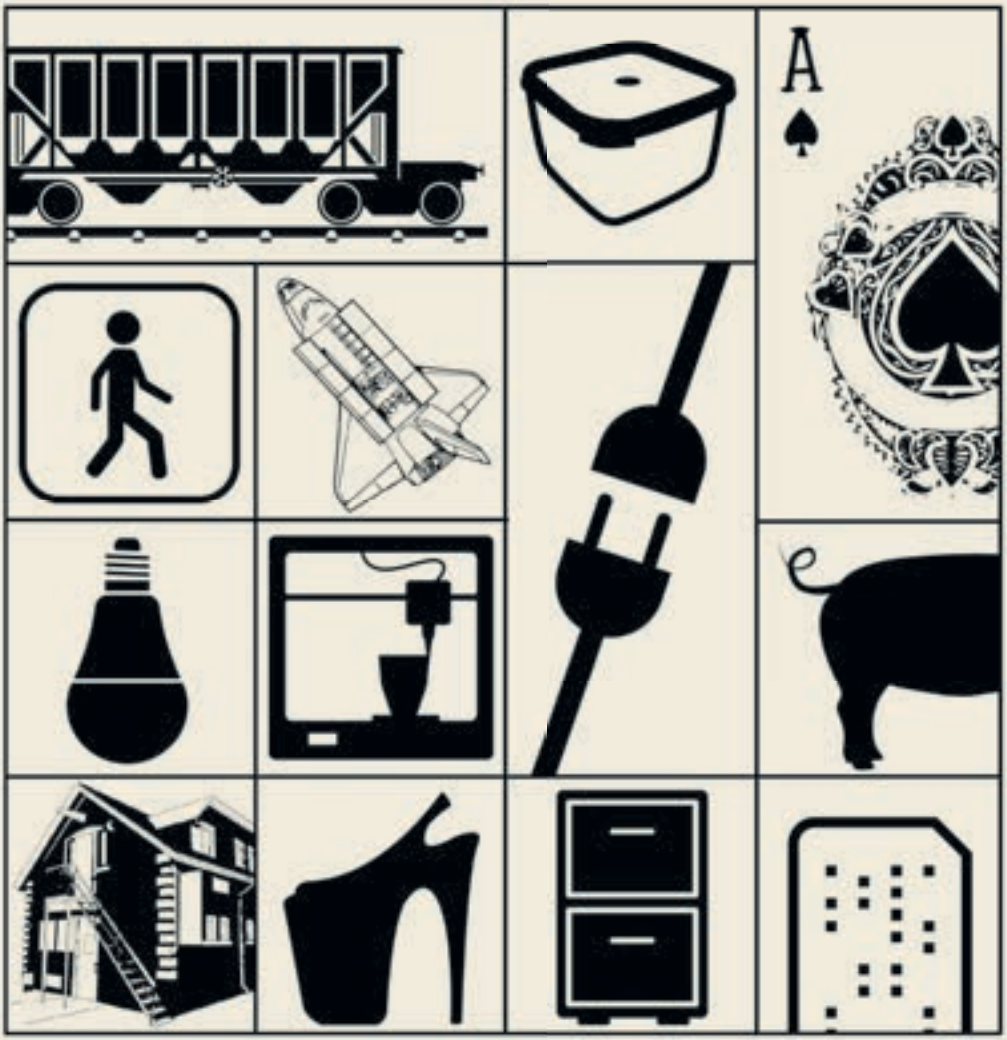
Re-Understanding Media

Feminist Extensions of Marshall McLuhan

Sarah Sharma and
Rianka Singh, editors



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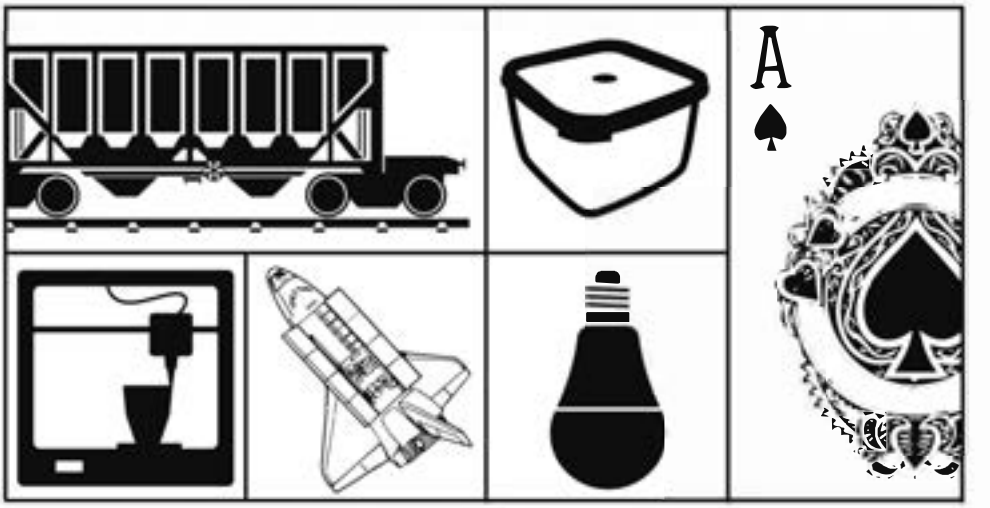

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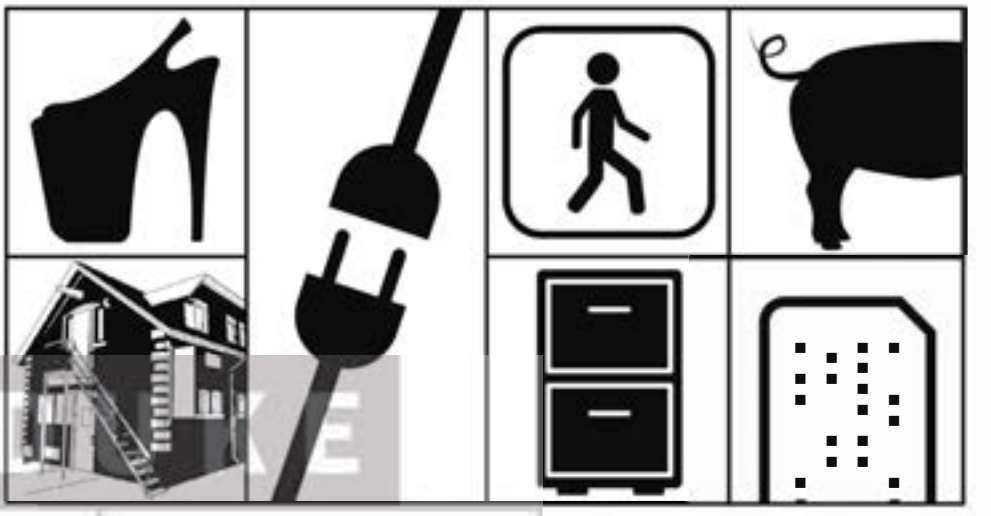

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Contents

Part III Media after McLuhan

Preface | **The Centre on the Margins**

SARAH SHARMA

I'm working in my office, which is a tiny coach house on the margins of the University of Toronto campus. It is Marshall McLuhan's former study, now the McLuhan Centre for Culture and Technology, but established in 1963 for McLuhan as the Centre for Culture and Technology (figure P.1).

