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The North American space industry has significant and important histories with respect to the race to the moon (e.g. Chaikin, 2007; De Groot, 2006; Launius, 2005, 2007). This race, primarily run by the U.S. and the Union of Soviet Socialist Republics (U.S.S.R), sees a variety of events and experiences, along with political posturing, within the uncharted space dimension (Hartt *et al.*, 2009; Logsdon, 2007). In these reified events and discourses, the launch in 1957 of the Russian Sputnik satellite, aboard a Soviet R-7 intercontinental ballistic missile, is often characterized as a key turning point (Launius, 2007) with respect to the ‘awakening’ of the competitive, militarization of space (Maier, 1997). We agree that Sputnik is one of a number of tangible symbols with respect to the impending “Soviet threat” (Hartt *et al.*, 2009, p. 236) to the U.S. and its interests. However, while the launch of Sputnik provides an ideological context of sorts (Durepos *et al.*, forthcoming) with which to frame our understanding of Cold War histories, there needs to be a finer-grained approach to untangling the ambiguities of the North American space histories, beyond a consideration of such a contingency (Clark and Rowlinson, 2004).

Some authors suggest, in their respective attempts to introduce a finer-grain, the presence of an early Cold War, from 1945 to 1965, and a late Cold War era beginning in 1969 (e.g. Logsdon, 2007; McLaren *et al.*, 2009). These early and late clock-based framings to the Cold War are the subject of a number of studies (e.g. Engelhardt, 2007; Hartt *et al.*, 2009; Logsdon, 2007; McDougall, 1985; Robin, 2001). We argue that the mid-Cold War phase, and its particular ideologies, needs to be teased out from the early Cold War framing. The ideologies surrounding the mid-Cold War phase should include not only the technological advances of space militarization but should also include the North American space industry’s White women and the roles they fulfilled, along with the discourses that surrounded them. Fundamentally, we believe that the race to the moon is not ‘just’ a story about the pioneering White men (McQuaid, 2007) but that there were many individuals involved in this race who were and continue to be hidden in the ambiguities of histories.

We are concerned in this study then with surfacing the larger context of meanings in discourses (Saleebey, 1994) with respect to cisgender White women’s historical and contemporary subjection

experiences in the North American space industry. Discourses are sets of statements and practices that bring an object or set of objects into being (Parker, 1992). As for cisgenderⁱ Whiteⁱⁱ women, feminist (new) historicism tells us that “‘history’ is a tale of many voices” (Newton, 2013, p. 152) but tales of, and/or by, cisgender women within the North American space industry are few and far between (e.g. Ruel, 2018; Sage, 2009), and those of Black cisgender women even less so (e.g. McQuaid, 2007; Ruel *et al.*, 2018; Shetterly, 2016). Many-voiced histories hold “inherent ambiguity” (Clark and Rowlinson, 2004, p. 331), just as a White or Black cisgender woman can be characterized as having fluid, ever-changing identitiesⁱⁱⁱ (Aikau *et al.*, 2003; McKibbin *et al.*, 2015) in these riven histories. Similarly, the cisgender woman identity, that is socially constructed and is interdependent with her other identity categories (Collins and Bilge, 2016), encompasses the feminine/femininities experiences^{iv} within a particular context (Butler, 1990). The fluid and unstable nature of these categorizations of individuals relies on the idea of social construction/reconstruction via discourses and her subjection (Butler, 1990; Foucault, 1978). The cisgender White women’s subjection refers to particular, historically-located disciplinary processes which enable us to consider ourselves as individuals, and which constrain us from thinking otherwise (McHoul and Grace, 2007). This subjection can be seen in various evidentiary discursive processes, such as in the privileged right to speak during an interview, or in photographs and accompanying descriptive narrative texts, that positions an individual below another.

