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Feminized Automobility:
Racing the Car as a Cultural and Technological Artifact

Eva Gray

April 2020

A Senior Thesis
Advised by James Challey and Jill Schneiderman

*Submitted to the Faculty of Vassar College in Partial Fulfillment of the Requirements for the
Degree of Bachelor of the Arts in Science, Technology, and Society*

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Acknowledgements

Four years ago I was terrified by the idea of writing a senior thesis. It was one of the many things I thought I could not do. Four years later I find myself here with so many people to thank. First and foremost, I owe everything to my two incredible thesis readers.

Jim Challey, thank you for being the only other person at Vassar who enjoys talking cars with me! Thank you for the countless books and newspaper clippings, and for being a continuous fountain of knowledge on all things auto-related. I am so grateful that you continue to read and advise theses even though I never had the pleasure of taking one of your classes. Jill Schneiderman, I grounded so much of this work in the wonderful discussions we had in our feminist approaches class, and that will forever remain one of my favorite classes I've taken in my four years at Vassar. Thank you for always being so open, enthusiastic, and helpful, and bringing me into the great world of feminist literature.

To my major advisor, José Perillán, you have been my steady support at school through more health issues than I ever expected, and I owe so much to your guidance. Thank you for responding to every panic-induced email, for always having your office door open for a chat, and for making me believe that yes, I did have everything under control, and yes, everything will be just fine. I also have to give a special acknowledgement to Marque Miringoff, who I always imagined would be there to read my thesis but sadly is not. Marque's sociology freshman writing seminar was the first class I ever took at Vassar, and I took a sociology class with her every semester that I was at Vassar until she unexpectedly passed away. Even though she was a sociologist, she saw STS as the perfect fit for me, introduced me to the department, and later helped me declare my sociology correlate and do the field work that later led to this thesis.

To the whole STS department, you have set me on a path that I always knew I had in front of me but never knew how to get to. I came to Vassar having no idea what STS was, even after having unknowingly been doing STS work for my whole life! A multidisciplinary program is, to me, the cornerstone of a liberal arts education, and STS has such an important role to play in the world now more than ever.

This thesis would not have happened without the incredible opportunity I had to work for The Lime Rock Drivers Club at Lime Rock Park. I started as an intern my sophomore year, and since then I have left campus every Friday and Saturday to drive to the track and have the time of my life. To Jeanette, Simon, Skip, and my entire Lime Rock family, thank you for always being so welcoming to me and supportive of my work. I feel blessed to be able to work at the track and combine my love of cars with everything I have learned from the STS department. Two field note journals, two field work papers, and one thesis later and the track has become such an important part of both my personal and academic life.

I also could not have done this without the continued support of my friends. I have never felt so secure, loved, and supported by such a strong and beautiful group of women, and I am so grateful for that every day. I will miss our long late night thesis writing sessions in the living room of our terrace apartment, and all of the laughs that ensued.

Lastly, to my wonderful parents, I do not think I have the words to thank you. You have believed in me and encouraged me to push myself, but also reminded me to always take care of myself. I think there is some of both of you in my writing and I consider myself infinitely lucky to have had you to guide me. To my mom, who has raised me to be a strong woman and an independent thinker, and to my dad, who started it all and taught me how to drive — thank you.

Introduction

Racing is a matter of spirit not strength. — Janet Guthrie

Take a moment to type into Google the name of any well-known male race car driver. You will see his race team information, statistics, news articles, point placings, and all of the normal information you would expect to see from a professional athlete. Not many places will you see any reference to their physical attributes, save for maybe weight measurements in relation to car aerodynamics or downforce calculations, which are vital to a race car driver's strategic planning. Now, type in the name of a female race car driver. Having a hard time thinking of one? How about Danica Patrick, who has become one of the most popular female drivers since her participation in the IndyCar series. Some of the first results you will see for Danica Patrick are articles titled "16 Gorgeous Female Race Car Drivers That Are Hotter Than Danica Patrick," and "The Untold Truth of Danica Patrick" with subject headings ranging from "Can Patrick take a joke?" to "She has a girly side," "Her love life wasn't always an open book" and "She froze her eggs as an 'insurance policy.'" This is why I have a thesis to write.

The simultaneous sensationalization and systematic exclusion of women from the racing industry is a complex and multifaceted phenomenon that is neither new nor close to ending. We have been told that there is no more masculine endeavor than that of operating and controlling a car. For more than a century following the popularization of the automobile, women have been relegated to the passenger seat using the same justifications as were used during the early twentieth century. Women are either too cautious or overly emotional, they panic in difficult situations or they are nagging backseat drivers, they are biologically less competent or they simply are not suited for driving as well as men — so it is said. The literature on the subject

appears to highlight the idea that men are inherently good at driving because of their gender, whereas proficient women drivers are anomalous. This pattern of generalizing men's driving habits but highly individualizing female drivers based on their perceived ability (or lack thereof) continues to the present day. The question then becomes, if women were given the same encouragement and pushed to pursue driving despite negative stereotypes, would they feel more comfortable in the automotive world? How have cultural values, especially those regarding women, manifested themselves in concrete changes to automobiles and auto racing both historically and in the present day?

Although others have explored some of these issues, I intend to follow an avenue that investigates some of driving as a part of daily life but more so racing as a heightened experience of driving. Since the day there was a functional automobile there have been races, and the two have evolved in concert. The claim that racing is a heightened experience of driving is an argument within itself, one that I intend to defend. My main focus, however, will be the progression of women in racing, and how the stereotypes of women as daily drivers have regularly found their way into the racing world. I will argue that one cannot be explored without the other. The parallels continue in safety and comfort innovations, often "blamed" on women (for example: the enclosed top, electric starter, automatic transmission, three-pointed seatbelt, and countless others) in street and race cars. These amendments were seen as concessions to female vanity and frailty before they were largely adopted by the automotive industry. I will argue that both gender and technology have influenced each other and evolved together since the inception of the automobile.

Technological artifacts and the networks that they thrive in are often constructed, however subtly, together. As daily cars have become increasingly comfortable and practical, which were characteristics most often correlated with femininity, the race car has maintained its connection to the early masculine ideals of motoring. Race cars today are closely linked to the early automobiles that were seen as so opposed to femininity: they are noisy, greasy, smelly, difficult to control machines that sacrifice every ounce of comfort in favor of speed and power. Early automotive pioneers such as Henry Ford believed that this raw soul of the machine existed jointly with masculinity. For Ford and many others, the roads on which cars were driven and the garages in which they were made were no places for women. The race car is still symbolically connected to the attributes that made automotive technology socially connote masculinity in the first place.

On the other hand, due to the relational nature of gender, femininity was everything masculinity was not. This construction of gender is not only reserved for bodily presentation or performance, but for what activities are deemed acceptable to the greater social order. Sociologist Pierre Bourdieu theorized that due to the overarching power of gender roles in our society “all the things of the world and all practices” are now “reducible to the male/female opposition” (Bourdieu 30). We have successfully built a society in which nearly every action or activity is gendered. This “male/female opposition” is extended to other artificially categorized dichotomies as well. The juxtapositions of emotion/reason, nature/culture, and biological/mechanical are inextricably tied to gender and longstanding. Women being associated with nature implicitly makes them seem incompatible with a sport that relies so heavily on technology.

The car is not simply a means to get from Point A to Point B — it is an experience in and of itself — and this is clear in the world of racing where driving the car is, precisely, the entire point. By examining women who drive cars for the passion and thrill of the sport, I aim to spotlight the stereotypes that exist in the automotive world and that determine their effects in the sphere of the race track. This arena is a unique microcosm of society in which gender roles play out on a fast-paced, highly-skilled and dangerous stage. Furthermore, studying a technology beyond its intended or “practical” use can be a valuable insight into what people have chosen to do with a technology — and how they do it — in accordance or opposition to social norms.

The practice of STS thrives on case studies, and one has recently emerged that has been subjected to very little analysis. We are currently at a crossroads in the racing world, with The W Series, the first exclusively all-female racing league in the world, having finished its opening season in 2019. Some female racers believe staunchly that there should be no separation by gender in the sport and that, with barriers to entry being removed, women should be allowed to compete alongside their male counterparts. However, other racers petition for their own league free from the stereotypes, highly sexualized language, and exclusionary nature of the historically male-dominated sport. Women’s relationship with cars has grown with the car itself, and as gender and technology have been shaped together, a new variation on the classic auto racing sport has been created. Some may ask, why study this at all? Because it is clear that “when thought of collectively, motorsports represent one of the largest, most popular genres of sport in the world, and their representations of gender and sex are both a reflection of larger cultural trends and a location where new subjectivities are developed” (Pflugfelder 414-5).

Although I will rely largely on secondary sources, I will ground my findings in personal interviews I have conducted with female drivers that I have met or gotten in contact with through my internship at the Lime Rock Drivers Club at Lime Rock Park over the past two years, as well as my own experience working at the race track. The base questions I have been asking my interviewees, excluding follow up questions, have been: What drew you to driving and then on to racing? What is your favorite car to drive and why (both race cars and daily cars)? How has your pursuit of racing been received by the community and the people you compete against? What setbacks have you faced and how have you dealt with them? Who have you looked up to in your driving career and why? Where do you see the future of female drivers going; and what about female engineers and designers in the auto industry? I plan on using these oral histories to ground my conceptual findings in real life experiences, since I wish to examine women's lived experiences with cars and racing.

Using the race car as a cultural and technological artifact, I aim to understand how the creation and use of technology is an active and dynamic process, similar to the social function of gender. A feminist approach to automotive technology has the ability to ask the critical questions that reveal how and for whom the technology is created, how it is used, and within what paradigms it has been created. Historically, racing has taken the form of a masculinized automobility since the creation of the car. Here, I aim to explore a new kind of feminized automobility. It is nearly as difficult for outsiders to try and understand the complex world of racing as it is for insiders to take a step back and critically examine the world that they occupy. Especially today, as more women have made their way into the racing industry, they represent a unique space as both insiders and outsiders in the business. I see this as the standpoint I occupy

as well. In addition to the historical male association with machinery and technology, the homogeneity of the sport is part of the reason that the female driver seems so out of place. When this homogeneity is challenged and, hopefully, dispelled, the female body is no longer in discord with the race car.

By creating a network of female drivers — a new network for the race car to act in — I will argue that the race car becomes less symbolically attached to the old ideals of masculinity and the very object has the opportunity to be redefined. Adding women to the equation in a way that is not tokenized or sexualized takes the race car away from being a marker of the male identity to a more universal symbol of freedom, speed, and competition. When the race car is no longer used as a way to reproduce the male identity in sports and a grounds for executing male power and privilege, it can instead be seen as a space for exploring the limits of the human experience with technology. In this way, the race car can become more itself.

Chapter 1 — A Brief History of the Evolution of Auto Racing

Auto racing began five minutes after the second car was built. — Henry Ford

Henry Ford was right when he commented on how quickly auto racing started after the invention and popularization of the automobile. From the late 19th century into the present day, auto racing has been a creative outlet for manufacturers to promote their brand, drivers to show off their skills, and mechanics to hone their craftsmanship. While there were parallels to these developments in Western Europe, the way American auto racing evolved is unique to and emblematic of our intensely hypermasculine and capitalist culture.

