



Gendered Innovations in Orthopaedic Science

Gendered Innovations in Orthopaedic Science: Hollywood and Orthopaedics: Through the Glass Ceiling—Darkly

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Our current trajectory suggests we are so far behind the curve of bringing women into orthopaedics that it would take a century or so to balance the scales; the previous bastions of neurosurgery and urology are out in front on this issue [21, 28]. Nothing is more dishearten-

ing to me as a medical student adviser than to see a young woman, exuberant with the discovery of surgery and what it has to offer, choose a nonsurgical specialty. The reason? Lifestyle and culture, however perceived and ill-informed. This is, in my mind, an injustice to our specialty. Suffice it to say we have work to do.

Recall the “glass ceiling.” Introduced almost four decades ago, the glass ceiling refers to the visible, but unattainable fruits of leadership to women and minorities in business and traditional white-collar professions [9, 10]. The purported reasons for economic and leadership disparity between men and women in the corporate world, orthopaedics, and society are manifold but similar: Lack of talent, lack of accessibility, lack of flexibility to meet high demands of said industry, and lack of negotiating and networking skills [3, 7, 8, 18, 26].

Similar to Fortune 500 companies, Wall Street, the sciences, medicine, and academia, the number of women executives and directors in Hollywood remain appallingly low [5–8, 13, 26]. The hierarchy of the motion picture industry—the business part of the fun—has enough similarities to the sciences and orthopaedics that it is worth a socioeconomic reflection.

In Hollywood, storylines are hyperbolized, characters dramatized, and shoot-'em-up action and internal strife wrench guts and evoke tears. But to me, one of the more unsettling aspects of visual entertainment is that women are often portrayed as sidekicks, love interests, and accomplices who—if they are too pretty, too strong, too much a vixen—either die or get their considerable punishment. I have often wondered, “Why are they so stupid, so helpless, or so fake?” The best and most assertive among them—from Batgirl to Bond Girls—tend to get sidelined, bumped off or even worse, rescued by their male counterparts.

Recent attention has identified the paucity of women in serious acting, directorial, or executive roles, affecting the movie industry at all levels.

Note from the Editor-in-Chief:

We are pleased to present to readers of Clinical Orthopaedics and Related Research® the latest installment of “Gendered Innovations in Orthopaedic Science” by Amy L. Ladd MD. Dr. Ladd is a Professor in the Department of Orthopaedics at Stanford University. She provides commentary on sex and gender similarities and differences in orthopaedics.

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According to Maureen Dowd's *New York Times* exposé on the dearth of women in executive roles in Hollywood [8], the most profound difference exists with women directors. Women comprised of less than 2% of the directors in blockbusters (considered the 100 top-grossing films) in both 2013 and 2014 [8]. When it comes to salaries, the entertainment industry pay gap mirrors that of the United States, if not the global economy. Despite the Equal Pay Act of 1963, women still realize only 79 cents on the dollar [7, 18], with under-represented minority women much lower [5].

Generally speaking, in order to chip away at social injustice, we must recognize the disparity and take action. The harder part is taking action. We have seen the emergence of the Civil Rights Act and its offspring the Equal Pay Act (never equalized), the Equal Rights Amendment (never ratified), and Title IX (and all its implications [16, 17]). *New York Times* reporter Claire Cain Miller proposes a sea change across the realms of business in order to bridge the pay gap. She recommends: (1) Publishing everyone's pay, (2) coaching negotiation techniques, (3) ignoring previous salaries, (4) making work easier for mothers, (5) building flexible work spaces; and importantly, (6) changing the Equal Pay Act [18]. In science, medicine, academia, and the entertainment

industry, egalitarian concepts such as these will speak to the entire body of consumers, patients, and the audience at large.

In healthcare, balancing the workforce and all its economic permutations provides the best opportunity for better business practices, research productivity, and better access to care for our patients across medical and surgical disciplines [2, 23, 27]. Widening the pipeline across the arts, sciences, and corporate world opens doors, and potentially shatters glass ceilings [24]. Residencies in pediatrics, family medicine, obstetrics and gynecology, and psychiatry now offer shared residency or part-time options for women (and men) who have family and other professional obligations [9, 10, 22]. This would extend the total residency in years, but accommodate childrearing and critical life decisions, inclusive of all of the best and brightest. Progressive orthopaedic education will require federal Medicare commitment or novel funding to support flexible residency training. This expansion is a fair ask of a government whose current directives aim to deliver affordable, value-based, and shared decision making across a diverse healthcare team and patient population. Naturally, it will take time and certainly investment beyond our current funding structure, but arguably one well worth the effort.

When women have (the rare) opportunity to lead a film, the investment tends to pay off. It turns out, tapping more women in meaningful roles or behind the lens has a substantial economic impact. The Bechdel test—named after cartoonist Allison Bechdel, who introduced the concept in her comic strip in 1985—is a barometer in film measuring whether (1) at least two women are present, (2) they talk to each other in conversation, and (3) they talk about something other than a man [4, 14, 25]. A study of 2013 blockbusters identified those that passed the test earned a total of USD 4.22 billion, while those that failed earned USD 2.66 billion [25]. Movies that pass the Bechdel Test cost significantly less to produce, and had a 37% higher return on investment [13].

Cinemas in Sweden recently announced that they would provide Bechdel ratings for movies they show in their theatres in an effort to promote gender equality [1]. Sweden's early adoption of gender equality projects recalls the impact of the Gendered Innovations sex and gender research initiative with granting agencies. The first policies were enacted in Scandinavia at the European Commission's Horizon 2020, the largest EU research and innovation program [11, 12, 15]. In part due to this momentum, the NIH has changed its granting policies and has acknowledged how examining sex

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and gender similarities and differences in science saves money and saves lives [11, 12, 15, 19, 20].

The business of saving lives and relieving suffering—whether on the silver screen or in the operating room—can only improve when half the talent pool are active participants. An orthopaedic workforce of the future that reflects the diverse patient population it serves—one that it is inclusive of both sexes—will best be equipped to provide breakthrough treatments and innovations for each and every individual.

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