It's also the site of his historic Monday Night Seminars, where McLuhan held court for his students, the public, and the occasional interested celebrity. These Monday Night Seminars have been ongoing sporadically under the center's various directorships since McLuhan's time. I hear the doorbell ring, followed by the heavy door bursting open. I've always found it quite telling that the media theorist who imagined that the coming electronic age could give way to a world made up only of centers of power without margins was allotted such a small building on the margins of campus to house his center for media study. Its location is also indicative of the marginal status of media studies as an academic discipline during McLuhan's time. In response to the doorbell, I call out an apprehensive "hello" while running down a staircase so narrow that only one body at a time can squeeze through.

There he was again! He was almost always white haired and wide eyed, clutching papers—an essay or an old dissertation, a notepad, and a camera. He would ask me who was in charge of the place. Could he speak to the manager? Could I introduce him to the researchers or the director? Could he walk around and soak up the energy of Marshall McLuhan? He's wondering if maybe he could sit where McLuhan sat for just a little while? He was here to learn about McLuhan. Could I tell him something? He had arrived from down the street, the other side of campus, another town, from the South, and sometimes from across the Atlantic.

P.1 Marshall McLuhan outside the Coach House Institute. Courtesy of Robert Lansdale Photography, University of Toronto Archives.

He would interrupt my classes and meetings. He would appear at the window of the main room with his hands forming goggles over his eyes. He would barge into my lectures asking, "Is there someone here who knows about McLuhan?" Once he walked in and stood in front of me while I was addressing the class and started telling my students he knew McLuhan personally. He would often tell me that McLuhan predicted the digital age. He would tell me how McLuhan's theories are really important because technology today!

I would be polite and nod my head, thanking him for his profound insight. He would write me unsolicited emails and letters and send me copies of his new self-published book, essay, or article typed in Roboto font, and sometimes the audio of a presentation he made on McLuhan. He was entrepreneurial and

so had some of his own business cards made—he was also running a center for technology. Where was it? It was online at this address.com. He was running his own McLuhan speaker series. He would ask me for feedback on his writing. Did I have office hours? McLuhan had told him something I should probably know. He was working on algorithms, cell phones, AI, VR, and driverless cars. Did I know that these media are really important and have effects on culture? Did I know that McLuhan predicted these media too?

He was McLuhan's former student, now a McLuhan consultant, and could teach one of my classes if I liked. He'd had the right sort of access to McLuhan that no one else could claim. He would offer unverifiable accounts of what McLuhan was just about to say, before his sudden stroke, regarding the emerging electronic world. He was an appointed McLuhan Fellow from well before my time and could he please get a key to the building. He is a McLuhan interlocutor; here is what he knows. He is McLuhan's Indian guru and therefore we must have a connection too.

McLuhan was his teacher. He was McLuhan's last student. He was McLuhan's very last student. Did I want to know what McLuhan last said to him? In short, this man would walk into the McLuhan Centre searching for evidence of McLuhan and find me instead. The disappointment was palpable, often making its way to his social media tirades about the Centre's new direction and new occupants. I did not have a direct line to McLuhan. If I had not been his apprentice, could not channel his spirit directly, or contact him via Ouija board, what was I doing there? More to the point, what was a feminist technology scholar doing there?

When I was appointed the new director of the McLuhan Centre for Culture and Technology in 2017, the coach house was still infamously known as a clubhouse for McLuhan fans. Like many visitors outside of this orbit, I encountered a difficult space steeped in patriarchal attachment to the great father, replete with essentialist understandings of race and gender along with a disturbing emphasis on global development theories. The Centre also seemed to be plagued by being in constant revival much like its founder. Every few years McLuhan's disciples would predict that he was going to be more important than ever now, again. In an attempt to popularize him, they would elevate his work and legacy while guarding their particular reading of his theories. But fandom, hagiography, endless revivals, and self-serving resuscitations of a revered figure are far from scholarly research and farther still from feminist work.

What I found instead was a space that did not need a revival but rather, a retrieval. Like a hex, I raised a hot pink banner across the coach house

for my first year as director (figure P.2). Not only did I want the space to be visible from the street, but I was going to highlight for my first year what I recognized as a possible feminist version of McLuhan's most famous aphorism, that the medium is the message. To me, the crux of his original theory of media and power seemed to be most alive within feminist scholarship on technology. And by critical feminist approaches I mean in particular the work on technology that does not treat difference and identity as if it is an addendum to technology but rather scholarship that understands how technology alters and can determine the social experience of gender, race, sexuality, and other forms of social difference.

Herbert Marshall McLuhan (July 21, 1911–December 31, 1980) was a Canadian English professor and scholar whose musings on the television set and the media theory of Harold Adams Innis propelled him into media study in the 1950s at the University of Toronto. McLuhan's theories of media are understood to be a cornerstone of communications and media

P.2 The coach house dressed in hot pink *MsUnderstanding Media* poster. Photo courtesy Erin MacKeen.

theory, and his works include *The Mechanical Bride* (1951), *The Gutenberg Galaxy* (1962), *Understanding Media* (1964), and *The Medium Is the Massage* (1967). McLuhan is often referred to as the "father of media studies" for turning attention to the medium's message, to the technology, over the content.[1]

Since 2017 I've been paying homage to McLuhan thematically while gathering the critical feminist, race, queer, and Indigenous media scholars, artists, and activists who take up McLuhan's privileging of the medium in novel and politically significant ways. However, they do so without pledging allegiance to its father. And really, they don't need to. Their work shares a common and enduring thread worth highlighting within feminist media studies but also for McLuhan scholars: these thinkers have been doing the critical work of locating how exactly the medium is the message. Their media study shines a light on the ways that inequitable power dynamics are tied to the properties and capacities of technologies that mediate power in social and institutional spaces. Thus, back to our playful themes at the Centre, rather than McLuhan's *Mechanical Bride* we have the *Mechanical Bro*; rather than *Understanding Media*, we can *MsUnderstand Media*, and rather than argue over which medium is hot or cool we might recognize the *HotMessAge* in which we live and think about the technological possibilities for radical and just social change. And rather than pretend we all live in a Global Village, especially during COVID-19 and the antiblack and anti-Indigenous racism that are all plagues to a better social world, we can consider the *The Global SpillAge*. The purpose of the Monday Night Seminar series guided by these plays on McLuhan's key works during my time as director of the McLuhan Centre has been to highlight and elevate the critical voices that had historically been left out of both the building and the discourse. It is also a means to address the common question I'm often confronted with when feminist scholars ask me, "But you don't really like McLuhan, do you?" I am not so much concerned with the man or his legacy as I am with the way in which his media theory has inspired me to think about power and structural differences. Thus the thematics for the Monday Night Seminar programming over the last few years at the McLuhan Centre are meant to turn toward McLuhan, not away from him. They do not seek to repair him. Rather, they are meant to confront the limitations of McLuhan's problematic examples while taking up the broader potential in understanding that the technological is a specific vector of power that demands a feminist understanding. This book gathers a small sample of the scholars that visited and participated at the center's Monday Night Seminar

series and other related programming over the last few years. What is collected here is not nearly exhaustive or fully representative of the potential and scope of these conversations, but they speak to some of the conversations that have been taking place in the McLuhan coach house on Monday nights and at the center's other public events since 2017. This book offers a re-understanding of McLuhan's *Understanding Media* for feminist ends. The chapters presented here do so in the hopes of a more critical and engaged approach to McLuhan and *a feminist medium is the message*.