In surfacing the larger context of meanings with respect to the North American space industry, we look to the White women’s experiences and social interactions in the United States (U.S) Pan American (Pan Am) Airway’s Guided Missile Range Division (GMRD). Pan Am was responsible for many activities within the various phases of the Cold War, including building Cape Canaveral in 1953^v (Turner, 1976). The airline provided not only the infrastructure, and support services, for the Cape’s missile range, but also established and maintained various missile test ranges scattered globally to support various Cold War activities. These missile test ranges collectively became known as the GMRD (Turner, 1976). At its peak, there were 7,000 people employed in this organization, mostly White men (Hart *et al.*, 2009).

While the White men of the GMRD fulfilled different roles, from the scientific to the blue collar/laborer, the White women of the GMRD were, in the majority, responsible for administrative and supportive roles (Dye and Mills, 2012). Black women were also present in Pan Am and in the GMRD; they held mostly blue collar positions in various installations across the world^{vi} (Harrt *et al.*, 2009).

Creating a finer grain to the North American space histories along with melding multi-voiced, ambiguous histories in this industry are important when we consider the influences on the present and future gendered relations in this particular industry. As such, we untangle the mid-Cold War phase from the early Cold War phase, integrating cisgender and ethnicity within a ‘historic turn’ (Clark and Rowlinson, 2004). We also provide space for the first-author, a former Life Sciences Mission Manager within the Canadian space industry, to add her voice to this ‘historic turn’. We integrate the GMRD White women stories with the first-author’s tales in such a way to surface how their states of being and of becoming could answer our research question “what has a Cold War U.S. missile division to tell us about present and future gendered relationships in the North American space industry?”

In this postmodern archival study (Mills and Helms Mills, 2018), we look at discourses within the GMRD *Clipper* newsletter, a monthly Pan AM glossy in-house newsletter for employees and for families of employees. The *GMRD Clipper* newsletters^{vii}, from 1964 to the end of 1967, are analyzed using a critical discourse analysis (CDA) based on Foucault’s technology of lamination (McHoul and Grace, 2007). We specifically explore narratives and photographic images, found within the *Clipper*, in such a way to surface the discursive reproduction of GMRD White women. We also present the first-author’s contemporary experiences, within the Canadian space industry, framing her experiences within an autoethnography (Denzin, 2006; Ellis, 2004). We move to first-person accounts, embracing the “I” of the present, in such a way to study the influences of these multi-voiced histories on the present and on the future.

We are making a three-fold contribution to this special issue and to our understandings of gendered/ethnic multi-voiced histories. We untangle the mid-Cold War phase from the essentialized Cold War era. We recreate multi-voiced histories of White women within the North American space industry, during the mid-Cold War phase, while adding an important contemporary voice to the debates surrounding ‘contentious’, ‘ambiguous’ histories (Clark and Rowlinson, 2004; Durepos and Mills, 2012). We also present a novel methodology, that combines the technology of lamination with autoethnography, to provide a gateway to recognizing the impact of multi-voiced histories onto contemporary and future gendered/ethnic relationships.

We begin by presenting the Cold War era in such a way to situate the reader, and to tease out the mid-Cold War phase. We then introduce the reader to the GMRD organization. The theoretical framework of Foucault’s notions of discourses and of subjection, within the lens of poststructural feminism, are then presented. We move to our methodology, spending considerable time in outlining our approach and how to use it, as one of our three contributions. We present the findings and results of our application of Foucault’s technique of lamination to archival data. The discussion section integrates in the first-author’s autoethnography, moving the reader from the third-person to a first-person account, weaving the laminated fragments of the GMRD’s White women into these accounts. In the process of presenting the first-author’s autoethnography, she provides one possible answer to our research question. We conclude with a summary of this work’s contributions.

Untangling the Cold War Era

Orwell would, in 1945, foreshadow an era by:

[...] looking at the world as a whole, the drift for many decades has been not towards anarchy but towards the reimposition [sic] of slavery. We may be heading not for general breakdown but for an epoch as horribly stable as the slave empires of antiquity. James Burnham's theory has been much discussed, but few people have yet considered its ideological implications — that is,

the kind of world-view, the kind of beliefs, and the social structure that would probably prevail in a state which was at once unconquerable and in a permanent state of 'cold war' with its neighbors (Orwell, 1945).