Many of the divisions of auto racing as we know them today came about following the end of WWII, but the early developments are also important to understand for the later contextualization of this thesis. Furthermore, early racing is an important place to study the formation of car culture and how vastly it can differ between different sectors of the sport. The term “auto racing” is somewhat of a misnomer, since this is an umbrella term that can refer to a number of different levels of competition with nearly incomparable cars. Each division of the sport has unique vehicles, governing bodies, audiences, and levels of female participation. Studying how these differences came to be is essential to understanding the history of women in the sport, even if this section of the thesis does not explicitly focus on female involvement (since early racing saw very little of it). Nevertheless, this fact speaks to how the evolution of auto racing was influenced by the values of the surrounding culture, and how these values were able to profoundly impact the nature of sport and the development of the race car as a technology.

The first American automobile race in 1895 featured what were called “road wagons,” which were quite different from how we may picture auto racing today. The competition was a

roundtrip road race between Chicago and Evanston, Illinois. The winner was a two-cylinder, four-horsepower Duryea road wagon that averaged about seven miles per hour for the entire race and had a top speed of twenty miles per hour (Smithsonian). While open road courses may have been the start of European and American racing, they quickly dissipated in the United States in favor of enclosed ovals, similar to those used for bicycle races. America's strong capitalist tendencies made enclosed ovals ideal for getting the largest amount of paying crowds at events, as well as keeping spectators more safely away from the action. Additionally, American racing seemed to favor brute power and speed over maneuverability, and many racing leagues and individual car developments reflected this fact.

While the Europeans stressed well-tuned suspensions, transmissions, and brakes to command the twists and turns of their road tracks, Americans wanted only to go in a straight line as fast as they could. As historian Robert Post aptly states, Americans "tend to favor their speed contests neat—in the case of autos, racing around super-elevated ovals that are essentially one continuous straightaway, or, even more peculiarly, they actually do go in a straight line," such as in drag racing (Post xxvii). Interestingly, this is indicative of each culture in its own right, and indeed American racing has played into many international stereotypes regarding the United States. In addition to Americans being indefatigable in their pursuit of straight-line speed, racing in the United States has also been highly individualistic and staunchly resistant to outside influence, especially from Europeans. For decades, "American IndyCar racers and fans were contemptuous of Europeans, dismissing them as 'tea baggers' who couldn't compete with 'real men,'" that is, until the 1960s when they came and beat us at our own game (Casey & Dodge 3).

In addition to resistance to European influence, white American male racers seemed resistant to anyone who was not American, white, or male.

The individualistic and masculine competitive aspect of racing extended well beyond the track and was ingrained in the creation of the cars themselves. Early auto pioneers sought to prove themselves through racing as well as economic and overall mechanical success. One such example is Henry Ford, whose “life story has come to stand as a primal tale of both the developing automobile business and of American masculine entrepreneurial character” (Scharff 11). In 1902, Ford and his draftsman Childe Harold Wills developed the massive, ten foot long, four-cylinder and seventy-horsepower 999 race car. This was a far cry from the four-horsepower road wagon that raced just seven years before, and “the story of the 999 became a kind of masculine creation myth for the industry” (Scharff 12). This larger-than-life car was seen as emblematic of the macho American endeavor of building a beastly machine, piece by piece, from scratch, with one’s bare hands. The story goes as far as to say that in the unheated room where the vehicle was born, Ford and Wills “literally fought off the cold while they worked” and would “put on boxing gloves” to fight each other when they were struck by the cold (Scharff 12). In this example it is clear from where racing got its roots: “muscular genius, mechanical mishaps, personal enmities and fraternity in overalls” (Scharff 13). Ford and other industry pioneers later saw themselves as purists who “decried the ease with which callow neophytes — women even — could take the wheel” (Scharff 13). The creation of automobiles, for daily driving but even more so for racing, was imbued early on with the ideals of American ingenuity, individuality, and masculine strength.

Following the first races, early twentieth century America saw the building of dirt ovals and wooden ovals, inspired by bicycle tracks, which gave rise to Indianapolis-style racing in 1909. The Indianapolis Motor Speedway, which ran the first of its iconic 500-mile races in 1911, was the perfect track for the open-wheel, single-seater cars that were built strictly for racing. The track was unique in that it was the only one of its day to be paved. The brick paving earned it the name “Brickyard,” and drivers today still kiss the line of remaining bricks for good luck. The track became emblematic of the new American style of racing, with an enclosed oval making for tight competition and even more tightly controlled ticket sales. In the years after its inception, “the Speedway’s oval track became the model for most American racetracks” and the Indy 500 was one of the few national races known by most Americans in the early part of the century (Casey & Dodge 8). Although there were a few road races at this time as well, such as the Vanderbilt Cup, the American Grand Prize and the Elgin Road Race, the twists and turns of these tracks made it difficult for spectators to see the entire race, so most preferred the ovals. Aside from the odd road race or a city-to-city sprint, “Indy-style racing” — that is, open-wheel, open-cockpit, and single-seater — “is the only form of American racing that was important before World War II” (Casey & Dodge 9).

After the war, however, a number of different classes and levels of racing emerged that are largely reminiscent of what we still see today. Two extremely popular forms of racing originated in the postwar years in a very American manner: illegally. The racing of stock cars, usually with removed fenders, began around the same time as Indy racing was popularized, but remained localized in the South in the 1920s and 1930s, and grew after the war. During prohibition, moonshiners needed cars that were fast enough to outrun the police and the

competition, and drivers were in high demand. Junior Johnson, who drove professionally in the 1950s, famously said that in the 1930s “moonshining was part of my growing up, but it was also part of my training in auto racing,” and asserted that “if it hadn’t been for whiskey, NASCAR wouldn’t have been formed. That’s a fact” (Klein). A mechanic and driver named Bill France organized these rebellious drivers into the National Association for Stock Car Auto Racing (NASCAR) in 1947, giving birth to one of the most well-known forms of American racing to date. This uniquely American history, of bold men flirting with danger and the law to run southern moonshine in their speeding cars, is another one of the profoundly masculine origin stories of auto racing in this country. It is in this story that it becomes clear what characteristics were valued in drivers early on, and how this shaped participation in the sport for years to come.

A second popular form of racing originated in much the same way, and is now known as drag racing. Roughly around the same time that Bill France was organizing moonshiners into what became NASCAR, young mechanics in rural Southern and Appalachian towns were looking to “show off their mechanical skills” by rebuilding and “souping up” their cars and running them on the quarter mile (Smithsonian). Since a straight line, standing start, quarter mile race was the most objective way to judge speed, “drag racing had four things Americans love — noise, spectacle, brevity (most races are only 5 to 10 seconds long), and clear winners and losers” (Casey & Dodge 12). This sport was dominated early on by “hot rodders” who embodied the tinkering and testing spirit of early auto pioneers who wanted to get the most out of their cars. Hot rodding itself became associated with male youth culture, and has been called “more a mechanics’ form of racing rather than a drivers’ form” (Smithsonian). Wally Parks, a Californian hot rodder himself, realized that to legalize the sport and prevent law enforcement from

continually breaking up their races, they needed to make it safer and more organized. In the late 1940s, Parks established the National Hot Rod Association (NHRA) and, working with his fellow enthusiasts and local politicians and policemen, set up the first drag strips around the country and codified the regulations for the sport (Casey & Dodge 12). Drag racing also appealed to many levels of drivers because of the wide variety of classes, types of cars, and competitors. By the late 1950s and 1960s, both drag racing and stock car racing had largely moved on from their illicit roots and saw their popularity aided by the rise of television.

One of the later forms of racing to emerge out of this era was sports car racing, which surprisingly had its influence in European cars and styles. Abandoned Air Force fields from after WWII became popular spots to test the turns that the European cars were famously made to handle. This sport was, and has mostly been, dominated by wealthy men seeking to experience the thrills of the track on the open road. This variety of driving led to the popularization of enclosed road courses, such as that of my home track, Lime Rock Park, which opened in 1957. Out of sports car racing grew the two broad forms of racing with which I am most familiar: amateur sports car racing by wealthy car enthusiasts, which is largely regulated by the Sports Car Club of America (SCCA), and professional sports car racing, which is largely run by manufacturers and includes series such as the International Motor Sports Association (IMSA) multiple series' and the Le Mans Series. Although it may have been more open than some of the Indy-style races, "the SCCA —the governing body of sports car racing in the United States—had begun in 1944 as an exclusive club of wealthy men. It was conservative in its approach to auto sport, that is, not open to radical change. It encouraged women to enter the 'ladies-only' races, so-called 'powder puff derbies'" (Charters 91). The SCCA did not phase out these women's

races until the late 1960s, and even when they did, the premise remained. Both SCCA regional races and the IMSA Northeast Grand Prix are run at Lime Rock, which is a road course similar to the other tracks that they attend, such as Mid-Ohio, Watkins Glen, Laguna Seca, among others. The world of sports car racing is large and varied, but has recently become one of the more accessible forms of racing for female competitors.

Two other less well-known forms of auto racing that have had fewer barriers to entry for women are speed record racing and rally road racing, also called off-road racing. Land speed record racing was first held on beaches, and later on dry lake beds in California and the famous Bonneville Salt Flats of Utah. The goal of this racing is for a single car on a timed run to hit a certain top speed, usually over the course of a mile. There are generally few spectators in this form of racing, so “land speed racers are a close-knit group, bound together by a mutual love of speed and mutual respect” (Casey & Dodge 14). As I was investigating this topic, I learned of the death of Jessi Combs, who was known as “the fastest woman on four wheels” and was famous for her 500+ mph runs in jet-powered cars. She was killed in August of 2019 going 550 mph in the Alvord Desert, and her death shocked the community and exemplified their close ties.

Similar to land speed records, which are set off the track, rally racing, which originated in California in the 1960s takes place on unpaved trails. Such open forms of racing not controlled by a large governing body in their early years ended up being more accessible to women. “From the outset, there were many more female entries, probably because rallying requires a two-person team” and includes a driver and navigator, or co-driver (Charters 88). Rallying was seen as more appropriate for women and “husband and wife teams took the top two places in the Moncton

Motor Sport Club's Lobster Rally in 1962; at least five other couples competed" (Charters 88). In this sense, rallying became a socially acceptable "couples sport" in which women could join with their boyfriends or husbands, often after being exposed to racing, rallying, or the general car culture by their fathers. There were also some entirely women's teams, especially in Canada, that competed in rallying and autocross. Additionally, these forms of racing were not corporatized early on and did not rely heavily on sponsorships to support them, since, similarly to land speed record racing, there were few spectators and the competitors mostly raced for themselves, for the love of the speed, and for the community they built around the sport.