—SARAH SHARMA, director of
the McLuhan Centre for Culture and Technology
January 2021

Notes

1. Marshall McLuhan is often regarded as a central figure within the Toronto School of Communication. This so-called Toronto School includes those theorists at the University of Toronto in the decades from the 1950s to 1980 who focused on the centrality of communications technologies to cultural, social, and institutional change. The Toronto School is often referred to as also including Harold Innis, Edmund Carpenter, Walter Ong, and Eric Havelock. We want to insist here on this page, and along with our other like-minded feminist technology scholars at the University of Toronto, that this Toronto School also includes the first woman professor and, more importantly, feminist in the Department of Metallurgy and Materials Science, Ursula Franklin.

Acknowledgments

We'd like to thank all of those who took up the invitation to explore with us the possibilities for a critical extension of McLuhan's medium is the message at the McLuhan Centre for Culture and Technology between 2016 and 2021: Awo Aboko, Cass Adair, Nasma Ahmed, Mitchell Akiyama, Morehshin Allahyari, Beverly Bain, Anne Balsamo, Sarah Banet-Weiser, Jody Berland, Rena Bivens, Zach Blas, Megan Boler, Alexandra Boutros, Tracey Bowen, Miranda Brady, Jack Bratich, Jayna Brown, Simone Browne, Roberta Buiani, Kenzie Burchell, Nadia Caidi, Terril Calder, Nicole Charles, Florence Chee, Julie Chen, Lily Cho, Wendy Hui Kyong Chun, Nicole Cohen, Beth Coleman, Natalie Coulter, T. L. Cowan, Lauren Cramer, Michael Darroch, Alessandro Delfanti, Greig de Peuter, OmiSoore Dryden, Brooke Erin Duffy, Stefanie Duguay, Zeinab Farkokhi, Emily Flynn-Jones, Yuriko Furuhata, Radhika Gajjala, Gary Genosko, Banu Gokariksel, Baruch Gottlieb, Melissa Gregg, Sarah Hagi, Hazal Halavut, Rachel Hall, Alex Hanna, Cassandra Hartblay, James Hay, Mark Hayward, Alison Hearn, Radha Hegde, Andrew Herman, Garnet Hertz, Faiza Hirji, Mél Hogan, Sun-ha Hong, Ursula Huws, Steven Jackson, Jenna Jacobson, Yasmin Jiwani, Tero Karppi, Patrick Keilty, John H. M. Kelly, Aphra Kerr, Ganaele Langlois, Jessica Lapp, Sophie Lewis, Elisha Lim, Steven Logan, M. E. Luka, Sara Martel, Shannon Mattern, Rhonda McEwen, Karen Dewart McEwen, Cait McKinney, Jaqueline McLeod Rogers, Tara McPherson, Hélène Mialet, Tanner Mirrlees, Michelle Murphy, Lisa Nakamura, Judith Nicholson, David Nieborg, Safiya Noble, Rebecca Noone, Susanna Paasonen, Jeremy Packer, David Parisi, Felan Parker, Barbara Perry, John Durham Peters, Ben Peters, Kamilla Petrick, David Phillips, Whitney Phillips, Praba Pilar, Jennifer Pybus, Scott Richmond, Lilian Radovac, Jas Rault, Carrie Rentschler, Alessandra Renzi, Sarah T. Roberts, Craig Robertson, Shirley Roburn, Chris Russill, Kim Sawchuck, Natasha Dow Schüll, Leslie Regan Shade, Christine Shaw, Ladan Siad, Kumi Silva, Skawennati, Andrea Slane, Avery Slater, Sandy Allaquore

Stone, Joshua Synenko, Victoria Tahmasehi-Birgani, Nicholas Taylor, Phillipe Theophanidis, Elise Thorburn, Lilia Topouzova, Armond Towns, Dori Tunstall, Jennifer Wemigwans, Nick Dyer-Witheford, Bianca Wylie, Liam Cole Young, Geoffrey Winthrop Young, and Jasmine Zine.

At Duke University Press, Elizabeth Ault shepherded this project and gave us latitude in the style and format of chapters so that we could include as many new and emerging experts in and outside of academia as possible. Benjamin Kossak, Annie Lubinsky, and Christopher Robinson were instrumental in the preparation, design, and copyediting of the manuscript. We are also grateful to the anonymous reviewers whose generous and close readings helped us strengthen the book.

Graduate student fellows, faculty, and friends at the McLuhan Centre were pivotal in this book coming together. Thanks to Réka Gál, Grayson Lee, Alex Ross, Lee Wilkins, Stephanie Fisher, Leslie Shade (again), and Erin MacKeen. Sarah would like to thank her trusty writing group in Toronto (Dana Seitler, Tess Takahashi, Selmin Kara) for reading early drafts of the proposal. She also thanks Andrew McLuhan for his friendship and support. Sarah is grateful to her colleagues at the ICCIT and would like to especially acknowledge Anthony Wensley for providing immediate support to her through the ICCIT at the very beginning stages of this project. And finally, Rianka and Sarah would both like to extend the biggest of thanks to Patty Facy for assisting in every facet of this book project from heating the Coach House to keeping all the papers in order.

Introduction

A Feminist Medium Is the Message

SARAH SHARMA

Feminism is not the first thing that springs to mind when considering Marshall McLuhan. The world-renowned Canadian media theorist and so-called father of media studies was not a feminist, and I certainly have no intention of reviving him as one. Nevertheless, I believe that it is necessary to retrieve his work for feminist ends. McLuhan's media theory offers a singular conception of the technological as a structuring form of power—one that offers feminist media studies insight into how a culture's dominant technologies can alter and determine the social experience of race, gender, class, and sexuality. This volume emerges out of a concern for the understandable lack of feminist engagement with McLuhan and the erasure of critical race and feminist media studies perspectives in the scholarly updating of McLuhan for contemporary readers. McLuhan's media theory has much to offer feminist media studies. This is the central claim of this volume. Moreover, the political potential and critical import of McLuhan's media theory depends upon a feminist retrieval. The chapters in this volume consist of a series of original essays, experimental writings, and interviews from emerging and established media studies scholars, artists, activists, and technologists. A key aim of this volume is to employ a feminist approach to

McLuhan's media theory to show how inequitable power dynamics become insinuated as part of the properties and capacities of technologies and machines that mediate power in social and institutional spaces. Together we advance a feminist version of McLuhan's key media studies text, *Understanding Media: The Extensions of Man* (1964) and with it a feminist version of "the medium is the message."[1]

Marshall McLuhan's *Understanding Media* played a significant and highly visible role in developing the academic discipline of media studies—most famously the penchant for understanding the specificity of forms and technologies constituting a twentieth-century electronic culture. McLuhan's well-known dictum that "the medium is the message" paved the way for the academic study of various media such as print, radio, TV, and film. His media theory broadened conceptions of media to include nontraditional media objects such as clothing, clocks, and light bulbs as well as a range of transportation technologies like wheels, bicycles, airplanes, and motorcars. McLuhan shifted the focus from a traditional understanding of media as content delivery method to the formal properties of media/technology. For McLuhan, the message of the medium "is the *change* of pace or scale or pattern that it introduces into human affairs."[2] McLuhan generalized all of human history into three media epochs: oral, print, and electronic. Each media age created a distinct social character or Media Man: tribalized, detribalized, and retribalized. The electronic era would return the phonetic, compartmentalized, linear, fragmented, nationalistic-thinking Print Man to the collaborative, connected, immersive and compassionate tenets of Oral Man. Electric Man would have a new depth of awareness that could catapult him out of the restrictive mental and political confines of print society.