This Orwellian ideology with its *stable slave empires*, experienced during the post-Second World War between the U.S. and the U.S.S.R., underscores how each *neighbor* was deemed *unconquerable* in the race to space. The Orwellian '*cold war*', a measure of who would 'win' this race, laid the groundwork for what is now widely acknowledged as an unwinnable contest.

Orwell's *slave empires* and '*cold war*' reflects an unprecedented expansion in military capabilities, from the U.S. and the U.S.S.R. Specifically, physical structures mirror these respective countries capabilities, establishing a *world-view* of the importance of being 'first'. These structures include ballistic missiles, the construction of the Berlin Wall, war actions in the 'third world' Southeast Asian war, and the Cuban missile crisis, just to name a few (Chaikin, 2007; Launius, 2007). The Orwellian *beliefs* are represented in the creation of organizations, and accompanying legislations and policies that protect the U.S. and its interests. These organizations include the establishment of the U.S. Central Intelligence Agency (CIA), the National Aeronautics and Space Agency (NASA), and the U.S. Air Force (Hart *et al.*, 2009). The U.S. Air Force in partnership with NASA relied on commercial entities, such as Pan Am, to further support these *beliefs* when it comes to space and being pioneers in this new dimension. *Social structures*, reflected in important political rhetorics such as the protection of the 'Free World' and of 'free peoples' (Robin, 2001), match the establishment and proliferation of these physical structures and *beliefs*. This then becomes a framework of sorts to recognize historical contingencies as reified elements representing the Cold War.

The North American space industry has significant and ambiguous histories during this Cold War era. Attempts to categorize this Cold War era, as we introduced earlier, result in various stable, time-dependent phases. For example, one Cold War phase, from 1945 to 1965, is recognized by some as the

early Cold War period (McLaren *et al.*, 2009). This time period is extensive, however, with respect to turning points (Launius, 2007). These turning points include the end of World War II, the “all-pervasive Cold War” (McQuaid, 2007, p. 408) becoming established in societal structures and beliefs, the death of Stalin and the vacuum created by his death in space-knowledge, Eisenhower’s attempts to control spending on ballistic missile development and his inability to do so, the ‘surprise’ launch of Sputnik, the establishment of NASA, President Kennedy taking office and his lack of knowledge about space, the flight of Yuri Gagarin, John Glenn orbiting earth, President Kennedy’s pronouncement about sending men to the moon, the launch of the first U.S. and Canadian satellites, just to name a few (Jelly, 1988; Launius, 2007; Logsdon, 2007; McDougall, 1985; Ruel, 2019). These turning points, and the larger context of meanings surrounding them, become overwhelming to study, and so we set out to untangle this phase.

This treatment of the early Cold War surfaces several concerns for us. We can characterize this phase as the beginning of the militarization of space that is supported by the political arm (McDougall, 1985). As such, if we rely on technology innovations to define this early phase (Peoples, 2008), the development, testing, launch, and use of Earth observation satellites, such as the Canadian Alouette I in 1962 (Godefroy, 2017; Ruel, 2019) and the U.S.S.R.’s scientifically-planned^{viii} and subsequent launch of Sputnik in 1957 (Jelly, 1988; Peoples, 2008), could be one central ideology. The construction and proliferation of ballistic missiles and rockets could be another central ideology (Godefroy, 2017; Jelly, 1988; Launius, 2007). Layering the military-based science and engineering work, such as studying the ionosphere, is another important consideration. The social reality of women is also an important ideology of this phase. Notably, when we reflect on cisgender/ethnicity, we find that we must look at the U.S. Food and Drug Administration (FDA)-approval of the use of the birth control pill (Burrows, 1998). This approval heralds the arrival of important changes for women in U.S. society, and in the role they play in a workforce (The Canadian Press, 2010) that is focused on ‘winning’ the race to militarize space. We are then reflexively building ambiguous histories (Clark and Rowlinson, 2004) of the early Cold War phase

into something that is bounded by technologies, science achievements, and by societal considerations with respect to cisgender White women.