Thus, a picture emerges of the early days of auto racing from its origins through the 1960s. The most pivotal time in the development of this new technology and burgeoning sport was arguably the first few decades of the twentieth century. At this time the automobile was beginning to become a fixture in daily life. Additionally, first wave feminism was challenging the rigid social roles prescribed to each gender and women were fighting for equal opportunities and rights. For each advancement that women made into the public sphere, there seemed to be a corresponding backlash from the men in power. The liberation of women implied by suffrage, combined with the car being used to venture into the public sphere, may have contributed to men feeling socially threatened. Driving the car itself was seen as liberating, and as women sought more freedoms, this was one avenue in which it was pursued. However, there was still an immense amount of power held by the early sanctioning bodies of racing.

The governing bodies of the emerging types of motorsports influenced the perceived social acceptability of female racers, mechanics, and even audience members. The early notoriety of the Indianapolis Motor Speedway and IndyCar racing made those sanctioning bodies

an authority when it came to racing policies and attitudes towards female drivers. It is important to note that, in accordance with social views of the time, before the 1970s the Indianapolis Motor Speedway did not allow women into their garages and NASCAR did not allow women in the pits until 1973 (Charters 91). Perhaps vocal public opinion has changed since then, but the undercurrents of this type of exclusion remain eerily static. During the height of Danica Patrick's racing career in the early 2000s, "Formula One chief Bernie Ecclestone scorned Patrick's Indy 500 success by remarking that 'women should be dressed in white like all the other domestic appliances'" (Charters 91-2).

Additionally, the founding of the Indianapolis Motor Speedway came with the instatement of the American Automobile Association Contest Board. In 1909, the AAA formed a committee to oversee the rules and regulations for the Indianapolis races, and spread to become "the major governing body of American auto racing until 1955, when it dissolved the contest board and left racing" (Casey & Dodge 8). It was also around 1909 that one of the first prominent female racers, Joan Newton Cuneo, made her mark on early automobile history but was systematically shut down by the AAA. Between 1905 and 1909, Cuneo arguably became the most well-known female motorist in the country, with numerous publications citing her competency when compared to her male counterparts. Cuneo even raced her first-ever track event a few miles from Vassar College's campus in Poughkeepsie, NY, at the Dutchess County Fair in September of 1905. One newspaper published in October of 1908 asserted that "no woman has ever attracted such wide attention throughout the country as a driver of motor-cars" and noted that, in a mechanical efficiency and endurance test earlier that month, she "finished

with a perfect score, while numerous male drivers in the contest were stuck in the deep sand and mud holes” (Town & Country, New York).

In the sports section of *The Atlanta Constitution* in February of 1909, the author noted the rising anticipation of Cuneo’s participation in the Mardi Gras Races at the New Orleans Fairgrounds and called her “the premier driver of the world” (*Atlanta Constitution*). Not only was she a proficient driver, but Cuneo was also famous for fixing her cars herself (Figure 1). On more than one occasion, Cuneo, sometimes aided by her team, pulled her car out of ditches, changed belts and fixed wheels on the fly.



Figure 1. Joan Newton Cuneo fixing her tire during the 1908 Glidden Tour.

At races later in 1909, Cuneo broke speed records and raced against and defeated some of the top male motorists of the age: Ralph de Palma, Bob Burman, and George Robertson. The media was crazed and Cuneo instantly became even more of a sensation. However, no later had she proved her worth behind the wheel, “for reasons unknown, the AAA decided later that year to ban women drivers, and even women passengers, from events under its sponsorship” (Scharff 75). This was not the first time that the AAA had attempted to prevent Cuneo from competing. When she was first beginning her career, they rejected her application for the Glidden Tour, even though she was a full member of the AAA. Angry at her rejection, “she sent her application back with a demand that they search the rule book for where, exactly, it stated that women could not enter. It was only with reluctance that the AAA admitted their mistake” (Blackstock). In 1909 the AAA officially banned women from their events. By formally writing that women could not compete in their racing events, the AAA followed through with its agenda from years previously. So, these reasons were not, as the AAA claimed, “unknown:” their actions were in fact a coordinated effort on the part of the governing body to reassert traditional gender roles and bar female entry into the sport. These actions set the stage for future restrictions and helped institute the idea that women did not belong in automobile culture, let alone racing.

Chapter 2 — Introducing Women and Cars: The Early Days

In massive and trivial ways, culture and technology propel and inhibit one another. — Virginia Scharff

From the outset, women came into the automotive world profoundly disadvantaged. With the early introduction of the car, it could have been introduced as gender-neutral, but instead women as owners or drivers were identified with gendered language. From the earliest publications about cars, women were “‘woman drivers,’ ‘lady drivers,’ or ‘female drivers,’ with a host of pernicious assumptions surrounding them” and “the desire to delineate who was driving and demean women with these monikers persisted into the twenty-first century” (Parkin xi). The understanding of Western technology has historically been grounded in seemingly insurmountable binaries: those of culture and nature, reason and emotion, the mechanical and the biological, and those traits associated with masculinity privileged over what is stereotyped as femininity. In this sense, gender was constructed, in part, around the technologies that were deemed socially acceptable for men and women, and vice versa.

Early cars were large, noisy, greasy machines as hard to work on as they were to drive. The traits seen as necessary to master driving and maintaining cars were exclusively masculine and unsuited for the private, clean, domestic lives of women. Early on, electric cars were seen as more fit for women than their gas-powered counterparts (Figure 2). The development of cars themselves, as is evident in the reproduced stories of Henry Ford’s successful life, “involved the creation of a male professional identity,” constructing “an ideal of manliness, characterized by the cultivation of bodily prowess and individual achievement” that resulted in “femininity being reinterpreted as incompatible with technological pursuits” (Wajcman 144). Women were also

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Figure 2. "For Wife or Daughter, Mother or Sister." Babcock Electric Advertisement, Harper's Magazine, December 7, 1908.

historically brought to the "nature" side of the nature/culture dichotomy, which served to distance them from the creation or use of this new technology. Men commanded "rational knowledge" while women's knowledge "stemmed from an intuition they came by naturally," usually relating to family life and childrearing, that was not well-suited to technological endeavors (Parkin 34). Women were seen as fundamentally suited to the life of the family and the home. Thus, women were expected to keep within the private domestic sphere. As masculinity and technology developed together, women's inherent "biological nature" was used

to keep them away from cars, because “disorderly women, like chaotic nature, needed to be controlled” (Merchant 127).

Women that strove to ride in cars, and later drive them, confronted head-on the gender expectations of the early twentieth century. Even the clothing that was used in “motoring excursions,” as they were called, was at odds with feminine ideals: “when male automobilists . . . donned heavy coats, goggles, and sensible hats, they affirmed manliness,” whereas women dressed purely for decorative, rather than practical, purposes, especially during public outings (Scharff 15). Furthermore, the socially constructed public and private realms that men and women were expected to adhere to were directly challenged if a woman got behind the wheel. By portraying women as nagging “backseat” drivers, men were able to “mute women’s guidance and feedback” so as to suggest that critiques of their driving appeared to come from an uneducated and unsophisticated place; surely no woman knew more about automobiles than her male counterparts (Parkin 2). These stereotypes also served to relegate women further to the private sphere from an earlier era. The act of driving allowed women to venture into the public sphere in a way that made them conspicuous and clashed with their usual invisible roles.

When women finally did get behind the wheel and began to drive, men in positions of power in the auto industry reconstructed the technology. The intention of this reconstruction was to create a “dumbed-down” version of the car at the level of female use, and to distance men from something considered feminine. When women tried to “develop their automotive acumen and disrupt the prejudice against them” they were challenging “cultural definitions of women’s gender and sexual identity” (Parkin xiv). In order to try and avoid this, carmakers innovated to make the experience of driving more suited to perceived feminine needs. Repeatedly in the early

twentieth century, popular media portrayed women as childlike and promoted new automotive designs to fit their perceived fickle and technologically incompetent characters. Early cars had to be cranked from the outside to be started — a task that surely was not enjoyed by men *or* women — but when the electric starter was introduced it was initially marketed to women. The Hunter Auto Supply Company “proclaimed that its starter was so easy to operate that ‘a woman or child can do it’” (Scharff 63). Here, women’s association with children served to denigrate them and downplay their technological competence.

Another, now taken for granted, aspect of car development was the covered cab. Many early automobiles were open to the elements, like present-day convertibles, and did not have an optional top. Motoring out in the elements was seen as a masculine confrontation of nature that any ‘real man’ worthy of driving an automobile should conquer. Covered cabs seemed to go against the masculine creation myths that surrounded the car such as that of Henry Ford’s 999. Therefore, when fixed roofs were introduced, they were marketed as a way to avoid men’s wives or girlfriends disturbing their carefully coiffed hair and styled clothing. It is hard to imagine that anyone, regardless of gender, enjoys driving in an open-top car in the wind, rain, and snow, just for the fun of it. Nonetheless, men felt the need to protect their masculinity and the masculinity of the car by changing the language surrounding this development. The popularity of these innovations should have indicated to car companies that the changes appealed to a broad base that included women but they continued to attribute these demands to women as still do.

Another of these noteworthy developments came with the automatic transmission, back then sometimes called an electric gear shift. Interestingly, this development has remained a

marker of masculine identity within automobile culture (Figure 3). The Ford Mustang advertisement below explicitly tells women to maintain the “helpless female” look. Even today, there are still undercurrents within car culture that suggest “real drivers” or “real men” drive a manual transmission whereas automatic transmissions are less desirable or looked down upon.



Figure 3. An advertisement for the 1967 Ford Mustang. The automatic transmission, first called the electric gearshift, was initially marketed to women and this association has endured to the present day.

When the automatic transmission was introduced, it followed the script of appealing only to weak and technologically inept women. As quoted by Virginia Scharff, an advertisement for

one of the first iterations of the automatic transmission, called the Vulcan Electric Gear Shift, promoted a product that “eliminates the need for muscular effort, making it possible for a woman to enjoy those things which her lack of muscular strength and general aversion to mechanical things has prevented her from using” (Scharff 64). This also related to the association of women with electric vehicles, which were developed at the same time as their gas-powered counterparts but quickly faded out. The automatic transmission “meant that women avoided challenging men’s role as ‘real’ drivers because they used invisible technology to operate the car, as opposed to demonstrating mechanical know-how” (Parkin 54). In these early days of motoring, it seemed that protection of the masculine ideal of a cumbersome, mechanical, noisy automobile was more important than its actual practicality and comfort. And, as we have seen over the decades, “some of the very items that gasoline car manufacturers, dealers, and consumers had considered feminine frills were at length incorporated as standard automotive equipment,” but ironically only after women proved that they could manage even the unruliest of gasoline vehicles. (Scharff 66). Many of these “feminine frills” also became standard in racing, and the roles were later reversed when racing became a way of testing safety equipment and the mechanical limits of new technologies before they were incorporated into daily cars.