McLuhan's media theory transformed both academic and popular understandings of media. On the scholarly front, McLuhan's theories have continued to be revisited, updated, and applied to new media contexts as well as influencing other strands of media theory internationally, such as German media theory. It was Friedrich Kittler who boldly opened his *Gramophone, Film, Typewriter* stating "media determine our situation" in reference to McLuhan's "medium is the message." His enduring relevance to the contemporary moment is reestablished over and over again.[3] On the popular culture front, he has enjoyed the status of global media studies guru. He is nothing short of a cult figure. After the release of *Understanding Media*, McLuhan was a household name, and the phrase "the medium is the message" became part of popular parlance. Some of his famed

appearances include a walk-on speaking role in Woody Allen's *Annie Hall.* He is the subject of a Canadian Heritage Minute, a televisual fictional attempt to capture the moment during his graduate seminar at the University of Toronto which was the first time he realized that the medium was indeed the message. The voice-over relays, "This man changed the way the world thought about communication." McLuhan's Centre for Culture and Technology, housed in an old coach house on the margins of the University of Toronto campus, was established in 1963 and received visits from Yoko Ono, John Lennon, and Canadian Prime Minister Pierre Elliot Trudeau. In the mid-1990s, with the commercialization of the internet, *Wired* magazine anointed McLuhan as their patron saint. On July 21, 2017, on what would have been McLuhan's 106th birthday, Google celebrated McLuhan with his own Google browser doodle. The internet unleashed a torrent of stories about McLuhan as the father of media studies. From the *Hindustan Times* in India to the *Telegraph* in the UK, newspaper stories celebrated the great man who predicted the internet. In June 2018, digital business tycoon Elon Musk tweeted an unattributed author photo of McLuhan without any accompanying text shortly after attaching his Tesla Roadster to his SpaceX Falcon rocket en route to Mars.

The celebration of McLuhan is a difficult one for feminist media studies to contend with. While he ushered in the field of study of media *as* media, his texts are peppered with frequent misogynistic, racist, and nonsensical commentary. His cult status and praise for his scholarly contributions seem too often entangled with those who consider themselves McLuhan experts. His theories are grand and universalizing, referring to epochal shifts in media ages that include a media typology of a singular white male subject. It is well known that McLuhan turned to essentialist and racist categorizations of both African and Indigenous cultures, particularly in describing Western and non-Western literacy.[4] It doesn't help that the scholarly updates of McLuhan for new times occur as if feminist and critical race approaches to technology have never existed. In 2004, Leslie Shade and Barbara Crow argued powerfully that the legacy and scholarship dedicated to McLuhan "does not address, incorporate or attend to gender in its conceptualization nor engage with any of the insights and/or contributions in feminist scholarship on technology."[5] McLuhan's legacy is maintained by a group of global disciples who have taken it upon themselves to declare what McLuhan would say or think today. Anthony Enns argues that the lack of political engagement within McLuhan's work has long been regarded as one of the main reasons his work is rejected and even ridiculed as unserious

scholarship.[6] Much of the extension of McLuhan's theories into the digital age interpret his notion that media determine culture as a singular effect upon the same singular universal human subject McLuhan was concerned with. Such a view parallels the dangerous and uncritical view of technology espoused by Elon Musk and is evidenced by the tech-bro culture of Silicon Valley, who remain willfully blind to the realities of the uneven technological futures they are increasingly responsible for.

Feminist Media Theory Is Not a Fan Club

McLuhan's failure to acknowledge the dynamics that bind together bodies, rhythms of life, power relations, and technology should relegate him to the tired domain of great white male legacies. Instead, I have found that his insights inspire a new critical project for feminist media studies. McLuhan himself might not have had his eye on economics, politics, and bodies, but "the medium is the message" is a media theory relevant to feminist and critical approaches. Taking it up as a critical framework is an invitation to more deeply consider social structures and power dynamics that inhere in technology. As Jonathan Sterne has argued about other great male figures within media and communication studies, we can still run with the "the curiosity of scholars" and can do so "without taking their findings as timeless truths."[7] Similarly, John Durham Peters astutely writes, "Just because McLuhan was worried about Dagwoods, effeminate men, and henpecked husbands doesn't mean we need to be. We can take his analysis without taking his attitude."[8] As Janine Marchessault has argued, McLuhan had a quite telling and instructive treatment of gender in *The Mechanical Bride: Folklore of Industrial Man*.[9] For example, Marchessault points out that gender is a significant category in McLuhan's critique of postwar America, but his focus was not just on the objectification of women's bodies in advertisements but on the ways women's bodies were instrumentalized and rationalized to mirror the relationship between finance and engineering.[10] We are also inspired by Anne Balsamo's *Technologies of the Gendered Body*, which takes a cue from McLuhan's focus on the creative possibilities that come from understanding how new "media work us over" but more specifically how media works upon bodies differently.[11] Balsamo reads in McLuhan "a submerged discourse of gender that continues to organize and make intelligible the discourses of the body in late capitalism".[12] Or we can do as Armond Towns does and take his media theory on directly, turning the analysis back on his own texts. Towns argues that McLuhan's treatment of Black people

in his media theory is an indication of the white supremacist view of Black people as a medium and ultimate extension of white Western man.[13] The contributors to this volume confront McLuhan's treatment of gender, race, sexuality, and class directly in order to unravel the medium-specific logics, or what we could call the *techno-logics* that produce and maintain social differences.

It is important to note here that the question of McLuhan's gender politics is often addressed in one of three ways. One response is to dismiss him as antifeminist and refuse to read or engage him. A second is to let him off the hook for being a man of his times. How often have feminist scholars had to endure the hideous explanation that racism and sexism were part of the past? Such a view strangely follows the logic of linear history—a view that McLuhan himself would have written off as an excuse that only a Print Man locked in his confining, compartmentalized, and linear mindset of the printed word would espouse.[14] But I digress. There's no Ouija board here to tell us what Marshall McLuhan would say anyway. Nonetheless, a third response to McLuhan and gender locates the role women played in his scholarship. For example, the handwriting of Corinne McLuhan (his wife) has been a subject of intense archival examination.[15] The notes taken by his female assistants have been archived and discussed as the invisible hand of women in his work.[16] His relationships with Jane Jacobs and Jaqueline Tyrwhitt are also offered as an indication that he was sympathetic to women.[17]

While recognizing the earnest efforts of these scholars to find a place for women in his work, *Re-Understanding Media* does not need McLuhan to be a feminist. This book is not concerned with McLuhan and his life and times per se, but rather with his media theory and the possibilities of a feminist "medium is the message." Finding the women in McLuhan's work or listing the women who have written about McLuhan does not indicate feminist engagement. In the former case, it universalizes the category of woman while forgetting that being a woman is not the same as being a feminist. We are not concerned with adding to the hagiography of McLuhan or cleansing his personal reputation. Thus, none of these three responses to gender and McLuhan speaks to this project. Instead we are interested in how his media theory allows for the most critical framework for thinking about technology and power. So even though he did not account for structural differences in his work, he approached technology as a structuring form of power.