We are cautious in this framing to the early Cold War phase, as we do not wish to reify this phase into solid pronouncements of ‘facts’ and ‘truths’. Our focus in this work is not on defining this early phase extensively. We are more interested in untangling the mid-Cold War phase from this early phase, moving away from a focus on Sputnik as THE event that defines the militarization and then the eventual exploration of space. We believe that this mid-Cold War phase needs to be teased out from the solid pronouncements of the early Cold War, and from reification of ‘all-pervasive’ events and technologies.

From approximately^{ix} 1963, where “strategy, diplomacy, and bureaucratic politics all converged to make 1963 the first great turning point in the U.S. military space program” (McDougall, 1985, p. 341), we draw inspiration to recreate fragments of multi-voiced histories (Foucault, 1969, 1980; McHoul and Grace, 2007) with respect to the mid-Cold War phase. While some argue (e.g. Launius, 2007) that President Kennedy’s assassination, in late 1963, and his particular discourses led a nation to the successful moon landing in 1969, we contextualize 1963 across an understanding of change ideologies as opposed to reified actions and decisions. This idea of change extends to approximately 1968, with Nixon’s arrival in office and the assassination of Robert Kennedy and Martin Luther King Jr. (Whitaker and Hewitt, 2003). We ‘see’, in this process of untangling and building fragments, a contrast start to emerge with the early Cold War phase and its solid pronouncements; that is, that the larger context of meanings for the mid-Cold war phase is significantly diverse and changing, when we compare it to the early Cold War phase (McLaren *et al.*, 2009).

This mid-Cold war phase is remarkable for its fluidity and change, across various dimensions. This includes the movement towards an end to the Cuban Missile Crisis, and the eventual installation of a ‘hot line’ between U.S. President Kennedy and Russian President Khrushchev (Carew, 2018). This ‘line’, notably, opens the door to a practice of ‘open’ communication between these two political figures. This

phone becomes a symbol of cooperation and communication, and movement away from ‘command and control’ types of meanings. By 1968, the meaning-making surrounding the U.S. and its presence in the Vietnam War (Bates, 1996), and the important racial tensions in the U.S. itself (Walsh, 2017) signal a boundary of sorts for these fragments.

This mid-Cold War phase also sees discourses centered on a “push for equal social and political opportunity” (McQuaid, 2007, p. 408). The establishment of legislation, such as the Civil Rights Act of 1964, and the Equal Employment Opportunity Commission and National Organization for Women (Freedman, 2002), are exciting aspects of this phase. These legislations signal an important movement for women, who were typically clerks, typists, ‘human computers’, or who worked in the home, to join or to re-join the workforce. These legislative frameworks also incite a larger number of women to undertake technical and undergraduate/graduate professional training in engineering and physical sciences (Freedman, 2002; McQuaid, 2007). ‘Second wave’ feminism (Calás and Smircich, 2006; Freedman, 2002), in particular, speaks to the economic hardships that women face at this time, and their attempts to control their bodies through reproductive rights. Friedan’s (1963) *The Feminine Mystique* galvanized the White, highly-educated women who were trapped in either domestic life, or in administrative/clerical office ‘hostess’ roles.

Ontologically, the oppression of women in this mid-Cold War phase is located in the condition of being ‘woman’ (Calás and Smircich, 2006). Also, the galvanization of liberal feminists^x, in this second wave, would see political, legislative, and grassroots initiatives take center stage to fight for control of women’s bodies, and for women’s rights. This galvanization is built on the idea of minimizing differences between men and women, in such a way that women compete as equals with men in the workplace (Meyerson and Kolb, 2000). The idea here is that ‘woman’ is responsible for her own sense of self, which pushes the idea that ‘woman’ is responsible to minimize differences with ‘man’ (Rottenberg, 2017). This state of being is premised, in part, on the woman’s experiences of gaining ‘control’ of her reproductive life with her use of the birth control pill (Green, 2008). The rhetorics of the mid-Cold War phase also

signal the attempts to put an end to the proliferation of the White-masculine ideal, in the workforce and at home. ‘Second wave’ feminism begins to try to dismantle these rhetorics. The changing role and responsibility of women, in the U.S. in particular, coupled with the political and civil rights movements (Freedman, 2002), provides an important layer to understanding this mid-Cold War phase. This framing then underscores our notion of change ideologies for this phase.

