FILMMAKING AND SCIENCE:

WHO HAS THE RIGHT?

by

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DEDICATION

For Craig

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ABSTRACT

This paper examines the relative lack of female filmmakers and physical scientists through the lens of authority. I argue that authority comes from other's confidence in one's ability to be a scientist or filmmaker. This confidence is, in part, related to how well a person fits a stereotype and belongs to the social group deemed to own the knowledge needed. Due to their analogous histories of development, the stereotypes of a scientist and a filmmaker are remarkably similar and designed to exclude women. As a result, women are not granted authority in these fields as readily as men. Some women have found ways to co-opt authority and become successful. However, until they are deemed rightful owners of the knowledge of scientists and filmmakers, women will be underrepresented in these fields.

INTRODUCTION

Most people see science and art as two very different disciplines. One is concerned with objectivity, data, and truth, while the other values subjectivity, personal expression, and creativity. However, having received training in both physics and filmmaking, I have begun to see similarities between the two fields. I believe these similarities are implicated in commonly-held and nearly-identical stereotypes about who can be a scientist or a filmmaker. These stereotypes, in turn, affect the level of authority men and women grant to participants within these fields.

To begin my argument, I will compare academic physical science and filmmaking, (concentrating specifically on the role of the director) through their shared patterns of historically excluding women. I will then address how social agents, such as scientists, filmmakers, the general public, grant or withhold authority based on knowledge ownership. This will lead to an analysis of the stereotypes, both within science and film, and outside observers, that people use to describe the practitioners as related to who is granted authority. I will include a discussion of how the patriarchal hegemony uses the monster narrative to shape the portrayal of certain directors and scientists, serving not-so-subtle agendas of social control. Lastly, I will discuss the methods excluded groups use to attain a measure of authority. By authority I mean the ability for a trained professional, be it a scientist or filmmaker, to exercise their specialized knowledge without excessive challenges based on their association with a social group. Throughout my paper I will specifically write about women; similar arguments may apply to the exclusion and subordination of other minorities in these fields.

To begin I am going to share two incidents from my professional training. First, when I was an undergraduate in an upper-level quantum mechanics class, my professor asked me to make a presentation on the life and work of a physicist who had made a major contribution to quantum mechanics. My professor, a history buff, provided the class with a list of names from which to choose. Out of the ten names, none were women. After class, I asked my professor if he knew of any female physicists who would qualify for the assignment. Without missing a beat he gave me two names – Maria Goeppert-Mayer and Lise Meitner. Goeppert-Mayer won the Nobel Prize in 1963 for her work on the structure of atomic nuclei. Meitner, who was instrumental in the discovery of nuclear fission, was nominated for the Nobel twice by Albert Einstein and Niels Bohr, yet my professor did not included either Meitner nor Goeppert-Mayer. Secondly, while preparing for writing this thesis I looked for books and articles written about film directors. While reading one of the books I found, I kept turning to my husband and saying "Did you know a woman directed *Fast Times at Ridgemont High? Real Genius? Near Dark*?" Is the similarity between these two anecdotes – the exclusion of Goeppert-Mayer and Meitner from undergraduate physics Valhalla and the general near-silence about the work of female directors – a coincidence? Or are both rooted deeply in the mechanisms by which we construct and award authority, credit, and prestige?

SHARED PATTERNS

Filmmaking and scientific research have gone through similar trajectories of growth and formalization. Film history often begins with Muybridge, the Lumière Brothers and Thomas Edison. Motion picture was a novelty and filmmakers just had to point and shoot to create films audiences would watch. Filmmaking became grounded in a studio system in the 1920's, creating a hegemony against which future film movements have been defined. Prior to studio standardization of filmmaking there was a surprising (to me at least) number of women involved in filmmaking. Film historian and curator, and filmmaker Radha Vatsal illustrates in her essay "Reevaluating Footnotes: Women Directors of the Silent Era," how, due to its novelty and uncertain future, early filmmaking was open to women but became closed off once it grew more established. She relates "the often-quoted story [that] had he realized that moving pictures were going to spawn their own lasting industry, Léon Gaumont (founder of Gaumont Film Company) would never have allowed his female secretary, Alice Guy, to make films" (120). Many consider Alice Guy, later Alice Guy-Blaché, to be the first female director. Silent film historian Anthony Slide has made the claim that "between 1911 and 1920 women were directing films as often and as well as their male counterparts" (Hurd 1).