In the early days of the automobile, if driving itself made women unnaturally conspicuous, racing was the final loss of a woman’s femininity. Racing called for an aggressive and competitive edge, which did not lend itself well to the ideals of femininity at the time. Even today, women racers themselves reflected on the fact that, after their initial exposure to the sport, “even I thought ‘oh my god they’re kind of aggressive women . . . this is not a very attractive look for a woman’” (Interview. Joanna MacKenzie). This only goes to show how deeply the old

notions of femininity are ingrained into car culture and how racing seems to promote the antithesis of these norms. For women to participate in the early days of racing, as did Joan Cuneo, they had to forego not only perceived femininity, but they also had to be better than all the men against whom they raced. Today, Christina Nielsen, the first female driver to win a title in the WeatherTech SportsCar Championship, expressed a similar viewpoint:

“You always have to come in and prove yourself, but once you show a good pace and good race craft, then, you know, it’s a fairly respectful environment. People probably notice you more often as a woman, because there’s not that many of us, so if there’s a new one coming in, yes they do pay attention a little bit more. . . . then you really need to perform to earn the respect, and sometimes that takes a little bit longer, but once that’s done, you know, it’s no different from the guys” (Interview. Christina Nielsen).

Nielsen’s comments about being the only woman in the field even resonate one hundred years after Joan Cuneo made waves racing in New Orleans.

Because they were already starting at a profound disadvantage, early women motorists first had to find acceptable niches in which to compete. One of the earliest ways women came into racing was through cross country races or tours. Often publicity stunts for car companies to advertise the ease with which *even* a woman could operate their vehicles, they also served as a powerful means of putting women in the public sphere as motorists and competitors. The headway into cross country driving and racing was made in part by Alice Huyler Ramsey who, in 1909, became the first woman to drive cross country. At twenty-two years old, the former Vassar student and three other women set out on a trip that would later be recognized by induction into the Automotive Hall of Fame.

A few years later, while racing was still mostly city-to-city sprints, actress and singer Claire Rochester started her driving career. Making two cross country runs in 1916 and 1917, Rochester broke the previous record from New York to San Francisco by ten days. After this

“record-breaking feat” she wrote “a number of rules which she recommends for adoption on long trips,” which interestingly included “forget beauty in yourself and your car. Wear men’s trousers as they are made in aviation suits. You will soon see the wisdom of this advice” but also emphasized that “cold cream is a necessity. Use it lavishly — it will aid in a comfortable tan” (*American Garage and Auto Dealer*). What is especially interesting about this statement is that while Rochester is advising women to do “unwomanly” things, she quickly amends her statement, commenting that the drive is a nice opportunity for a tan.

Today, female drivers feel the same kind of pressure that Rochester felt about balancing what society needs to see as “feminine” while also proving themselves as worthy competitors. Julia Landauer was the first woman to win a championship in NASCAR’s Limited Late Model Series, but in an interview for a blog was only asked about “how she keeps her skin in shape after spending hours in a 130-degree car” (Miller). It is difficult to imagine a male racer of the same caliber being seriously asked about *his* skin care regimen, and yet it is unquestioningly accepted, even common, for female drivers.

While early female motorists like Alice Ramsey and Claire Rochester made their mark in the early days of driving and racing, their actions were still viewed more as anomalies than indications of a future for female racers. Without getting too much into the details of women driving cars in daily life, it is apparent that female drivers were not taken as seriously as their male counterparts. The stereotypes about women’s technological incompetence that emerged in the early twentieth century were powerful enough to bar them from racing almost completely. The key developments from this era showed that the early engineers of automobiles had to “simultaneously build artifacts and build environments in which those artifacts [could] function,”

which, in the case of the automobile, meant adherence to strict gender roles (Sismundo 65). To avoid the disruption that the automobile may have caused to these roles, engineers and car manufacturers carefully constructed adaptive technologies to their cars that made them more “suitable” to women and thus more socially acceptable for them to use. Race cars, however, were largely left out of this equation. The race car remained symbolically connected to those early days of cars that were loud, uncomfortable, unwieldy, open to the elements, and staunchly masculine. Paradoxically, although top-tier race cars are some of the most technologically advanced land vehicles in the world, they are often the *most* uncomfortable, unwieldy, unpredictable and thus the most closely connected to the early masculine ideals of automotive technology. In racing, the stereotypically feminine ideal of comfort is sacrificed for the masculine ideal of speed, reliability is sacrificed for maneuverability, and aesthetics are sacrificed for aerodynamics. Many of the masculine attributes present in the early automobiles are no longer visible in street cars today, but many remain in race cars. Racing has, in some ways, remained the last truly male stronghold on the technology of the automobile.

Wiebe Bijker’s theory of sociotechnological ensembles can be helpful in understanding the early development of cars. While not relying too strictly on technological determinism, this theory can help explain why the development of certain technologies can appear deterministic in some situations through its use of frames. The technological frame is “the set of practices and the material and social infrastructure built up around an artifact” that reproduces itself as enough infrastructure is built around it (Sismundo 102). Adding on to Bruno Latour’s Actor-Network Theory, Bijker also incorporates his idea of a technological script. When this script and its corresponding frame are well-developed, they can impede interpretive flexibility and thus make

a technological artifact appear deterministic. The automobile is one such example. The frame in which the car was developed was within an existing technological framework that favored male entrepreneurship and expertise. A social and physical infrastructure began to be formed right away, and the mechanical aspects of the car were constrained within this frame. The potential users were initially only seen as men, and often just wealthy white men, so the artifacts were framed to appeal to them first.

However, so many of these mechanical aspects of cars are not only what made them appeal to men but also to women as well. The feel, sounds, sights, and smells of cars may have been intended for a male audience but there was nothing inherently masculine about the technology itself. One of the amateur racers I interviewed about her favorite cars mentioned that “I *love* having a stick shift, I love being in full control of the speed, the shifting, all of it. What I love most about my [Mazda] Miata and my Mini [Cooper] is that it takes more to drive them, you know, you have to be in more control and understand the car, you can’t just sit back and let the car be” (Joanna Mackenzie. Interview). Professional driver Christina Nielsen emphasized “I’m quite a big fan of the Acura NSX that I raced this year, I thought it was a lot of fun to drive and it just feels so powerful. And I really do like my daily vehicle that I drive at the moment, it’s an AMG GT 63 from AMG Thousand Oaks, it is, for me, a sporty car, it’s fast, sounds good — sound is quite important to me — that’s one of the things I really love about sports cars” (Christina Nielsen. Interview). Here, sound and speed, as well as power and control, were emphasized as characteristics that these women looked for in their cars. Two of the younger women I interviewed, Shelby Avery and Tanner Tardi, both commented on how much they enjoyed driving muscle cars. In mainstream car culture, muscle cars connote aggressive

masculinity, so it is interesting that these women singled them out as their favorites. Tardi told me that “on track I drive a [club] members’ Boss 302 Mustang which is fantastic. It just sounds awesome when you hear it firing down the front straight” (Tanner Tardi. Interview). Avery said that she had driven both a Chevy Camaro and a Ford Mustang, but decided that “right now my favorite car to drive is my race car which is a Mustang mini stock, and it’s a ton of fun on the quarter mile track at Monadnock. One day I really hope to hop into a Modified [version of it] on a bigger race track” (Shelby Avery. Interview). All of these women cite specific examples of the technology that appealed to them, even though these have been historically associated with masculinity.

However, despite these women vocally advocating for one car or another, the stereotypes still remain about which cars they need to be “safe” and “protected” — partially from their own perceived ineptitude. Part of the dangers of the early stereotypes of female drivers and their “continuing power and strength” were that they lay “in this combination of validity and distortion” that participated in endless feedback loops to reinforce themselves (Ott & Mack 197). Throughout automotive history it is true that not as many women had the technical skills to work on and drive cars, let alone race them, but this was not due to any biological inferiority. Rather, it was due to lack of exposure, encouragement and different socialization. But the car, like many other patriarchal systems, made “gendered power imbalances seem natural and innate” and used the lack of women in the field to indicate their inability to race (Ott & Mack 195). Thus, the car developed as both a perceived result of and also a supporting force of masculine mechanical and technological aptitude and its construction closely followed the social script of the time.

The culture that grew around racing was a byproduct of these early old-fashioned views, and has remained largely the same into the present day. Racing has come to be saturated with heavily sexualized iconography as a result of its early domination by men. This imagery, present at nearly every level of racing implicitly if not explicitly, has served to deter women from the sport. Absent of female role models and lacking portrayals based on professionalism instead of sex, the road for female racers has been as difficult to drive as it was for the first women trying to get behind the wheel. Now, the place of women in the sport has come into the spotlight as we approach a crossroads that I will explain in the following chapter.

It is also important to note that the issue of inclusivity is a matter of class as well as gender. Historically, it was mostly upper-class women who could afford cars, such as Joan Newton Cuneo; her husband bought her first car and her entrepreneurial family would have been modern-day millionaires. While some middle-class women drove cars, there was also a notable difference between urban and rural use of automobiles. The issue of women and the automobile is not a singular one, and other confounding factors such as geography, race, age, income, and family have always been at play. Sadly, there has been even less representation of lower-class or minority women than upper-class white women. For the scope of this analysis, however, some of these factors must remain unexplored. That being said, a feminist approach should at least consider class, and I will examine this matter later in the following chapter in relation to sponsorship of racers.

Chapter 3 — A Crossroads: The W Series

Auto racing is an extremely technical sport. As a driver your competitiveness is 100% dependent upon technology. – Renee Dupuis. (Interview).

Gender segregation in sports is a familiar phenomenon; in fact, most sports have been separated by gender since they began. Auto racing, however, provides an interesting arena in which to reconsider these divisions, since it is not face-to-face physical competition but competition mediated by machines. While this technology should be seen as a potential aid in equalizing the playing field, it has instead been used to further the divide between men and women in the sport. As indicated in the last chapter, women were dissociated from automotive technology from an early stage, and this separation has made it difficult for them to navigate a sport that relies so heavily on technology. Thus, we come to an interesting impasse: the historical social construction of womanhood is made to seem incompatible with the technological aspects of auto racing, while in reality the technology itself should balance out any small biological differences that may exist between men and women. The impasse is fabricated. This chapter will explore this paradox, as well as the social, political and economic barriers to entry for women in the sport.

My experience, and those of many other female drivers, has been that many of the world's leading luxury car brands are designed exclusively for men without explicitly saying so. Having had the opportunity at my internship at The Lime Rock Drivers Club to drive multiple Lamborghinis, Ferraris, and McLarens, at 5'3" I needed a booster seat to drive each one. The pedals are too far apart for me to comfortably brake and accelerate without having to move my foot — something that can be dangerous at high speeds. Furthermore, the seats did not go forward or rise high enough for me to safely see out of and drive the car. Without women at the

highest levels of the industry and female drivers to test the cars, these issues only serve to make women feel further out of sync with the technology. This is also part of the rationale that women need certain amendments to the cars to drive them properly, which harkens back to the early promotion of certain technological advancements to the car being marketed as “feminine.” This is just one of the many barriers female drivers face.

Natalie Angier’s leaky pipeline metaphor for the lack of women in science, technology and mathematics (STEM) may be useful for further contextualizing this chapter. Originally used as a model for understanding the low numbers of women in upper level STEM jobs, this metaphor can be used to explore the factors that contribute to the nearly entire lack of women at the highest levels of racing. Similar to women in tech and engineering jobs, auto racing is more than a hobby for many of these women: it is a career that is heavily based in technology. According to Angier, women flow through “a pipe with leaks at every joint along its span, a pipe that begins with a high pressure surge of young women at the source” (Sismundo 41). For our purposes, the pipeline begins with young girls in go-karting and midget racing. Often exposed at an early age, these girls are encouraged to pursue their hobby, but usually give it up later, as hobbies are given less time as they get older. It is important to note that “the pipeline metaphor makes most sense if we pay attention not only to leakage but also to intake, blockage, and filters, or processes of inclusion and exclusion” (Sismundo 42). On the intake end, recruiters already tend to favor male athletes, given the historic male domination of the sport.