As for space, we see a proliferation of scientific and military attempts to continue to run this *unconquerable* race in this challenging environment. Notably, there were over 34 satellites launched into orbit during this time, studying not only Earth, but the Moon, the Sun, Venus, and Mars. The first successful circling of the Moon, by the Apollo 8 crew, was accomplished at this time also (Logsdon, 2007). The halving of NASA budgets for space militarization initiatives, after the peak spending of 1966, are also part of this phase. This halving of space budgets, it is important to underline, was done a full three years prior to U.S. men landing on the Moon, in 1969 (McQuaid, 2007). This moon landing, as a technological fragment, coupled with Nixon’s political initiatives and the radicalization of the feminist movement (Freedman, 2002), signals a movement away from the mid-Cold War phase into something more solid and yet still ambiguous. This space militarization larger context helps us frame this mid-phase then within ideologies of conservatism and of cutting in war-type spending, along with a proliferation of exploration initiatives.

Our attempt to embrace ideological contexts to define a finer-grain to the Cold War is similar to Green’s (2008) exploration of gendered history with respect to women’s healthcare and fertility control. Notably, she did not build women’s healthcare as a ‘fact’, but rather she embraced a gendered meaning-making exercise (Mills and Helms Mills, 2004) around histories surrounding women’s healthcare. We apply some of Green’s approach by reconstructing a mid-Cold War phase by incorporating political rhetorics and moving beyond those discourses into retrospective meaning-making. The continuing physical presence of the arsenal of intercontinental ballistic missiles and the beginning of diplomatic solutions between the U.S. and the U.S.S.R. provides one possible framework to our mid-Cold War

phase. However, we need to look beyond the diplomatic solutions and the ballistic missiles. The changing role of women, the women's rights movement, race-relations, legislative actions, conservatism with respect to war-time spending, and the proliferation of space initiatives, are all part of this mid-Cold War phase. To underscore this framing, we now turn to an introduction of Pan Am's GMRD organization framed within this mid-Cold War phase. We do this in order to situate the reader within this organization and in this phase, prior to considering our methodology and our findings on the GMRD White women.

Pan Am's GMRD Organizational Context

Pan Am was one of a few U.S. commercial airlines to be involved in the early- and mid-Cold War efforts. Notably, Pan Am, and its predecessor, American Overseas Airlines,

kept the air lifeline open between the Free West and Berlin. Under authorization of the four Occupying Powers, Pan Am continue[d] to provide and improve air service with 682 flights a week in and out of Berlin (GMRD, 1965a, p. 25).

Pan Am was also responsible for the transportation of personnel and military supplies to the Philippines, Okinawa, Japan, and Vietnam. They evacuated more than 800 military-dependents during the Southeast Asian crisis in 1965 (GMRD, 1965a), along with operationalizing other U.S. strategic initiatives.

With respect to the space race, Pan Am provided the infrastructure and support services for the first missile range, Cape Canaveral, as we introduced earlier. They also offered services with respect to the transportation of military personnel. The company established, and maintained, various missile test ranges scattered around the world. These various missile test ranges collectively were known as the GMRD in 1953, and was staffed with a total of 55 employees (Hartt *et al.*, 2012). By 1964, GMRD was the prime contractor to the U.S. Air Force, and was responsible for the Cape Kennedy Missile Test Center, and the Atlantic Missile Range. The GMRD participated in 88 major missile launches, such as the Ranger and Mariner missile launch vehicles, and of other automated spacecraft necessary for the development of the Gemini two-man space capsule program (GMRD, 1965a).