Once filmmaking became institutionalized in studios, the studio model was further entrenched by film schools that taught the techniques and attitudes required for success in the studio system (Sabal). Students took on studio roles of producer, cinematographer, editor and the "mythic . . . director [who has] a vision and spirit that endows the life of the movie" (Sabal 6). While some directors shy from the idea that

their personal vision makes a film, others seem to embrace it. Roman Polanski, for example, told Joseph Gelmis, "to me the director is always a superstar. The best films are best because of nobody but the director. You speak of *Citizen Kane* or *8 ½* or *Seven Samurai*, it's thanks to the director who was the star of it. He makes the film. He creates it" (6). Richard Lester stated it even more strongly,

> A director's job in this period of filmmaking – and I know that this may change, as it has in the past – is to be an absolute dictator and produce a personal vision on a subject that he has chosen. He is paid too much because he has that responsibility, and what the people who pay him are buying is that personal vision. He must be absolutely ruthless in producing an accurate vision. He must be a dilettante and interfere in every part of the production and it must finally succeed or fail on the success or failure of his own personal vision (6).

These ideas drive some students, despite "not know[ing] what a director does, [to know] they want to be one" (Sabal 8).

Scientific inquiry initially belonged to the wealthy men and women who had the time and resources to carry out research in their homes. The institutionalization of scientific research occurred when humanists, such as Galileo, with a desire to exchange research in the form of papers and standardize curricula, worked to take it out of attics and salons and place it within the walls of a university. The move began during the late Middle Ages, with universities being modeled on monasteries. A respect for tradition helped to exclude women from some universities into the 20th century (Schiebinger). The university system changed the requirements one needed in order to be a credible scientist. No longer could a person undertake research in their home and be a scientist, they needed to attend university. This resulted in the transfer of knowledge ownership from an exclusively landed, moneyed class to people who could obtain a university

degree. However, as in film, once science became entrenched in an industry, the university system, it became more difficult for women to gain access to the institution (Rolin). Once founders of universities, primarily humanists and clergy, removed science from the home (the female sphere) the "intellectual virtues of the scientist became increasingly polarized with the virtues of the woman" (Rolin 102).

By creating formalized codes the disciplines of science and filmmaking also created uniform criteria to determine who could or could not make movies or scientific discoveries. As a result, the people who did not fit the criteria of scientist or director were forgotten, perhaps intentionally. Scholars of both filmmaking and science have put energy into discovering these "lost" women (Gaines 113). Why was it so easy to forget these women and, conversely, why was it possible to find them? Today, both film and science have standard ways of displaying credit for work. Scientists list their names on articles, books, and patents, with the order often indicating hierarchy within the collaborative group of researchers. Filmmakers have credits, at the beginning and end of films, with titles that explicitly state the contribution of each person involved. Acknowledging production has not always been as predictable as it tends to be today. Not many early films survive and many extant examples are missing their credits altogether. Often films were recut and producers and distributors would only include the credits they deemed important: title of the film, production company, copyright information, etc. Many of Alice Guy-Blaché's short silent films list only her production company and the film title. Another example was silent film era actress Mabel Norman, who, it was announced in a December 1913 issue of *Moving Picture World*, "is in the

future to direct every picture she acts in" (Vatsal 123). Vatsal lists all the reasons why it is difficult to establish a definitive filmography for Normand or any other director during the silent film period:

> the fact that there is not enough detailed information available to make the judgment calls necessary; that the films were so popular they went through many hands, and along the way were recut and retitled, so the same title exists in many different versions; and as the films as well as the interviews with Normand and other members of Keystone gang suggest, these shorts were rapidly put together in a freewheeling and improvisational manner that doesn't leave much room for a "director" in the conventional sense (124).

To complicate Normand's situation further, she regularly costarred with Charles Chaplin, who claimed to direct himself. His recognition surely biases viewers of *their* work.

