame, power and fortune. So asking whether science is sexist really does not make much sense. People must learn that setting irrational and unreasonable high standards to measure plausibility will not guarantee best outcomes.

REFERENCES

6. Hirsch, J. (2013). How to make it to the top of your field--even if you're a woman in science? Retrieved April 2013 from <https://www.youtube.com/watch?v=fMZnOFJ1cmY>