Men in motorsports have created a cycle not unlike that of other male-dominated sports. People have been socialized to associate men with cars and motorsports, which makes it even more difficult to break free of that mold. “All-male sports teams exist largely within a system run

by men who went through the system themselves — men who end up as coaches, officials, and members of boards. It's a system that teaches men that a version of masculinity, that is both toxic and hierarchical, is among the most important traits to have" (Sanders). Again, as with the development of the car, stereotypically masculine traits such as competitiveness, risk-taking and aggression are prized and seen as inseparable from the male identity. The combination of sports, technology, and the domination of powerful machines seems to lend itself perfectly to a male identity that has been co-constructed from these attributes. Sociologist Eric Anderson notes that these kinds of sports represent "a resilient system that reproduces a more conservative form of gender expression among men, helping make sport a more powerful gender regime" (Anderson 269). This existing gender regime, as Anderson puts it, immediately disqualifies women before they even make it to the track. Accomplished racer and trailblazer Shea Holbrook said of her own experience that "if you're approaching a potential sponsor I think at times it's been harder to sell them on the idea because I'm a woman. They aren't used to seeing female drivers, so without a proven record it can be a difficult sell" (Shea Holbrook. Interview). Building on her previous experiences that were not unlike those of most female racers Shea Holbrook became involved with The W Series, an all-female racing series.

Despite the mixed reception of The W Series in the racing community and among female racers when it was first announced, the first season of the series was a success and viewership exceeded expectations. The all-female racing series was announced in October of 2018 and completed its first season in 2019 with eighteen international drivers. The brainchild of lawyer and corporate financier Catherine Bond Muir, who felt as if women needed a space to be recognized in the sport, The W Series was launched with the hope of bringing women up to

participate in Formula 1: arguably the most elite level of racing. Six European races from Hockenheim, Germany, to Assen in The Netherlands, were free to watch and broadcast on Channel Four in the UK. Highlighting their ties to Formula 3-level racing, the drivers used powerful Formula 3-style Tatuus T-318 race cars with 1.8-liter turbocharged engines with approximately 270 base horsepower. Additionally, all the drivers use the same car, and by doing away with the team structure, it emphasized the skill of operating the same machine. A total of \$1.5 million in prize money was awarded to the top three drivers at the end of the championship, with the winner earning \$500,000.

Aside from being a racing series exclusively for women, what makes The W Series unique is that there is no required sponsorship for drivers and no charge for a place on the starting grid. The women were hand-selected by the creators of the series based on skill and experience. This comes in stark contrast to other open-wheel and open-cockpit style racing where a place on the Formula 3 grid costs between \$720,000 and \$837,000 and a place in Formula 2 costs \$1.7 million to \$2 million (The W Series Website). While there are no official public numbers for Formula 1, the highest and most exclusive level of racing, analysts have estimated that the road to Formula 1 costs nearly \$8 million. Of the over 700 drivers that have competed in Formula 1, only two have been women and the last woman participated in 1976. No woman has ever won the series.

One of the potential fears surrounding the launch of The W Series in 2019 was that the series would suffer the same fate as the little-known Formula Woman series (officially titled the Privilege Insurance Formula Woman Championship). Formula Woman ran from 2004 to 2007 and was also based in the UK. In the first season, the sixteen competitors drove RX-8 cars

sponsored by Mazda. After the car manufacturer withdrew its support following the first season, the drivers switched to Caterham 7 cars, but the series had already begun its downward spiral. The series managed to secure a brief sponsorship from Mates, a condom brand, but this received a mixed reception and the series could not be aired at certain times due to this branding.

Arguably the biggest issue was that instead of being promoted as a legitimate competition based on speed and skill, Formula Woman was structured more like a reality television show. Formula Woman was broadcast on ITV, which, having popularized reality dating shows such as “Love Island,” “Take Me Out” and “Dinner Date,” had already set the tone for the show before it even started. The women were selected and critiqued not only based on their skill but more so on their appearance and likeability: “Racers can no longer let their driving do the talking these days, their public speaking and media skills have to pass muster too” (Wilkins). With the selection process sensationalized in this manner, the directors of the series as well as the media drew attention away from the women’s racing skills and towards superficial attributes. The organizers claimed that they “hoped that the advent of the reality-television format would allow viewers to build stronger connections to the women through their career,” while no similar rationale existed for male drivers (Matthews 22). This fed familiar stereotypes about women needing to be likeable and attractive versus the men in the sport who were followed and respected based on their skill.

Well-known female racer Katherine Legge walked out on the series early on, after rumors that the producers would include public voter-based elimination in a celebrity show style. Formula Woman also underwent a series of leadership and sponsorship changes, which, due to

poor management, caused the series to request sponsorship money from women participants. A driver from the 2007 championship said that in her opinion:

“It almost made a mockery of it. There are women out there that are actually doing it of their own accord and getting a more established view from other people than the girls coming from Formula Woman. When I say to people that I’d done Formula Woman they almost look at you like, ‘Oh yeah Formula Woman, the crappy girly racing series.’ It’s almost like a bad stain on your record” (Matthews 23-4).

The way this series was structured in conjunction with the media portrayal did little to advance the place of women in the sport, and little evidence exists from the women who actually participated in it, similar to the reasons stated above. If The W Series continues to succeed in future years, hopefully it will come to exemplify progress and will remedy the wrongs of Formula Woman.

A large part of what made The W Series so successful in its first season was the way it was marketed as a serious competition. While the creators of Formula Woman may have had better intentions than how the show turned out, the makers of The W Series thoroughly worked through every possible backlash and preemptively addressed them. Drivers Club member and avid racer Stephanie Economu, who also happens to be a close friend of Shea Holbrook, attended the first race to support her and told me about her experiences there. At the beginning, Economu says “they — The W Series — *made* it exciting. They had all these signs everywhere, this great PR, and it totally drew you in . . . I remember this ad they had, all you saw were these eyes in this helmet, it was purple, and you just wanted to know more!” (Stephanie Economu. Interview). Additionally, in stark contrast to the reality-television style of Formula Woman, The W Series “made the women drivers *so* accessible to the public. Girls were there — and boys! — were there, and they could get up close to these cars, the cars were right out there, the women

drivers were right out there, and interacting with these crowds. And it's through this kind of grassroots approach, that direct approach, that I think they just melted a lot of hearts. I was impressed with the program" (Stephanie Economu. Interview).

Economu also noted that there was a strong driving force behind the creation of this series, and remarked at the small amount of time it took to get the idea off the ground. She seemed to think that this indicated changing times and the need for women to be taken seriously in sports, which may not have quite been the case in the early 2000s, which was also the time Danica Patrick, an IndyCar driver, was beginning her highly sexualized career. As a result of this "grassroots approach" and interaction with fans early on, the series got off to a strong start. After the first race, the series was being shown in over 350 million households in 50 countries (Parkes). More and more television providers signed on, especially from countries that had women competing in the series, and they just announced a partnership with "humanity first telecommunications company" ROKiT (The W Series Website).

The W Series has promoted itself as a stepping stone to higher levels of racing, providing promising young female racers the experience and coaching that they need to move, hopefully, all the way up to Formula 1. The statement on their website reads:

"At the heart of W Series' DNA is the firm belief that women can compete equally with men in motorsport. However, an all-female series is essential in order to force greater female participation. W Series is therefore a mission-driven competition, the aim of which is not only to provide exciting racing for spectators and viewers on a global scale, but also to equip its drivers with the experience and expertise with which they may progress their careers, racing and honing their skills in W Series before eventually graduating to existing high-level mainstream racing series" (The W Series).

A large step was made at the end of the first season, when, starting in 2020, they announced that the top eight competitors will be eligible for the Super License system run by the Fédération

Internationale de l'Automobile. This will give women a direct line to Formula 1, with the winner of The W Series being granted fifteen of the forty points needed to be considered experienced enough for the highest level of racing that Formula 1 occupies.

The W Series has recognized that in auto racing, the technology has the capacity to act as an intermediary for gender. Despite the stamina and strength required to pilot a car for the duration of a full-length race, the amount required is not enough to bar women physically from the sport. A recent study done following the conclusion of the first season of The W Series — although the two are not explicitly related — was conducted in response to the outdated and harmful critique that not only are women physiologically unable to race as successfully as men, but that they are even more compromised during their menstrual cycles. The researchers studied heart rate, core temperature, and breathing rate inside the cockpit of a race car and, unsurprisingly, found no differences between male and female drivers. Furthermore, while “the luteal phase elicited higher physiological responses than the follicular phase” it was still “not different from the male drivers” (Ferguson et al. 2570). The last sentence of the study wittily commented that, due to their findings, “thereby, practitioners should focus on reducing stresses induced by a closed cockpit race car as opposed to the menstrual cycle,” thus attempting to close the conversation once and for all (Ferguson et al. 2570). Although this study was not directly related to The W Series, the publicity from the launch of the series has spurred a number of such research ventures to attempt to end the “biological/physical incompetence” debate that has plagued female drivers from the start.

It becomes clear that in the absence of these physical barriers, the barriers to entry in the sport are entirely social, political, and economic. Clearly the economic aspect of the sport can be

nearly insurmountable if, as Shea Holbrook noted, sponsors are rarely willing to give a young female driver support and when given the chance will turn to a young male driver with an equal amount or less experience. In a sport where sponsorship can make or break a career, this is an early braking point for many female drivers. Just after the excitement caused by the success of The W Series, the all-female team that had run in the GT Daytona class of the 2019 IMSA series was disbanded due to lack of sponsorship. Even after finishing in the top ten as the first ever all-female team to complete an IMSA season, the team “is still considered a gimmick” in “an otherwise entirely male-dominated sport” (Blackstock). Jackie Heinricher, a racer herself, initially had difficulty securing sponsorship, but finally got a deal with construction equipment manufacturer Caterpillar. Interestingly, she was expecting support from female-targeted brands such as cosmetics, clothing, or menstrual products, but she was met with little support from them.

Just before the beginning of the 2020 season, Caterpillar informed Heinricher that they would no longer sponsor her team, leaving her scrambling to secure the \$3 million to \$6 million dollars required to fund the venture, and eventually forcing her to disband the team. This came as a shock to much of the racing world, given that the team included current female racing legends such as Simone De Silvestro, who won a race in the IndyCar Series, Katherine Legge, who holds a track record at Laguna Seca and was the runner-up 2018 IMSA champion, and Christina Nielsen, who I interviewed after she finished first in her IMSA class in both 2016 and 2017. Furthermore, Heinricher herself had accomplished a number of “firsts” in the industry: in 2017, she and Pippa Man formed the first ever all-female team to compete in the Lamborghini Trofeo

series, coming in third. However, this narrative of “firsts” has come to be more of a curse than a blessing for these female drivers.