Within science there is actually a term to describe the over-recognition of someone based on their fame rather than on their actual contribution. It is called the Matthew Effect, after Matthew 13:12, "For whomsoever hath, to him shall be given, and he shall have more abundance." A second effect, the Matilda Effect, was named after the second part of 13:12, "but whomsoever hath not, from him shall be taken away even that he hath." This describes how people without much of a reputation will continue to be denied credit by people such as fellow scientists and science journalists for their work because the "Matthews" of the world have already been given it. The genders of the two names are not a coincidence. Rossiter states it well when she writes, "[t]he 'losers' in the process are often marginal figures with no solid position, central location or established disciple to battle for them or protest their exclusion, thus demonstrating that in scientific myth-making politics can play at least as important a role as the work itself" (326). She then lists a number of women who were excluded from credit. There is Trotula, a

physician from the eleventh century whose treatment and cures of women's diseases was written about extensively by her husband and son, both physicians. Her “re-discovery” as a female scientist hinges on these early descriptions. A monk, transcribing her work a century later, could not believe a woman could accomplish so much and masculinized her name (Rossiter 328). Some women chose to publish under masculine pen names in hopes that this would cause their work to be taken seriously (Alic). Unlike in film, where a married name often just gave another option for a woman to be credited under, women scientists who married male scientists could suffer the fate of Matilda while their husband got a bump thanks to Matthew. After biochemist Ruth Hubbard's husband George Wald won the Nobel in 1967, science journalists began to attribute her independent work before and during their marriage to him (Rossiter 330).

THE GRANTING OF AUTHORITY

Can confusion over names and the Matilda/Matthew effect really explain why women seem so easily forgotten by history? I think this forgetfulness hides an underlying cause for the lack of female directors and scientists in current work. The absences of a historical record also reinforces the reason why there are so few; they lack authority in these fields. The authority to do something does not only come from one's education or experience – other people grant it. This is especially true in collaborative enterprises such as science and filmmaking, in which the social status within the creative group can affect authority and effectiveness.

Latour and Woolgar write about how scientists accrue credibility, which in turn gives them authority. They include in their definition of credibility "personal influence based on the confidence of others" (Latour 194). They emphasize that the opinions of others, not just about the data published but of who published it, effects how much credibility a scientist is given. In one example Latour and Woolgar give, a scientist is not surprised when a technique another has recommended fails. He says his lack of surprise is due to his previous experience with the other scientist and that the other's data made him "feel uncomfortable" so he never expected the proposed technique to work (Latour 202). His expectation of failure underscores the fact that the "credibility of the proposal and of the proposer are identical" (Latour 202). This connection between proposer and proposal stems from the belief that "the people who know are those who are supposed, or are authorized to know" (Mukerji 64). Latour and Woolgar unfortunately ignore influences on credibility that are not directly related to scientific output, monetary gain in

the form of grants, or academic lineage. In doing so they fail to recognize the consequences of "groups own[ing] bodies of knowledge" (Mukerji 64).

A corollary of knowledge ownership states that people belonging to a group whose claim to ownership of a body of knowledge is widely recognized by the patriarchy (both men and women) will be granted the authority to know and those outside that group will not, regardless of their actual knowledge. As a result, if more than one person claims knowledge, the authority to know goes to the "person who can display the most appropriate social characteristics relevant to the issue at hand" (65 Mukerji). Within a collaborative effort, be it scientific research or film production, each person belonging to the creative group also belongs to a societal group. This broader societal affiliation often determines which knowledge each person owns. This knowledge claim comes from a societal group's "social history and present social position" (Mukerji 66). Therefore, as Mukerji states, "since authority over knowledge is related to activities and position outside of a group we can use it to link internal processes to both internal and external social definitions of group members" (67). These two points – the connection between authority and knowledge and the societal context-dependence of knowledge ownership – relate directly to why female directors and scientists are less common than male ones and the women who work(ed) in those fields are often overlooked by historians, practitioners in their fields, etc.

A blatant example of how these connections play out is the story of Dr. Barres. Barres attended the Massachusetts Institute of Technology, works at Stanford University, and is a female-to-male transgender. He underwent the transformation during his

scientific career and is therefore uniquely able to testify to the (knowledge-independent) differences in the treatment of female and male scientists. He once overheard a fellow professor, unaware that the female Dr. Barres he knew of and the male Dr. Barres he just heard give a seminar were one and the same, say “Ben Barres gave a great seminar today, but then his work is much better than his sister's” (Barres 134). He also states that the biggest difference he has noticed in his treatment by other scientists is that “people who don't know [he] is transgendered treat [him] with much more respect: [he] can even complete a whole sentence without being interrupted by a man” (135). While this example may lack statistical significance, it is a powerful anecdote regarding societal group affiliation and perceived authority based on gender.