When McLuhan's theory is fully engaged, it offers a political understanding of *media beyond content* and of *technology beyond a tool.* To consider

the message from a feminist perspective is to consider the multiple relational changes in pace, pattern, and scale a media technology can introduce within a society. A feminist approach to "the medium is the message" rejects the focus on the message as a singular change upon a singular subject and instead locates the multiplicity of unaccounted changes ushered in by the media technology related but not limited to changes in pace, pattern, and scale. This book extends McLuhan into new critical terrain in order to re-understand the forms of subjectivity, social arrangements, rhythms of relations, and specific power dynamics that are entangled, influenced, or even determined by the time-shifting and space-altering logics of a culture's governing technologies and technological systems. This book also extends McLuhan's pivotal broadening of the scope of which technologies are understood to be media.

In *Understanding Media*, McLuhan famously turned to the light bulb to introduce his overall media theory. The message of the light bulb was the radical social and economic transformation that ensued when the definitional and experiential boundaries of day and night shifted, with newly light-filled rooms. But to extend this theory into gender and labor studies, one can consider how the light bulb shifted the gendered labor of the day and ushered in a new politics of night replete with new subaltern publics, transgressive politics, and different modes of policing. The light bulb also made possible the second shift or double day that second-wave feminists have illuminated in their own work.[18] The new social patterns and the structure of social differences that emerged were inexorable to the light bulb. In this example of the light bulb, we might begin to see the political potential of this media theory as pointing media scholars to the media logics at play in forms of systemic inequality and structural difference. McLuhan's media theory insists on both the ontological and epistemological power of media. Through McLuhan we can understand how the medium sets the parameters and possibilities for not only communicative action but political and social change. These chapters reveal the differential techno-logics of power tied to a wide range of media objects by extending a feminist "medium is the message." To understand our environment, we must extend our conception of what is included when we talk about media. Further to this, media like railroads, sidewalks, computer cords, textiles, incubators, Tupperware, filing cabinets, index cards, platform shoes, black data, and 3D printers cannot be properly understood as media without a feminist analysis.

To take up McLuhan's media theory within the purview of feminist media studies—a critical approach to media study oriented to issues of gender, race, sexuality, and social justice—means that one must consider how the terrain of struggle in question is technologically produced. Thus, McLuhan's understanding of technology as a form of power is an understanding of media that precludes questions about representation, ideology, policy, and even political economy. In other words, it is necessary to consider the precise technological conditions of possibility that can have a determining effect and are tied to the terrain of struggle.[19] McLuhan's understanding of technology as a form of power raises new questions about representation, ideology, policy, and even political economy, whether he addressed them directly or not. Feminist and critical race scholars have long been doing the work of examining exactly how the medium is the message—by locating specifically how, where, and to what extent (a) different technologies alter the tempo, scale, and rhythms of life in differential ways for different populations while also paying specific attention to (b) how patriarchy, racism, and other violent forms of power are extended through technology and (c) how technologies extend people's ability to resist patriarchy and racism. But I would add a very crucial caveat here. McLuhan's media theory can add an additional layer to these critical approaches because his theory allows us to consider the technological while still being medium specific and context specific. Work addressing the question about what a medium affords in terms of difference or how inequities are baked into various media technologies is already doing this to a certain extent.[20] This represents some of the most critical work in the field. But we must still address the fact that technologies cannot be understood outside race, class, gender, and sexuality. And we may want to spend some more time on what the notion of baking may foreclose in terms of thinking about techno-logics. Moreover, we must accept that race, class, gender, and sexuality cannot be understood outside of their intersection with the technological. And we must be careful that turning to baking as a metaphor does not then translate into an understanding of difference in terms of singular identity categories accidentally treated as separate ingredients. McLuhan's media theory allows us to avoid this potential misstep. By providing a feminist refocusing of McLuhan, this project gathers the force of feminist materialist perspectives in order to provide a more detailed consideration of how the technological is an important dimension of intersectional experience.[21] We incorporate McLuhan into the project of feminist

media studies in order to inspire further thinking and urge scholars to take on the necessary task of locating the medium-specific techno-logics of how power operates in culture.

A Feminist Medium Is the Message

It may seem an odd starting point, but I begin both my graduate and undergraduate feminist technology courses by explaining the relationship between technology and power through the work of Canadian media theorists Harold Adams Innis and Marshall McLuhan. In *The Bias of Communication*, Innis connected the rise and fall of empires to the properties of a given culture's dominating media forms.[22] An empire needed to be able to extend its power across vast distances (space) and also endure over history (time). The crux of Innis's media theory is that power is derived not from the content of the medium but from a technology's space- or time-binding capabilities. While Innis compared stone, clay, and tablets (time-binding) to the properties of parchment and paper (space-binding), the contemporary digital context brings us tweets, webpages, blogs, YouTube channels, Reddit, and 4chan. What we learn from Innis, McLuhan, and other scholars within the so-called Toronto School of Communication, is that our governing technologies portend a techno-logic.[23] The way power works, the shape it takes, will be very specifically tied to the medium in question. Part of our critical work as media scholars, then, is to locate these techno-logics in order to reveal how power is working on bodies, genders, classes, races, and populations to produce difference and inequality. This means paying attention to a relationship between technology and difference where technology is not just a tool wielded by different people differently or where technology is an addendum to a particular identity. It means we must also consider how the technological is a mode of power within systems of social struggle. For example, we must ask how technologies produce race.[24] McLuhan's theories of media challenge the dominant cultural understanding of technologies as tools whose effects depend upon their use. In fact, that technologies are even imagined as tools (neutral in and of themselves) that depend on policy changes, shared forms of control, or perceived as in need of more diverse representation in their development is part of today's dominant techno-logic. What gets built and designed is determined by the requirements of patriarchy, capitalism, and white supremacy. Technologies are understood to be powerful materials designed and harnessed to alter the social world. Technologies can determine the social order in unanticipated ways—in

particular, they change social conceptions of time, space, and distance and more fundamentally what it means to be human and in relation to one another.

Many feminist technology scholars have already argued that within a patriarchal society, technologies function to extend patriarchy.[25] In more radical traditions of feminist thought, technology is understood as inherently patriarchal.[26] The connections between misogyny, imperialism, and the technological power grab is not a hard one to make. A cultural history of fathers and their dominance over the television remote control has already been written.[27] More recently, smart home technologies appear at the forefront of domestic abuse cases as the new weapons of gendered domination and control.[28] This includes not only tracking a partner's movements through home surveillance technologies but also controlling environmental conditions against the other's will (heating, lighting, and lock mechanisms). Even a cursory glance at contemporary tech industry culture, often labeled tech-bro culture, yields similar results.[29] In the summer of 2017, former Google employee James Damore made headlines when his company-wide Google Diversity Memo leaked.[30] In it, he argued that biological differences between men and women make diversity-based hiring in the tech sector problematic. Damore was concerned that equal representation was going to be bad for Google's business and the future of software engineering in general.