Even more distressing for the Heinricher Racing team, who was more than qualified to compete, was that it was turned down for a place in the prestigious 24 Hours of Le Mans because the competition “already had one female team” (Furchgott). This blatant display of tokenism is an example of just how far we have to go in the industry. Caterpillar later told Heinricher that one of the reasons they dropped her team was that “an all-female team has been invited and raced in the LeMans, so now it is not a first that we can promote” (Furchgott). Not only do women face sometimes insurmountable financial barriers, but also they must be the “first” woman to participate, otherwise they will not generate publicity. In Natalie Angier’s pipeline metaphor, blockage and filters are some of the main causes of women falling out of STEM-related fields. The economic blockage is apparent, but sometimes the filters such as these can be less immediately visible.

Filters in this pipeline can be encouragement and support, or lack thereof. In their development, “youth’s competitive skills are influenced by many socialization agents, including role models, parents, peers, education, and media” (Brantley 28). At an early age, girls and boys are exposed to and expected to adhere to the somewhat traditional paths laid out by their respective genders. Boys are often gifted toy cars, just take a look at the boy’s section of any Walmart or Target, while girls usually are not. Additionally, the competitive aspect of personality tends to be fostered in boys, while in girls it is often condemned as bossy and disrespectful. There is also the aspect of risk-taking. Men, by their apparent “nature” are “supposed” to be more engaged in risky behaviors, usually as the breadwinner for their families.

Women, on the other hand, are judged negatively for participating in activities that could supposedly detract from their role as child bearers and mothers, as is evident with the media scrutiny on racer Danica Patrick's personal life and the debate over her freezing her eggs. Subtle discouragement for such a prolonged period of time can make even the most avid drivers reconsider her choices. In these ways, the industry filters out women. These social filters, combined with the economic barriers to entry at the higher levels of racing, are a major reason why The W Series came to be.

Support in childhood seems to be an important factor in the lives of many female racers. Interestingly, six of the women I interviewed described getting into cars and racing as a result of their parents' encouragement — usually that of a father. NASCAR driver Renee Dupuis noted that “I started racing Quarter Midgets when I was 5 (Quarter Midgets are similar to Go Karts, but offer a full roll cage). At that age it's not so much as a conscious decision, but rather doing what your parents offer up” (Renee Dupuis. Interview). Other women were drawn to the sport early on as a result of a boyfriend or husband that raced either as a career or a hobby. Driver Joanna MacKenzie told me that:

“What drew me into racing was really — I mean, it's so strange — but it was to spend time with my husband, because I knew that, when we got into this [club] and he had gotten a family membership. And, you know, I think I had bought into the same stereotypes that everyone else kind of believed that women don't drive cars, or want to get into cars and go fast around a track. So I thought I'll just go and be supportive of my husband, you know, be on the sidelines and cheer him on. And it wasn't until I actually got in the driver's seat that I thought ‘wow! I didn't even realize girls could do this’” (Joanna MacKenzie. Interview).

It is evident here how many women gain entry into the sport through male influences. Similarly to MacKenzie, Lime Rock Drivers Club member Carole Halvorsen started out in racing as a result of her husband when “our daughter got my husband a track day at Lime Rock for Father's

Day” and when she went with him she signed on at the club and in one year “I was on track 56 of the 60 days available to us and won the clubs coveted Most Improved Driver Award for the year. I was very honored and thoroughly hooked!” (Carole Halvorsen. Interview). Many of these women also expressed the desire to pass the love of driving on to their children, both boys and girls.

As a child, much of what we consider “normal” or “acceptable” comes from the socialization we receive from our parents. Shea Holbrook commented on how “I actually started driving at maybe 7 or 8 years old. I used to sit on my dad's lap and drive us down dirt roads” (Shea Holbrook. Interview). Shelby Avery said that her stepfather had been a racer and her mother competed in equestrian sports, so for her it was perfectly natural for her to fall into the sport. Reflecting on how she got started, Avery told me:

“My mom and my stepfather came up to me out of nowhere one day and asked if I wanted to try it out. Honestly, I was kind of hesitant in the beginning. I was only 14, and never driven a street car before, never mind a race car. I didn't even have my permit yet. But I wanted to give it a shot, I loved watching the races and I figured being in an actual race would be so much fun. I have always been really competitive my whole life, from softball to horseback riding and everything in between. The second I got into my first race car with my stepfather, I was hooked. I fall deeper and deeper in love with racing every time I hop in the car” (Shelby Avery. Interview).

Many of the women I talked to informally at events such as those sponsored by the Sports Car Club of America (SCCA), Vintage Sports Car Club of America, (VSCCA) and Porsche Club of America (PCA) at Lime Rock Park expressed that they never realized there was anything remotely unusual about being a girl that liked cars when they were younger.

On the other hand, a lack of encouragement can shape interests to conform with more conservative gender roles from an early age. Katherine Parkin notes that “one of the first places young women learned to limit their driving patterns appears to be from their parents” (Parkin

93). Girls that grew up with fathers as mechanics or racers — such as a teenage girl I interviewed at Lime Rock who told me “my dad was a mechanic for a while and he’s always building cars in our backyard and fixes cars for friends so I guess I was just exposed to it early on and he taught me to drive sitting on his lap” — were usually the ones who continued to drive competitively at a later age (Tanner Tardi. Interview). The encouragement, usually from fathers, shaped the entire careers of everyone from Shelby Avery, a teenage dirt track racer in New Hampshire, to Shea Holbrook, an accomplished professional racer in the public spotlight. The role that parents have in shaping what women consider a “normal” or “acceptable” career choice is powerful, especially given the few female role models in the racing industry.

When you ask a child what they want to be when they grow up, they usually draw from highly publicized and media-driven sources, such as popular superheroes, presidents, or athletes. The sadness at the lack of female role models in the racing industry was expressed by nearly every woman that I interviewed. Nineteen year-old Shelby Avery said that “there’s a lot of people I look up to in racing. Sadly, there aren’t many female drivers for me to look up too. So, I look up to a lot of male drivers who live in New England” (Shelby Avery. Interview). Danish driver Christina Nielsen expressed that “I haven’t really had that many role models in racing” and went on to say she felt very strongly that “all we can do is create awareness and create initiatives that help women be a part of the industry” (Christina Nielsen. Interview). Aside from a lack of female racers, there are also very few female mechanics, pit crew chiefs, and racing personnel, let alone women at the design and engineering levels. Women rarely occupy professional roles at the race track and in the broader car culture.

One of the other major influences in creating The W Series came from the role that women usually occupy in the motorsports world. In a way of further reducing their contributions and expertise, women in most racing contexts are highly sexualized and objectified nearly to the point of the cars (which are also often referred to with feminine pronouns). Although there are many stereotypes surrounding women and cars, “one of the most enduring associations concerns identity:” “Americans considered the car to be female, regularly referring to the automobile as ‘her’ and ‘she,’ adorning the car with feminine markers, and sometimes naming it . . . with both women and cars having bodies, car talk often blurred the lines between the two” (Parkin xxi). By viewing both women and cars as objects to be dominated or controlled, much of the language pertaining to racing demeans women. Drawing on recurrent old stereotypes that initially served to separate women and cars, car culture today is saturated with images of women as nothing more than car ornaments. Even accomplished drivers such as Danica Patrick have acquiesced to building a brand on sex (Figure 4). Patrick’s “barely clothed appearances in *FHM* and *Sports*



Figure 4. Danica Patrick posing for the 2008 and 2009 Swimsuit Editions of *Sports Illustrated*.

Illustrated and her participation in sexually suggestive commercials represent Patrick as a feminine, sexualized body first, and a driver only as a context for her body” (Pflugfelder 422).

Sports advertising research has actually shown a regression in the depictions of women’s bodies in motorsports. Pioneering female racers of the 1970s and 1980s such as Lyn St. James, Janet Guthrie and Sarah Fisher were actually portrayed more professionally than many female racers today. As Shea Holbrook and many other women in The W Series saw, “attractive and traditionally feminine women athletes gain more media coverage and endorsement opportunities than those who are seen as less attractive and less feminine, regardless of their level of skill” (Ross et al. 2007). In an already competitive battleground for recognition and sponsorship, the media trope that “sex sells” is often utilized as these women’s only resort. The W Series wanted to separate themselves from the highly sexualized language and media coverage that surrounds women in motorsports and create a space where female drivers are no longer anomalous. In the larger racing world, “when a female driver’s vehicle performs in competition, she remains an exception, marked as a gendered body within a vehicle because her gender creates a distinct meaning for her identity within a homogenous sport” (Pflugfelder 420). The idea behind The W Series was to create a space where a woman’s body could be streamlined into the sport, and the association of women with this technology was no longer so radically different.

Despite the promising reactions and the good intentions behind the creation of the series, many female (and some male) drivers have questioned if women are really in a league of their own. Lime Rock Drivers Club member Joanna MacKenzie voiced her concerns that “I don’t like seeing society going back to more gender structure, more binaries, and more black and white . . . race car driving is one of those things where you’ve got the power in the car and there really

shouldn't be that much difference between the man and the woman" (Joanna MacKenzie. Interview). Many women are afraid of the public seeing The W Series as a "dumbed-down" female version of the sport, such as softball for women instead of baseball. British driver Pippa Mann has been an outspoken opponent of the series since it was announced, taking to social media to say:

"My gender doesn't impact if I can drive a race car or my talent behind the wheel. My gender does not mean I need a segregated series. My gender does make it harder to find the funding to compete. This applies to almost all women in motorsport. Making segregation the only option to secure the funding to race is not the way forwards" (Hall).

While she says she backs the women who are competing in the series, Mann has made it clear that she does not think it is the only or the best way forward. Mann and others like her believe that the money being put toward The W Series should be reinvested into other driving initiatives that give young women racing experience and thus make them more likely to get sponsorship. Interestingly, Mann and Holbrook both serve as the "pro advisors" for Shift Up Now, a group of female racers "empowering a new generation of women" who assert that "the future depends upon women and men working together interacting with respect and compassion to stop the myth of gender specific roles that stifle creativity and advancement" (Shift Up Now Website).

Despite their differing opinions and approaches, drivers like Pippa Mann and Shea Holbrook both have the same goal in mind: streamlining the pipeline that supports the young, ambitious female drivers of today. Seeing The W Series as a stepping stone for women to move past the series and into the larger racing leagues is one way critics have reconciled their support for the series. This all begs the question, are women really in a league of their own? Can the technology of the car be used to circumvent stereotypes that came into existence with the car itself? There is no definitive answer, and the ways women have decided to avoid or challenge

stereotypes in auto racing are as multifaceted as the challenges that they face. What is clear is that “motorsports do not exist apart from larger understandings of gender, identity, and power but are always situated within global discourses about these issues” (Pflugfelder 419). As one of the largest, most popular types of sports in the world, auto racing has more of an effect on these issues of gender representation than it may realize. Gender norms are both reflected and reproduced by the popular media coverage of auto racing, but have also been largely influenced by changing perceptions of gender and the rise of movements such as the #MeToo movement. An analysis from a feminist perspective provides the opportunity to reveal issues related to technology of the race car and envision unique solutions for how to fix such problems.