STEREOTYPES AND MONSTERS

One can summarize the trajectory of "lost" female scientists in this manner: initially, women *did* scientific research, later they *should* not do research, and finally they *could* not undertake scientific inquiry. This shift became possible, not just because of their exclusion from formalized institutions and history, but because those same institutions defined the qualities that make a good scientist in contrast to those that a good woman should possess. Women were to be emotional, modest, and nurturing. These qualities "subsumed under the term femininity [were] barred" from science (Rolin 103). This oppositional definition of scientist makes way for a commonly held stereotype that a scientist

> emanates an aura of absent-mindedness, extreme confusion, or even madness. He is more of an outsider in terms of social contacts. He is inattentive to the people around him and is uninterested in social trends and fads. He seems socially displaced. His enthusiasm for his work could almost be called an obsession. His work attitude can sometimes be completely apolitical or even scrupulous (Flicker 309).

A similar sentiment describes individuals who "have tended to define themselves as outsiders, alienated and misunderstood . . . stereotypically eccentric, obsessive, and seemingly unconcerned with daily material realities" (Citron 64). While the first quote describes a social definition of scientists, the second is from an article written in the early 1980's in which the authors explain why so few women enter film school. Throughout the article, one could replace the term "filmmaker" with "scientist" and have a paper similar to the many I've read about the retention of women in the physical sciences. Citron and Seiter point out that "[h]istorically, culturally recognized artists are men" (64).

They point out that women have been “excluded from participating” in the behaviors widely seen as characteristic of artists. When listing reasons why there are so few female film students in their school's film program, they include the “cultural myths about art and the artist” (61). They make it clear that because women do not belong to the social group that putatively owns the knowledge of art, they are not entering filmmaking and are therefore reinforcing their own exclusion. A study conducted by six female members of the Director's Guild of America (DGA) confirm that women are not becoming directors, the most mythic position for a filmmaker. Their study showed that between 1949 to 1979 less than 0.5% of feature films and prime time television were directed by women (Philadelphia). As a response to their findings, the DGA began keeping track of the number of days female directors work per year beginning in 1983. In 1997 the guild released their employment records and revealed women directors are responsible for working only 7% of the total number of days all guild members report (Directors Guild of America).

Often when it is pointed out that there are not many female scientists, the response unsympathetic people give is that there is Marie Curie. She is the famous, multi-Nobel prize winning scientist whom (almost) everyone can name when asked for a female scientist. She was brilliant and talented and, unlike many of her contemporaries, not in need of discovery. Kathryn Bigelow was the first woman to win the Oscar for best director in 2010 for *The Hurt Locker*. She is becoming the Marie Curie of directors, the name that should forever lay to rest the idea that women somehow are underrepresented in directing. If so many women have been forgotten and the ideal for a scientist or a

director is the antithesis of what women are constantly told to be, then why is Marie Curie an icon and Kathryn Bigelow a history maker?

Perhaps they function less as models than as monsters. Edward Ingebretsen says that "the monster reconfirms the virtues of the normal for those who, from time to time, need persuading" (25). In his paper, "Monster-Making: A Politics of Persuasion," he uses the obvious and extreme example, "How is one a good neighbor? The story of Jeffrey Dahmer is exemplary in warning us how *not* to be" (25). The patriarchal hegemony needs women like Marie Curie and Katherine Bigelow in order to keep the rest of us in line. If there were no examples of female scientists or directors then there would be no one to warn us against becoming. A few, select women must be recognized in order for other women to know what *not* to do and how *not* to act. Of course their mere existence is not enough; they must be "identified – pointed out, gossiped about" in order to become monsters (Ingebretsen 26).

Marie Curie, who married a Frenchman and did all her scientific work in France after being denied a position in Poland because she was a woman, suffered from xenophobic and anti-Semitic attacks (despite not actually being Jewish) in the press after applying for a seat on the French Academy. The fact that she had won a Nobel prize for work done in France and was about to win a second did not guarantee a solid reputation (Pasachoff). She was not granted a seat on the French Academy. The press identified her with other "monstrous" groups of the time such as foreigners and Jews, in order to make clear her own monstrosity. However, the act that most inflamed the mob was when the press revealed she had carried on an affair with a married man (Paul Langevin, also a