Media trolls and peons who have become pundits and presidents by virtue of Wi-Fi clearly recognize something about the techno-logics of power and the imperial space-binding power of digital technology. We are not suggesting that McLuhan be forgiven for his misogyny and racist formulations. Instead, if we confront it directly, what we find in McLuhan is a significant link that explains how sexism and racism are always tied to the technological. McLuhan was certainly not oriented toward the political project of feminism or critical race theory, and we do not need him to be. Today, like Innis, we must consider the centrality of how media bind time and space and how the logistical capacity of media is manipulated and directed in ways that oppose a more just world. Digital trolls take advantage of this capacity to spread their vitriol fast and far, exerting power not only through ideological and emotional harm, but also through the capacity to overwhelm others' temporal needs and diminishing others' safe space. The 9/11 terrorists understood, for example, the potential media complex of skyscrapers/airplanes/live television.[31] The attack was devised with the spectacular power of live media coverage in mind and specifically timed to hit the two towers so that the second tower would be broadcast live. This

is not about media content as primary but rather about media content determined by the temporality of live media. Trolls and terrorists recognize the destructive potential of each medium's different paces, patterns, and scales, amassing technological power in innocuous ways. Like Elon Musk, they appear to have a pretty good handle on "the medium is the message" as a technological strategy to maintain patriarchy, white ethno-nationalism, and the perpetuation of class inequality.

A critical approach to gender and technology demands a feminist retrieval of "the medium is the message" not only to account for the power of technology but also to imagine the possibilities for new techno-logics. This is an understanding of technology that feminist media studies scholars working at the intersection of gender, critical race studies, disability studies, and technology are already bringing to bear.[32] Nevertheless, as it stands, the set of words "gender and technology" usually refers to women in the tech industry or that technology is a tool that is used differently depending upon one's gender. In each case, technology is treated as an external force that needs to be better managed. More specifically, gendered technology is often understood to refer to access to technological resources and capacities that have been described as the gendered digital divide. The internet is imagined to be an emancipatory technology for marginalized populations. It is also common to talk about gendered technologies as representational objects that become gendered by design and marketed. In other words, objects acquire feminized colors or are adapted or, more precisely, maladapted to women's bodies, such as air conditioning, knee replacement surgery, pacemakers, and NASA space suits. But none of this accounts for technology's depth of involvement in the structuring of difference or in the confining category of *woman*. Race and technology, sexuality and technology, and class and technology are treated similarly. Technology is an externality or an addendum within this framework. The problem is that people fail to account for technology as one of the forces that constructs, produces, cultivates, activates, delineates, categorizes, reproduces, maintains, and changes gender and other cultural categories.

While the key aim of this book is to advance a theory of technology and social difference by way of a feminist version of McLuhan's theory, it also serves as a corrective to the way that McLuhan continues to thrive globally at the expense of so much of the important and critical work that takes place within feminist media studies. The recirculation of McLuhan over and over again and the elision of feminist and critical race approaches occurs not just because it's business as usual for patriarchal hagiographies of

great academic men. Nor does this happen just because of the systemic and well-documented poor citational practices of male scholars who fail to cite the scholarly work of nonwhite male scholars. The erasure of feminist influences within the uptake of McLuhan is also because of what is always at stake in McLuhan's theory: technology—the imagined guaranteed domain of masculine prowess, ingenuity, and insight.

The chapters that follow take up McLuhan's invitation to locate the technologics that inhere in different media to determine how power operates in culture, but leave behind McLuhan's universalizing and grand narratives. They do not engage in hairsplitting over McLuhan's inaccurate technical detail. Instead we collectively pause on the more significant contribution of McLuhan—one which asked people to think about how technology serves as the bridge between culture and power. He was by no means an expert on hardware, future software, fiber optics, satellites, or the human senses. His grandiosity betrays him in the same way so many men today consider themselves technologists simply because they are online a lot of the time.

This volume showcases some of the contributions of critical race and feminist media theory to McLuhan, sharpening and revealing the political potential of such an approach. At the same time, the book provides a sustained challenge to the continued dominance of masculinist and universalizing media theories. It offers feminist media studies a feminist materialist approach inspired by McLuhan. It offers a way of thinking about the wider technological possibilities of the apps, devices, forms of popular culture, objects, programs, technological systems, and texts that are in question in our work within feminist media studies and explores what it means to give up some sense of agency in the face of technology and the way we theorize it. It works against the masculinist notion that the power to control media is paramount, a position that is replicated within liberal feminist arguments that technology or media platforms should be seized by women or that power will be redistributed by having better representations of women in media content (see chapter 9).

Structure of the Book

PART I

McLuhan's *Understanding Media* begins by outlining his major theoretical interventions and his case for the study of media as an academic discipline. It is also where he provides the most developed explanation of "the medium is the message," which provides the source of inspiration for this collection

of feminist retakes, takes, and offerings for further media study. We have organized the chapters of *Re-Understanding Media* into three parts.

Part I of *Re-Understanding Media* brings a critical and feminist approach, along with an analysis of gender, to the media technologies that McLuhan indirectly addressed in his long list of media objects in *Understanding Media.* These included "Wheel, Bicycle and Airplane," "Roads and Paper Routes," "Games: The Extensions of Man," and "Clothing: Our Extended Skin." In part I of *Re-Understanding Media*, instead of wheel, bicycle, and airplane, roads and paper routes, games and clothing, we bring you Armond Towns's "Transporting Blackness: Black Materialist Media Theory" (chapter 1), Shannon Mattern's "Sidewalks of Concrete and Code" (chapter 2), Nick Taylor's "Hardwired" (chapter 3), and Ganaele Langlois's "Textile, the Uneasy Medium" (chapter 4).

Armond Towns's chapter "Transporting Blackness," takes up McLuhan's key insight that transportation technologies are media. While McLuhan was interested in how transportation technologies, such as roads, wheels, and airplanes, moved people and things while also transforming the people and things that are moved, Towns considers what this means in the context of histories of gendered Black mobility, where it is specifically Black women who were seen as things to be moved. Turning to the complex of media within the Underground Railroad where it was not just roads, wheels, and trains but also attics and cargo boxes where Black women were moved, Towns puts McLuhan in conversation with Hortense Spillers, Katherine McKittrick, and other Black feminist theorists in order to address the limitations of McLuhan's media theory of transportation, clarifying that while these transportation systems are media, they are not suddenly neutral in how they move people.

McLuhan's discussion of roads in his chapter "Roads and Paper Routes" is rooted in his interest in technological acceleration and cultural power. McLuhan's theory of roadways hones in on the speed of information. McLuhan's critical argument is that "any new means of moving information will alter any power structure whatever."[33] McLuhan considered roads to be a medium that gave way to newer electrically mediated ways of transmitting information. Shannon Mattern's chapter "Sidewalks of Concrete and Code" starts with McLuhan's tenet that media are responsible for specific changes in the organization of space. But Mattern steps off the road and onto the sidewalk, where she traces the long media history of sidewalks and shows that this liminal and often unassuming space takes on new meaning with the growing dominance of networked, ambient technologies. She points to

how sidewalks have always been a site of contestation, marked by unequal gendered and raced power dynamics tied to access, movement, and the right to space.