Chapter 4 — Social Implications of Women and Racing

It's not something people associate with women on a professional level, and certainly not at a hobby level. People don't consider it to be a very feminine hobby. — Joanna MacKenzie

As was explored at length by scholars Virginia Scharff and Katherine Parkin, women being able to inconspicuously drive cars in their daily lives was a harder-fought battle than many had anticipated. Even today, female drivers are still surrounded by a cloud of negative stereotypes and preconceptions. While still focusing on the themes I have covered so far, I initially wanted to explore women driving in everyday circumstances *and* racing cars, but soon realized that this was a much broader topic than allowed for by an undergraduate thesis. Furthermore, there has been much more work done studying how early female drivers reshaped femininity and challenged their prescribed social roles through everyday driving than through racing, and much less work done connecting the two. These two ways of using the car — practically and impractically — are not as different as they may seem. Racing is just a heightened experience of driving.

While racing is a tremendously competitive sport, it can still be considered as highly individualized as daily driving. When you strip away the fights for sponsorship, the pit crew, team owners, and all the stakeholders who do not actually sit in the cockpit and operate the car, what you are left with is a machine and a driver. Many of the feelings of liberation and freedom described by both early female drivers and daily drivers today are expressed by racers as well. Amateur and club racer Joanna MacKenzie was introduced to the sport by her husband, and did not expect to gravitate towards driving herself. But, when reflecting on her first few times driving on the track, MacKenzie said:

“Getting in the car and being able to drive, I found it *so* exhilarating and freeing, and

there's something I find, almost, I mean, meditative is not the right word, but this idea of focus and that you cannot be thinking of anything else or distracted by anything else or worried about anything else in your life. When you get behind that wheel you just have to focus on what is right in front of you, what's the next corner ahead, and that's it. And so I found that, for the first time in my life, it was an area that I could focus, but also get a real thrill out of driving fast" (Interview. Joanna MacKenzie).

Even though she began driving in her forties, MacKenzie noted that for the first time she could truly focus on herself and her connection to the car, which was both freeing and exhilarating to a point beyond daily driving. PCA racer and founder of Gearhead Girls Racing, Stephanie Economu, told me that "In 2006 I bought my first brand new Porsche . . . it took me until 2006, at the age of 46, when I bought *this* car, even though I had owned Porsches before, and I thought, this makes a lot of sense because I *want* to learn how to drive this magnificent machine at the level it was engineered at" (Interview. Stephanie Economu). For Economu, simply driving this car on the street did not do justice to its engineering: the car wanted to be raced. This was her stepping stone into competitive Porsche Club racing, and then on to other series'.

For both of these women, who did not begin competing until later in their lives, racing became a time for them to focus on themselves and the task at hand. The amount of focus and determination it takes to drive at nearly any competitive level in the motorsports world is difficult to grasp unless you have done it yourself. At such high speeds, the driver is able to feel every inch of the car, every bolt and every gear and even the wear on the tires as rubber is put down on the track. While daily driving hints at this experience, racing heightens it. Racing also heightens the freedom, exhilaration and thrills experienced in daily driving, as well as the focus required. Many of the instructors that I spoke to at The Lime Rock Drivers Club, including my own, said that overall the women that they coached were much more focused and methodical than their male students. While many of the male drivers, especially the younger, more

inexperienced ones, only wanted to go fast, many of the women were more cautious, but as a result made more progress on their first few days. Overall, the instructors remarked that women tend to strategize more and focus on small corrections so that every lap is a bit better than the last, rather than being too ambitious and putting the car into the guardrail. While being careful not to overgeneralize on the basis of gender, this is still an interesting trend.

There is also much to account for in terms of individual personality. Some of the women I interviewed described themselves as always having been competitive, having also competed in other sports such as volleyball, soccer, and equestrian sports. However, a love of driving does not necessarily require this strongly competitive edge. Women who came to Lime Rock just for track days, for example, only wanted to experience their love of driving without speed limits and with the safety and expertise of a coach, even if they did not compete. The feel of the car and the emotions associated with it were enough for these drivers, both women and men.

Sociology scholar Mimi Sheller argues that “an emotional agent is a relational entity that instantiates particular aesthetic orientations and kinaesthetic dispositions towards driving. Movement and being moved together produce the feelings of being in the car, for the car and with the car” (Sheller 222). While emotionality has been negatively associated with women for centuries, Sheller argues that this “emotional agent” is both central to and a result of driving. In her observations of car-based cultures, Sheller explores how emotions related to driving can come differently from various vehicles, driving situations, and aesthetic preferences, all of which are central not just to daily driving but to racing as well.

It will take more than just a few seemingly anomalous female drivers for us to be able to shift our thinking and adjust the paradigm in which automotive technology is being developed.

When women first began to drive cars in the early twentieth century, they challenged the existing norms about femininity and the public sphere. The power of automobility brought with it “new concerns about the stability of the family and the social order” (Clarke 11). Arguably, what we are experiencing with the rise of women in motorsports today is a similar phenomenon moving through the same phases as this earlier one did. First, the question of whether women can really handle these powerful machines is brought into the conversation. Second, the role of women in the nuclear family is brought into question: If women are driving cars, are they attending to their social responsibilities, one might ask? The few women stepping into the spotlight by driving, and now by racing, are scrutinized at length and portrayed as anomalous and not representative of their entire gender. Lastly, as more women begin following suit and the image of the female driver grows, femininity itself is reconstructed to fit into its new parameters allowing for *some* acceptable uses of automobility (usually relating to domestic duties) and stereotypes to ensure that female drivers still remain lesser than male drivers. The place that we have gotten to with daily driving, although not with racing, is that women are more or less accepted as decent drivers, save for the stereotypical jokes about women being naturally bad with cars. With this slow advancement, however, there is almost always a corresponding backlash.

The popular discourse and media coverage of female racers has a huge amount of influence on how welcome women feel entering the sport and how the public perceives them. With exponentially growing numbers of women in kart racing, drag racing, rally racing and land speed record racing, they have been largely ignored by the mass media. This has given the illusion that there are far fewer female racers than there actually are, and seems to provide a sort of false justification for the lacking numbers of women at the highest levels of open-wheel and

open-cockpit racing such as IndyCar, Formula 1, Formula 2 and Formula 3, and popular stock car racing like NASCAR. The issue clearly is not one of women interacting with technology or being incompatible with technology, it is in their lack of access to the same opportunities, lack of female role models, lack of exposure, and the way a few popular women have been portrayed in motorsports. Additionally, the few women that exist at these higher levels occupy a strange space where they are simultaneously sensationalized for their achievements, discredited on the basis of gender, and highly sexualized as a selling point for their brand.

Auto racing has been compared to a fraternity, and for good reason. In an interview, NASCAR Whelen Modified Tour driver Renee Dupuis told me that:

“The racing world needs to produce successful female athletes at the top-levels of the sport. There’s certainly more involvement at the local and regional levels... And you would think that that would lead to moving onwards and upwards... But, there’s a long list of those who have tried to advance to the top with arguably only moderate levels of success. I think NHRA [National Hot Rod Association] and drag racing in general have been by far the most successful in that area. I don’t have any answers here – but I do 100% know the sport is still very much an old boys club in my neck of the woods” (Interview. Renee Dupuis).

Her experience with the “old boys club” is reminiscent of many of the women I have talked to as well as my own experiences working for The Lime Rock Drivers Club: out of about eighty members, we have six active female members, two of which are spouses of male members and joined the club through their husbands. Ben Shackelford sees the continuities between fraternities and auto racing as he notes that they both feature masculine constituencies, proprietary knowledge, rituals that build solidarity, and operation within a corporate idiom such as advertising symbols (Shackelford 183). Strikingly similar to the early auto manufacturers of the twentieth century, many of the men that participate in auto racing today see themselves as the rightful owners of automotive knowledge and the tinkerers of machines. Part of the ritualistic

nature surrounding this technologically advanced sport is the constant invalidation of women and old tropes about women as bad drivers (Figure 5).

MANUFACTURER'S SUGGESTED RETAIL PRICE © VOLKSWAGEN OF AMERICA, INC.

**Sooner or later, your wife will drive home
one of the best reasons for owning a Volkswagen.**

<p>Women are soft and gentle, but they hit things. If your wife hits something in a Volkswagen, it doesn't hurt you very much. VW parts are easy to replace. And cheap. A fender comes off without dismantling half the car. A new one goes on with just ten bolts. For \$24.95, plus labor.</p>	<p>And a VW dealer always has the kind of fender you need. Because that's the one kind he has. Most other VW parts are interchangeable too. Inside and out. Which means your wife isn't limited to fender smashing. She can jab the hood. Graze the door. Or bump off the bumper.</p>	<p>It may make you furious, but it won't make you poor. So when your wife goes window-shopping in a Volkswagen, don't worry. You can conveniently replace anything she uses to stop the car. Even the brakes.</p>
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Figure 5. An advertisement for the 1964 Volkswagen Beetle capitalizing on the stereotype of women as reckless and incompetent drivers.

Over one hundred years of this inequality has resulted in a sort of “learned helplessness,” with transgender woman Jan Morris in her book *Conundrum* remarking that “the more I was treated

as a woman, the more woman I became. I adapted willy-nilly. If I was assumed to be incompetent at reversing cars, or opening bottles, oddly incompetent I felt myself becoming” (Bourdieu 61). This “learned helplessness,” as is also reflected by the Ford Mustang advertisement earlier in Figure 3, is a manifestation of male superiority in operating cars that has been internalized to the level of women believing it themselves. Furthermore, part of the backlash to arise in recent years has been the extreme sexualization of women in motorsports.

While the sexualization of women in auto racing may not initially be seen as a result of the increasing number of women in motorsports, it is still a backlash against their progress because it serves to discredit their accomplishments and technological aptitude. In this model, “missing are representations of competitive female drivers without the assumptions of Western femininity and presumed driving inability” (Pflugfelder 414). The stereotypical woman in motorsports has been constructed as a hypersexualized airhead which makes it incredibly difficult for young, motivated, and talented female drivers to be taken seriously. While this backlash may manifest itself differently than the early twentieth century concerns about women forgoing their family duties and disrupting the social order by driving cars, they rise out of the same place. Even today, “our automotive lingo keeps describing women who can't drive, don't understand their cars and don't want to understand their cars. It keeps making women who know cars well into exceptions and turning fast drivers into pinup models. It rejects any information that refutes this version of reality and embraces and amplifies any that does not” (Stiefvater 2). By “turning fast drivers into pinup models,” the racing world is effectively reducing them to their looks and their appeal to men rather than their competitive driving abilities.