famous physicist), after the death of her husband. She became a “foreign home wrecker” in the press and the Swedish Academy asked her not to attend the ceremony where she would be awarded her second Nobel Prize (Pasachoff). (I'd like to share that Erwin Schrödinger famously took one of his many mistresses to the Alps with him where he worked out his wave equations and, and as far as I could tell, the Academy did not feel compelled to comment when they awarded him the Nobel for that very work.) One newspaper editor wrote of Marie Curie, “the Vestal Virgin of radium [was] an ambitious Pole who had ridden to glory on Curie's coat-tails and was now trying to latch onto Langevin's” (Preston 42). She violated the norms of scientific professional identity by being a woman and so was classified as an outsider in an inflammatory way. She violated the norms of womanhood by having an affair and was again vilified with the added sting of claims that she was incapable of the scientific achievements she held without sleeping with a superior man.

The director Linda Yellen pointed out that when she was growing up “it was all right to look at movies but it was not the sort of thing anyone was ever expected to do professionally. . . it's not the thing a 'nice' girl did” (Miller 246). It is, therefore, no surprise that Kathryn Bigelow has also suffered from vilifying statements. Some of her peers even attack in the same manner Curie was, claiming that her success is only because of who she had married. According to David Eichler, a Hollywood producer, “[f]or years there was this feeling that she was getting her career from [James Cameron], and there wasn't much respect” (Blakeley). After her Oscar nomination, her femaleness dominated discussion of her work and its significance. Some, however, did not find her

adequately girly. Martha Nochimson, writing for *Salon*, dubbed her the "Transvestite of Directors" by arguing that she is "masquerading as the baddest boy on the block to win the respect of an industry still so hobbled by gender-specific tunnel vision that it has trouble admiring anything but filmmaking soaked in a reduced notion of masculinity." Once again the patriarchy, working through the media, identifies the monster woman with another "monster" group, evoking terrifying images of gender-bending mustachioed drag queens.

These untamed monsters serve as fables for women to know how not to act. I imagine that female scientists of Curie's day would have seen how she was treated and been grateful to be forgotten instead of smeared through the mud. Do today's female directors read press on Bigelow and then hesitate to take on projects that aren't girly enough?

Monster women are often very successful; there is no room for mediocrity if you want to become the exception to the rule. These women also (unwittingly) serve the patriarchy by setting the standard that all women must meet in order to be competent enough to compensate for their gender. For example, Kristen Rolin relates a story of a woman who applied for a faculty position in the Physics Department at Duke University in 1936. Rather than comparing her accomplishments as a physicist to the "merits of the other (male) applicants [professors in the department compared her work] to 'the accomplishments of Madam Curie'" (103). As the quote from Nochimson implies, will future female contenders for best director be compared to Bigelow and only measure up if they also choose films absent female perspective and heavy on the explosives? The

director Kavery Dutta points out that when there are so few women within an industry, it is not just the hugely successful women that one has to worry about,

> Sometimes, you walk into a film equipment house . . . and the first thing you trigger off is someone's story about a neurotic woman who was there last year, a woman who didn't know what she was doing. “I'll never forget that lady. She drove us crazy. . .” the story isn't directly aimed at you. Nor is the person unfriendly toward you, but when a male director walks in, he certainly doesn't trigger off stories about the one male who messed up (Miller 83).

Women must learn to beware of successful monsters and ward off association with failures at the same time.

'The confidence of others' is not solely determined by social group membership. I do not think Latour and Woolgar were wrong to include grant money and recognition in their calculation of credibility. Nor is it wrong for a filmmaker with more previous experience to be granted greater responsibility. However, those are not the only criteria people use to make a judgment about a person's ability. If position in a historically-defined social group plays a part in others' opinions, where does that leave people whose history was forgotten or misplaced? It can be difficult to join a group that has been defined specifically to exclude you.

CO-OPTING AUTHORITY

Some female directors have found one method to co-opt knowledge that might otherwise be denied them. A common theme that emerges while reading interviews with female directors is how detailed technological knowledge helps them maintain a tenuous grasp on authority. Michelle Citron points out that "a director is a macho thing – technology and virtuosity and control. . . the artist in a kind of large, technical, male way" (Miller 76). It is not surprising, then, that since women can't conform to the "male" part of being a director, they feel obligated to master the technical part. Tami Gold felt that "as women, we're challenged technically all the time. . . I have to know the technology of production. I have to know, so that I never feel that I'm on the defensive" (Miller 124). The women felt they had to prove themselves by knowing all the technical details. However, when reading interviews with male directors, if technological knowledge came up, often the men saw no need for the details, believing their vision was all that was needed. Jim McBride states that he "d[id]n't particularly put too much value on learning technique . . . [b]ecause the only thing that a movie can really be is an expression of yourself" (Gelmis 9). McBride and many other male directors take authority on set as a given and therefore do not have to rely on technical knowledge to help their credibility.