In Nick Taylor's chapter "Hardwired," he "follows the wires" that materially connect quotidian media devices. Taylor links the management of the wires in gaming consoles to gendered domestic life and the production of new contemporary techno-masculinities. Taylor imagines how McLuhan would write about wires today, given that they are media that "consist of pure energy without any content."[34] While McLuhan did write on games in "Games: The Extension of Man," this predates video games or mediated card games. Nevertheless, McLuhan's argument that "all games are media of interpersonal communication" allows Taylor to consider the media that give way to games and what they communicate about interpersonal gender communication in the home.[35]

Ganaele Langlois's chapter on Shipibo-Conibo textiles offers a new perspective on how Indigenous textiles become media interfaces. Langlois's chapter builds on McLuhan's key chapter, "Clothing: Our Extended Skin," where he outlines an approach to clothing as an extension of skin and media interface. It is in this chapter that McLuhan's tendency toward misogynistic and racist language appears to be tied up in his understanding of how other bodies are interfaces for white male power (see again chapter 1). For example, McLuhan argues that changing American women's fashion is more tactile and invites touching rather than looking before commenting on how "backward people" sense differently than "highly visual industrial societies."[36] In positioning textile as global media, Langlois's chapter offers a feminist and decolonial intervention on McLuhan's media theory of cloth. The chapter focuses specifically on Indigenous Amazon textiles, which, as the chapter shows, are sites of appropriation and exploitation. She argues that textiles are not only an extension of the skin but also extend the environments in which they are produced.

PART II

The second section of the book includes a series of essays by media scholars whom we requested to engage McLuhan in the work they were already doing—seeing in their intriguing scholarship the potential to integrate McLuhan and the politics of gender in new ways. We invited these scholars to reconsider their media and synthesize McLuhan with the gendered technologics these media portend. These chapters address incubators, Tupperware, spindles, filing cabinets, and index cards.

Sara Martel's chapter positions incubators as life-sustaining media technologies (chapter 5). Martel's creative chapter is a love letter to the incubator that kept her son alive when he was born prematurely. In her letter, Martel positions the incubator as her "machinic coparent," showing how the medium reveals reproduction as technological. Martel's letter, along with the corresponding notes that follow, provides a way of reading the incubator through McLuhan's theories of sensorial experience and medium as environment.

In chapter 6, Brooke Erin Duffy and Jeremy Packer's "Wifesaver: Tupperware and the Unfortunate Spoils of Containment," we see a shift from McLuhan's thinking about media as extension to thinking about media of containment. Packer and Duffy show that Tupperware as medium does not only extend "women's capacity to contain or nurture life," but also exists as a containment medium that reifies existing structures of patriarchy and labor. Tupperware as a feminized industry as well as material objects indexes wider binaries that have historically organized food and domestic labor, including hunter/gatherer, commercial/domestic, production/reproduction, and professional/amateur. Duffy and Packer argue that these same binaries have structured traditional understandings of gendered and raced power. Tupperware is therefore cast as a powerful media object that forces us to ask, "Who contains what, and to what ends?"

In chapter 7, "'Will Miss File Misfile?' The Filing Cabinet, Automatic Memory, and Gender," Craig Robertson also addresses media of containment. Robertson shows how the filing cabinet, a critical information technology, articulates early twentieth-century ideas of efficiency and gender. In storing paper, the filing cabinet and the file clerk figure in this chapter as a media complex that simultaneously introduced a new form of containing information and produced new information about how we should regard gender in relation to work. Robertson argues that the medium for filing has an embedded techno-logic of gendered labor.

Cait McKinney's chapter on index cards questions their absence in McLuhan's *Understanding Media*, considering that they were a prominent new medium or "precomputational device" at the time of his writing. Index cards were an important component of the gendered history of early electronic information management. Chapter 8 focuses on the Knitting Needle Computer, a system that semi-automated the encoding and retrieval of information from the 1960s to the 1980s. McKinney argues that this system offered its users an approachable entry into computing by using gendered

tools like knitting needles to encourage women to adopt an emerging information technology.

This section closes with Rianka Singh and Sarah Banet-Weiser's "Sky High: Platforms and the Feminist Politics of Visibility" (chapter 9). In this chapter, Singh and Banet-Weiser bring into question the political utility of digital platforms for feminism. They argue that the recent focus on the digital platform and feminism's relationship to it, with the #MeToo movement as the most obvious example, must acknowledge a feminist relationship to the platform which both precludes and extends beyond the digital. The longer history of the platform that emerges in this chapter shows that the relationship between visibility, women, and platforms is much more complicated than current scholarly and popular treatment of digital platforms assume. They argue that while platforms have indeed long made people visible, such visibility has not always been to the benefit of feminist politics. Those who unduly struggle to survive, namely women, Black, queer, poor, and disabled folks, might experience platform-mediated elevation not as empowering but rather as yet another impediment to survival. The chapter takes inspiration from McLuhan's *Understanding Media* playbook and focuses on nontraditional media platforms in order to consider how the platform defines and delimits the possibilities for feminist action.

PART III

Part III consists of critical questions about media that are explicitly tied to digital technologies and exist as post-McLuhan media objects through a feminist lens. These final three chapters are presented as interviews with artists, technologists, and scholars. Each provides insight on media that have come to significantly alter social and political life in the twenty-first century, and that McLuhan could not have addressed in *Understanding Media*.

"Scanning for Black Data" is an interview with community organizers and technologists Nasma Ahmed and Ladan Siad (chapter 10). This conversation with Ahmed and Siad asks us to consider a technological experience of blackness. While neither Ahmed or Siad see McLuhan as a feminist or a critical race scholar, like McLuhan, they assert the utility of a power analysis of technology. Drawing on concepts of refusal and humanness from Sylvia Wynter, Tina Campt, and Arthur Jafa, Ahmed and Siad put them in conversation with McLuhan to examine how Black life is conditioned by technology.

Media artist Morehshin Allahyari introduces a feminist theory of 3D printing in our interview with her (chapter 11). Allahyari traces how she came

to use 3D printers in her artistic practice. She explains how her feminist approach to 3D printing counters the initial hype, adoption, and monetization of the technology by realizing the political potential of 3D fabrication. Allahyari shows us with her feminist and decolonial perspective that 3D printers do not just reproduce and replicate, but rather offer a point of departure from masculinist approaches to novel technologies.

My interview with Jennifer Wemigwans, "Toward a Media Theory of the Digital Bundle," offers a new perspective on how internet media logics are in tension with Indigenous knowledge protocols (chapter 12). Wemigwans uses McLuhan's theory of electronic media to argue that the internet is not a repository for knowledge but rather a tactile interface that can integrate all of the senses. Rethinking the impetus to decolonize the digital, Wemigwans suggests that we turn our attention to the technical specificities of digital technologies and consider how they intersect with Indigenous knowledge.