It is important, however, not to overlook the strides that have been made in the right direction in recent years. New women-led and women-oriented driving programs are developing all over the country and working to put an end to the way women have been portrayed in conjunction with cars. In 2018, Liberty Media, the owner of Formula 1, announced that they were dropping their “grid girls” from the pre-race ceremonies, and instead recruiting children of both genders to accompany the drivers on pit lane before the races (Jakubowska 114). This came following an incident in 2015 where driver Lewis Hamilton stood inches away from a “grid girl” on the podium after winning a race and sprayed an entire bottle of champagne directly into her face, causing damage to her eyes. The “girls” are also often routinely yelled at to lift up their dresses and exist simply “to be ogled at and dehumanized” (Starke). While incidents like this have happened in the past, this seemed to be a wakeup call for the owners of the racing series, stating that the customs were now “unsuitable for modern times” (Jakubowska 113).

The challenges that women have faced breaking into the motorsports industry are noticeably parallel to those of the early female drivers. While the backlashes to their automobility and technological expertise have manifested themselves differently throughout the years, the motivation and end result is the same: to effectively deter women from pursuing the same liberties and careers that automobiles have afforded men.

Chapter 5 — Conclusion: A Feminist Approach to Racing Technology

Feminist writing within the field of STS has theorised the relationship between gender and technology as one of mutual shaping. — Judy Wajman

Technology is an integral part of culture. It has the ability to produce, reproduce, or even redefine social structures that have shaped our actions and interactions. The creation and use of technology is an active and dynamic process, similar to the social function of gender. Gender is also a process, and both gender and technology are performative in the sense that both are constantly being produced and reproduced. Gender is also relational. Historically, for something to encompass “maleness” it must also exclude “femaleness,” and vice versa. Gender is not only relational in terms of this internal binary, but also in the ways it is associated with certain characteristics, activities, and technologies. In many ways, “gender is an analytical tool useful for making sense of culture, and thus for exploring the relationship between culture and technology” (Lerman et al. 2). One of the most interesting ways to study this relationship is not only in the practical or intuitive use of technology but in its “impractical” or counterintuitive use as well. What people have chosen to do with a technology — and how they do it — beyond its intended use can reveal even more about a culture.

What people do in their free time tends to showcase things they, or their society, value. Things like freedom, independence, or thrill seeking have been sought out in many ways at many different times. When the car was first introduced, it was marketed as a new ticket to freedom and a way to explore past old confines. Some of the first women that drove used the car as a political statement to fight for suffrage or assert their place outside of the private sphere. When it was first put into use, “the auto represented a new, movable field upon which women’s struggle for power and autonomy would be played” (Scharff 25). Approximately one hundred years later,

and the car is still being used beyond its intended “practical” applications. The car can be used symbolically while still being used literally. Racing is so essential to study because it represents this space beyond the intended use of a technological artifact. Scholar Langdon Winner importantly notes that, because technological artifacts are usually created with a specific use in mind, they are mistaken as fundamentally neutral (Winner 6). He argues that this is clearly not the case. Certain people, often men, are usually credited as the sole proprietors of technological knowledge; instantly creating an imbalance that is anything but neutral. The fact that women are still as highly individualized in their driving skills as they were when the car was first popularized is a result of this imbalance. Men, with their inherent association with technology, are assumed to be naturally compatible with it in all forms. In this case, that means they are assumed to possess the necessary skills that make them good drivers.

When people race, they do so for the love of driving. Finding out where this comes from and in whom this love is fostered is important. The way people interact with this technology can be indicative of what they value and what society values. It is clear that “technologies provide structure for human activity” and “technologies are not merely aids to human activity, but also powerful forces acting to reshape that activity and its meaning” (Winner 6). What if the activity of racing was not so exclusively male? Technology has the power to be a profound equalizer, and this is why a feminist approach is so essential. It is important to “put the spotlight on artifacts themselves” and to examine “the very process by which technology is developed and used” to understand where women have been pushed away from technology and thus begin to bring them closer to it (Wajcman 146).

First and foremost, there must be a greater inclusion of women at the conceptual, design, and engineering levels of racing. So much of the politics that are imbued in these technological artifacts come from the earliest design levels, which makes them a key starting point for using technology to bring about change. Seemingly small technical issues that serve to make women feel out of sync with technology are oversights that should not exist. Aside from creating more universally operable technologies, little changes like these would do more to welcome female drivers. Since many of these high-end manufacturers also produce race cars, such as Ferrari famously only making street cars to fund their racing team, the technological imbalances carry into the racing world. If these cars had been designed by women, or at least with female test drivers, there is a much larger chance that these oversights would not have been made. “The discourse surrounding motorsport culture includes rhetorical tropes that highlight women’s bodies as inferior and/or requiring special needs to function at the same level as men if such discourses even assume that they can,” all because the male body within the car is the expected “default” body, so any modifications to the car so closely aligned with the male body is seen as seceding to women’s needs (Pflugfelder 412). This was true in the early days of car development as well, with modifications such as the electric starter, the covered cab or the automatic transmission marketed as secessions to women’s vain nature. The culture of racing is not so far removed from daily driving, and the engineers who make the cars for racing or street use are operating within the same parameters.

Female engineers, on the other hand, do not need to only engineer cars for women. They can engineer cars for everybody. Coming from a previously undermined and underrepresented place, minority engineers like women have the ability to see potential barriers imbued in

technologies that the stereotypical white male engineer would not. People tend to gravitate towards and create things for people that they are similar to, often without a conscious effort.

The value of a critical approach to technology, and a feminist approach as well, is that it has the ability to look at the production of artifacts and ask: Why are they produced? For whom are they produced? Who are the stakeholders in the production and why? What cultural or social norms do they follow or reproduce themselves? These questions can be difficult for people embedded in the industry to ask, which is why they must be asked by people who have simultaneously been insiders and outsiders. Women occupy this pivotal position in the racing world.

The socially constructed “female” identity has been shaped as incompatible with many forms of technology, usually only excluding those associated with domestic duties. Today, now that more women are entering the workforce, they are occupying a wider variety of roles than we have ever seen. This progress, however, has been marked by somewhat invisible setbacks.

Drawing more women into the engineering and design fields is difficult, and even more so when it comes to automobiles. Theorist Judy Wajcman noted that:

“In addition to gender structures and stereotyping, engrained cultures of masculinity are still ubiquitous within these industries, causing many young women to reject careers and older women to leave the field. This is fundamentally because women are being asked to exchange major aspects of their gender identity for a masculine version, whilst there is no similar ‘degendering’ process prescribed for men” (Wajcman 146).

This is especially true in the racing industry. The masculine identity has been so omnipresent since the creation of the first car that there has been no counterpoint for women to develop their own identities with the technology. The “appropriate” use of automotive technology for women has largely centered around an extension of domestic duties such as grocery shopping or transporting children to various activities. Since the feminine identity has not been shaped by

automotive technology to the same extent that the male identity has been, breaking into these fields has been especially difficult for women of all backgrounds. The “degendering” process that Wajcman mentions is indicative of the fact that the default gender associated with technology has been male, and since these identities are constructed so closely together, they are seen as virtually inseparable.

Arguably, a large part of what The W Series has sought to achieve is to show a way in which women can race cars and be accepted into the automotive world without undergoing a “degendering” process. This also calls into question the very traits that we consider “masculine” or “feminine” and asks us to rethink our inherent biases. By using the technology of the race car to give young women the confidence they needed to pursue careers in racing, The W Series is doing much more than putting them in the spotlight: it is showing women that they do not need to change fundamental aspects of their personality, preferences, or identity in order to “fit in” in the racing world. It is also normalizing the very existence of female race car drivers. While this may seem intuitive, it should not be understated. “Objects are defined by their places in networks,” and by creating a network of female drivers, engineers, designers and mechanics, the very object of the race car is redefined (Sismundo 86). Here, the race car goes from a marker of the male identity to a more universal symbol of freedom, speed, competition, and the capabilities of human ingenuity. In a way, by adding female drivers more prominently to the equation, the race car can become more of itself.

Instead of the race car being used as a way to reproduce the male identity in sport and aid in the public perception of male power, it can now become simply a vessel for competing and exploring the limits of the human experience with technology. Programs like Shift Up Now and

Girls With Drive that have decided to use the technology of the race car as a way to empower women and show them what they are capable of are at the forefront of this change. Instead of operating within the paradigm, that has associated technological competence with maleness, these initiatives are changing the conversation and thus changing the perception of the technology itself. When we continue to innovate and create new technologies but do so within the existing parameters of an old-fashioned patriarchal paradigm, we are not creating new technologies at all but rather making technologies that follow the same social norms and guidelines, and reproducing them. This leads to the creation of more technology within these guidelines and creates a feedback loop that cannot be broken until work is done outside of the existing paradigm. What needs to be done in the racing industry, and what is just now beginning, is the changing of the social climate surrounding the technology. In other words, “a different kind of novel use of technology is the use of different *ideologies* of technology” (Sismundo 99).

As STS scholar Langdon Winner said, “knowing how automobiles are made, how they operate, and how they are used and knowing about traffic laws and urban transportation policies does little to help us understand how automobiles affect the texture of modern life. In such cases, a strictly instrumental/functional understanding fails us badly” (Winner 9). Winner understood that in order to understand how technology *really* shapes our lives, we must look beyond the literal. I have proposed that this should be taken a step further, and look beyond the practical use of a technology to its impractical use. In studying this impractical use, the use of cars for racing and not merely transportation, the ideologies governing it become more malleable. Since “no technology – and in fact no object – has only one potential use,” when we go beyond the intended use of an object we gain the ability to redefine what the technology is and what it can

be used for (Sismundo 98). The women who have pioneered in the motorsports industry have used the technology as a means of proving wrong the stereotypes about their gender, which is certainly not what the car was initially intended to do.

As we have seen, the creation of a technology is closely woven into its cultural context, and this is often full of social expectations. The fact that the creation and use of technology is a dynamic process is not a fact that should be overlooked. The entire purpose of the motorsports industry is to push a technology to the absolute brink of what it is capable of achieving, and doing so also pushes humans to that limit. Not only have automobiles challenged the ways in which we see and interact with the world, they have fundamentally changed the ways in which we see and interact with each other. The power behind the steering wheel is one that should not be underestimated. Many of the women I interviewed emphasized that in order to be respected, they had to beat their male competitors at their own game. What if it does not have to be a man's game anymore? The goal of The W Series and all of the other initiatives to get young women into racing will have been achieved when the gender of the driver is no longer an issue: when there is no "default" gender behind the wheel. Historically, "women drivers always signify more than male drivers within motorsports discourse, and their driver-car identity is considered something less than a unified cyborg identity because motorsports' dominant gender is male. Female drivers embody their distinction much in the same way that any distinct minority within a relatively homogeneous sport must recognize that his or her body is seen as visually and symbolically unique" (Pflugfelder 420). When this homogeneity is gone, there is no longer any discord between the female body and the car. When this homogeneity is gone, women are no longer incompatible with technology.

This goes back to the relational nature of gender. For something to be one, it must by definition exclude the other. When something, like a sport, is homogeneous and occupied only by one gender, the presence of another is automatically out of place. This makes the “default” gender appear as the only one compatible with the sport or its technology. This is how the cycle repeats itself. With ruptures in this cycle and the changing of the paradigm the technological development operates within, there no longer has to be a “default.” Any body can be unified with the technology. Anybody can race.

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