Interestingly, the use of technology to establish the authority of female scientists in fictional films is also common. Perhaps, directors, male and female, are aware (consciously or subconsciously) that technological prowess grants women the authority to knowledge outside their social group. Giving female scientist characters technological props while introducing them is a short cut to let the audience know the women are meant

to be believable. These props are not included when male scientists are introduced, presumably because no cues are necessary for audience members to take them seriously. For examples, consider *Junior* (1994), *Twister* (1996), *The Saint* (1997), *Mimic* (1997), *Contact* (1997), *Volcano* (1997), or *The World is Not Enough* (1999). In *The Saint*, the director, Phillip Noyce, introduces Dr. Emma Russell, an electrochemist, lecturing in a lab wearing a lab coat and holding up lab equipment. Her male counterpart in the movie, Dr. Lev Botvin, is first shown with glasses and unkempt-looking hair and clothes to reinforce the scientist stereotype but he does not have equipment surrounding him. In the beginning of *Twister,* Jan de Bont shows the audience Dr. Joanne 'Jo' Thornton-Harding with electrical cords over her shoulders fixing a satellite dish while members of her team repeatedly ask for her assistance. Dr. Bill Harding, her soon-to-be-ex-husband, needs no introduction when he arrives. His authority in the setting is established by everyone's excitement for him to be there (Jo is no exception) and their desire for him to see their newest piece of equipment. In *Contact*, Robert Zemeckis introduces the adult Dr. Ellie Arroway, an astronomer, overlooking a giant radio telescope. She then arrives at her new lab eager and ready to work. She wears glasses, her hair is carelessly pulled back and her clothing is poorly-matched. Her colleagues call her "Dr. Arroway" and she asks them to use "Ellie." Dr. David Drumlin, Ellie's nemesis in the film, the man responsible for cutting her funding – arrives neatly dressed in a suit without a lab coat, any cable over his shoulders, or a shot to a telescope to let us know he is a scientist. If the women are not wearing lab coats, they are dressed as if they do not care about appearance – often similarly to their male colleagues. Additionally, early on in the movie they are referred to

as “Doctor.” Writers, directors, nor editors chose to introduce them in a domestic setting. Their male counterparts are rarely introduced with scientific equipment; some do not even need to be called “Doctor” to establish their authority.

In the movies, as well as in real life, female scientists have to cope with the unequal allocation of authority by working two and a half times harder than their male colleagues (Wennerås 342). If this comment sounds oddly quantitative, there is a reason. The authors of “Nepotism and sexism in peer review,” a 1997 article in the prestigious science journal *Nature,* determined that women must produce 2.5 times more scientific output, as determined by impact-factor-adjusted number of journal articles, for a granting panel to deem them as competent as their male counterparts. (Interestingly, Spike Lee has also felt the need “to be twice as good as [his] white classmates” (Fuchs 9).) Women also have to learn to self-promote more aggressively than they may otherwise be comfortable doing. Scientists interviewed by Rolin point out that women need “an extra bit of aggressiveness” (107). Perhaps less flattering is the term “rooster complex” to describe scientists' need to “assert that this is a good idea, the right interpretation, and that you thought of it . . . [because] it doesn't do your career any good to have the theory accepted, without anyone giving you the credit” (107). As a result women should be “very articulate and aggressive” (107). Rolin, importantly, points out that whether women's hesitancy towards aggressive behavior is a product of nature or nurture is not at issue. The fact is men and women often attribute aggressive behavior to the male gender and women must 'do' that aspect of male gender to gain authority.