Feminist Retrievals for Further Media Study

In the very last pages of McLuhan's *Understanding Media*, he ends with a section on "Further Readings for Media Study." We know that the path he laid out has been well traversed. We also know there is yet another path for media study found within *Understanding Media*, a feminist one. In *Understanding Media*, McLuhan argues, "Man becomes, as it were, the sex organs of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new forms. The machine world reciprocates man's love by expediting his wishes and desires, namely, in providing him with wealth."[37] Flash forward to today and consider this often-repeated statement, which first appeared on the conservative website Breitbart in 2016, by one-time alt-right leader Yiannopoulos: "The rise of feminism has fatally coincided with the rise of video games, internet porn, and, sometime in the near future, sex robots. With all these options available, and the growing perils of real-world relationships, men are simply walking away."[38] This statement is astounding for how it reveals a misogynistic formulation of women as extensions of men, as technological tools there to take care of and reciprocate, in McLuhan's own words, "man's love." McLuhan posits a conception of women as pure information, like the light bulb. Thus, Siri is not a woman but an idea of woman. Feminists concerned with technology might take heed of McLuhan's patriarchal view and also avoid universalizing and fixing the category of woman in critiques of technology and gender. Technologies that are gendered as women are not extensions of women under

patriarchy; they are, in fact, extensions of men. This allows us to consider how technologies are tied up with normative conceptions of gender. From such a perspective, we might argue that the toxic culture of Silicon Valley exceeds the issue of representation and inclusion.[39] This is a view that is in fact growing more dominant as the limits of representing and having a representative are harder to ignore. What this moment demands is the exact type of media study that McLuhan suggests. If we are interested in new objects like sex robots, we might treat them like McLuhan's light bulbs and think, along with feminist labor theorists, about the new technology constituting a shift in patterns of labor and types of work, giving rise to new pathologies.[40] There will be new forms of manual labor related to cleaning, housing, and assembling and new cultural anxieties that will demand new types of care labor.[41] This is only just one example for further feminist media study. A feminist approach to "the medium is the message" offers a virtually unlimited amount of politicized media study left to do.

This type of feminist media materialist and medium-centered theory has unexplored implications for thinking about gender and other inequitable social relations of power within not only the tech world but all sorts of institutional spaces. The media and topics examined here are by no means exhaustive—there is plenty more work to do. Rather, they are offered here as a starting point so that feminist media studies can assume its position as taking on, this time with credit, the expansion of "the medium is the message"—out of the hands of the tech-bros and the patriarchal culture they thrive on. To think about the technological as a form of power means also to rethink what might be designed and what sorts of new and better social worlds could be newly determined by feminist techno-logics.

Notes

1. McLuhan, *Understanding Media* (1994).

2. McLuhan, *Understanding Media* (1994), 39.

3. See, for example, Kroker, *Technology and the Canadian Mind*; Levinson, *Digital McLuhan*; Stamps, *Unthinking Modernity*; Theall, *The Virtual Marshall McLuhan*; Cavell, *McLuhan in Space*; Federman and de Kerckhove, *McLuhan for Managers*; Strate and Wachtel, *The Legacy of McLuhan*; Genosko, *Marshall McLuhan*; Hanke, "McLuhan, Virilio and Electric Speed"; Logan, *Understanding New Media*; Peters, "McLuhan's Grammatical Theology"; Peters, *The Marvelous Clouds*; Peters, "Reading over McLuhan's Shoulder"; Buxton and Bardini, "Tracing Innis and McLuhan"; Guins, "Themed Issue"; McLeod Rogers, Whalen, and Taylor, *Finding McLuhan*; Cavell, *Remediating McLuhan*; Krämer, *Medium, Messenger, Transmission*;

McLeod Rogers, "City as Techno-human Sensorium"; McCutcheon, *The Medium Is the Monster*; Berland, "McLuhan and Posthumanism"; Bollmer, *Materialist Media History*; Daub, *What Tech Calls Thinking*; Davis, *How Artifacts Afford*; McLeod Rogers, *McLuhan's Techno-sensorium City*.

4. Sterne, "The Theology of Sound"; Scott, "Critical Approaches to Advertising."

5. Shade and Crow, "Canadian Feminist Perspectives on Digital Technology," 161.

6. Enns, "Review of *Remediating McLuhan.*"

7. Sterne, "The Theology of Sound," 207.

8. Peters, "Reading over McLuhan's Shoulder," 296.

9. Marchessault, "Mechanical Brides and Mama's Boys."

10. Marchessault, "Mechanical Brides and Mama's Boys," 57.

11. Balsamo, *Technologies of the Gendered Body*, 172.

12. Balsamo, *Technologies of the Gendered Body*, 29.

13. Towns, "Transporting Blackness"; chapter 1, this volume.

14. McLuhan, *The Gutenberg Galaxy*.

15. Young, "The McLuhan-Innis Field."

16. Young, "The McLuhan-Innis Field."

17. McLeod Rogers, *City as Techno-human Sensorium*; McLeod Rogers, *McLuhan's Techno-sensorium City.*

18. Hochschild, *The Second Shift*.

19. Slack and Wise, *Culture and Technology*.

20. Bivens and Haimson, "Baking Gender into Social Media Design"; Hicks, *Programmed Inequality*; Eubanks, *Automating Inequality*; Noble, *Algorithms of Oppression*; Benjamin, *Captivating Technology*; Brock, *Distributed Blackness*.

21. Crenshaw, "Mapping the Margins"; Noble and Tynes, *The Intersectional Internet.*

22. Innis, *The Bias of Communication*.

23. Jhally, "Communications and the Materialist Conception of History"; Angus, "The Materiality of Expression."

24. Coleman, "Race and/as Technology"; Chun, "Race and/as Technology"; Towns, "Black 'Matter' Lives"; Towns, "Transporting Blackness."

25. Wajcman, *Feminism Confronts Technology*; Oldenzeil, *Making Technology Masculine*; Wajcman, *Technofeminism*.

26. Wajcman, *Feminism Confronts Technology.*

27. Spigel, *Make Room for TV*.

28. Braithwaite, "Smart Home Tech."

29. Quinn, *Crash Override*; Chang, *Brotopia*; Wiener, *Uncanny Valley*.

30. Kate Conger, " Exclusive: Here's The Full 10-Page Anti-Diversity Screed Circulating Internally at Google," *Gizmodo,* August 5, 2017, https://gizmodo.com/exclusive-heres-the-full-10-page-anti-diversity-screed-1797564320.

31. Baudrillard, *The Spirit of Terrorism*; Virilio, *Ground Zero*; Žižek, *Welcome to the Desert of the Real*; Parks, *Rethinking Media Coverage.*

32. Browne, *Dark Matters*; Hall, *The Transparent Traveler*; Keyes, "The Misgendering Machines"; Noble, *Algorithms of Oppression*; Atanasoski and Vora, *Surrogate Humanity*; Benjamin, *Race after Technology*; Costanza-Chock, *Design Justice*.

33. McLuhan, *Understanding Media* (1994), 91.

34. McLuhan, *Understanding Media* (1994), 52.

35. McLuhan, *Understanding Media* (1994), 237.

36. McLuhan, *Understanding Media* (1994), 121.

37. McLuhan, *Understanding Media* (1994), 46.

38. Nolan, "Milo."

39. Ullman, *Life in Code*.

40. Cowan, *More Work for Mother*; Huws, "The Reproduction of Difference"; Gregg, *Counterproductive*; Gregg and Kneese, "Clock."

41. Hobart and Kneese, "Radical Care."