CONCLUSION

Filmmaking and scientific research have a lot in common when it comes to women. Both fields transitioned from 'hobbies' of the privileged to formalized institutions, successfully accumulating social capital as a profession by weeding out the less credible members of society. After the shift, history often (intentionally or unintentionally) forgets the women who worked in these fields until feminist scholars (re)discover them decades or centuries later. In part as a result of this loss of history, men and women do not grant women, as a social group, authority in these fields as readily as men. Virginia Valian put it plainly when she wrote that "femininity is incompatible with competence and leadership" (324). Historical omission is not, of course, the only reason for this – in a broad sense, how can people at the bottom of the social hierarchy be trusted to be right about *anything*, especially in fields requiring specialized technical training or artistic taste? This lack of authority reinforces the (uncannily similar) stereotypes about scientists and filmmakers – a tribe of antisocial, narcissistic geniuses whose racial and economic privilege is so deeply assumed as to be unmentioned.

The obstacles facing women in male-dominated fields such as science and film today do not revolve primarily around the issues of equal access and equal opportunity that were championed by second-wave feminists. The difficulties today stem from the systematic denial of authority. Women have found ways to co-opt authority by concentrating on detailed technical knowledge, working 2.5 times harder and acting like an aggressive rooster. These methods work for some women but are not a solution. The solution, ultimately, is the emergence of a broad consensus among both men and women

that women have as much authority as men to be scientists and filmmakers.

The first step to addressing the denial of authority, I think, is remembering those that have been forgotten. If people learn that women did scientific research and directed films in the past then it should be easier to see women doing that work now. However, having a lecture dedicated to women just implies their uniqueness and highlighting successful monsters "is a hoax, the outcome of which is to make many woman feel inferior because they are unable to follow the model" (Valian 329). If professors only mention the contributions of female scientists or filmmakers when discussing "feminist perspectives" or "gender issues" this serves to delegitimize their work by implying that their impact was limited to the girls' league. For example, in a 1999 book dedicated to American film outside of Hollywood there is a chapter titled "Female/Feminist Sensibility." The author, Emanuel Levy points out that "[o]ne cannot assume that women directors necessarily make feminist or even enlightened films" (349). Fortunately, this admission doesn't require him to move discussion of non-feminist female filmmakers to other appropriate locations in the book; simply amending "Feminist" to "Female/Feminist" allows him to keep all the directresses in the metaphorical kitchen where they belong . By the same logic, Levy could have put the rest of the book in another chapter entitled Male/Homosexual/African American Sensibility and pointed out in the text that not all male filmmakers *really* make homosexual, African American films, if one wants to be sensitive about that kind of thing. That, of course, seems ridiculous, so why does lumping all women together seem more sensible? Additionally, why the term "sensibility" and not "cinema?" Perhaps women don't make films: they make estrogen-

soaked, emotional rants.

Instead of isolating female scientists and filmmakers, they should be integrated in a historical context that shows their contributions. If one sees a “number of women with a broad range of characteristics, you have reason to think that you too could fit in” (Valian 330). That is why it makes sense that there be chapters dedicated to African American cinema, gay cinema, and filmmakers working in different genres and regions. I think it is fair to discuss feminist filmmakers as a group (with the caveat that not all women are automatic members), but why not include women in all the chapters instead of defining their work in terms of their 'female sensibility?'

Although historians of science and filmmaking have made progress in addressing the loss of female history, greater historical awareness has not resulted in dramatic change. A group's authority to know does not just come from its history, it also relies on the group's present social capital. That is why “[t]ypically, departmental culture changes when an individual male, with a key role in the power structure, acquires feminist values” (Etzkowitz 181). Like male directors who take authority for granted, the patriarchy grants men in academia authority more readily and so they are in a better position to institute changes in policy. Definitions need to change; attributes that are considered feminine can not be considered the antithesis of those needed to be a scientist or filmmaker. In order for this to happen there has to be a shift in our behavior towards sexism.

Today most of the world is sensitive to racism; if Madam Curie were alive now no one would publically accuse her of being Jewish as a way of insulting her, and anti-

Semitic language used by prominent people typically brings swift retribution(just ask Mel Gibson or John Galliano). Yet, Katherine Bigelow shows us that being a woman is still an issue and sexism is still acceptable. Citron and Seiter share that "many male students submit film treatments that are extremely sexist. Violence against women is a favorite theme" (65). One could dismiss this observation by noting their article was published thirty years ago. Not that long ago, I watched work by my fellow classmates in which domestic violence was used to get laughs. I have scientist friends that have had dirty, sweaty gym clothes left on their desk because their male labmates want to make it clear that they should be doing laundry, not science. We can remember history, we can challenge stereotypes, but women won't have equal authority until sexism is as dirty a word as racism.

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