By 1967, the GMRD, now renamed the Aerospace Services Division (ASD), employed over 7,000 people (Hartt *et al.*, 2009). ASD was responsible directly to NASA for its American space exploration initiatives. These responsibilities included the launch of Apollo 8 (GMRD, 1967a), which would see three White, U.S. military trained-men orbit around the moon for the first time.

Given this understanding of the mid-Cold War phase and our introduction to Pan Am's GMRD, we move to the theoretical framework for this study. We begin by presenting poststructural feminism, and then consider two of Foucault's technologies.

Poststructural Feminism, Discourses and Subjection

The poststructuralist perspective is founded on the notion of 'difference'. The reader is cautioned to not confuse poststructural 'difference' with implying that the opposite of 'difference' is 'sameness'. Difference, as we frame it within Foucault's technologies, is used in the sense that we reproduce uncertainties and a range of beliefs/meanings that we don't necessarily aim to resolve (Belsey, 2002). This notion of difference can be reproduced, and this can be done within systems that we learn, assign meaning to, and enact. As such, a poststructuralist examination of a social reality, in this case one that focuses on cisgender/ethnicity as part of multi-voiced histories, compels the researcher to move away from binary oppositions, as such comparisons invoke sameness and difference arguments that are not appropriate within this perspective.

Given this understanding of 'difference', poststructural feminism compels us to focus on a variety of cisgender/ethnicity social realities via discourses, and values and norms (Weedon, 1991, 1997). Poststructuralist feminists have no doubts that there is a world. Their questions lie in what they can know of this gendered/ethnic world, and how they can know this world. That is, they question the claims of certainty, or of 'fact', stable 'truth', about the gendered/ethnic world (Belsey, 2002; Weedon, 1997). Foucault's approach to poststructuralism, in particular, compels us to consider the reconstruction of the various social worlds, based on webs of power-relations, among individuals, that are capillary and travel

through the social (Foucault, 1980, 1982, 1983). This reproduction among these webs can lead to fragmented ‘truths’ that can reveal or shine a light on the social.

In our reading of Foucault’s scholarship, specifically his later work after *Discipline and Punish* (Foucault, 1977), we recognize that he did not explicitly address gender and feminism. We are not the first, or even the second, to surface this limitation to Foucault’s scholarship; Fraser (1989) and Hekman (1996) consider this shortcoming extensively. Melding in their work here in gendering poststructuralism, we cannot ignore the first-author’s experiences of power-relations and discourses in the contemporary Canadian space industry and how they play an integral part in ‘who she is’ and ‘who she is becoming’ (Ruel, 2019). Her fractured state of being, within the Canadian space industry, is closer to Foucault’s reconstruction of the self within a gendered social world, than what we see in such standpoint perspectives as liberal feminism and radical feminism. As such, we embrace Foucault’s (1977, 1978, 1982, 1984a, 1984b) teachings, specifically his “bodies of knowledge (discourses) as potentially discontinuous across history rather than necessarily progressive and cumulative” (McHoul and Grace, 2007, p. 4). We do this to frame our theoretical understanding of a cisgender/ethnic individual, in multi-voiced histories, along with an individual in the present and in the future.

Foucault’s notions of discourses, and the subjection of the self, are central to framing these discontinuous bodies of knowledges. The definition of discourse can be influenced by both the theoretical perspective and the methodological approach taken (Grant *et al.*, 1998). Foucault’s concept of discourse, in particular, can be characterized as a critical lens that looks to conflict and to power-relations as a counter position to social conditions (McHoul and Grace, 2007). This type of discourse is historically-situated, and is reflective of a system of power-relations that constitute objects and subjects (Fairhurst and Putnam, 2004). Discourses, and their production, go beyond language, texts, and semiotics. In other words, Foucault’s macro concept of discourse does not refer to language or how individuals use language, such as measuring interruptions in a conversation. Foucauldian discourse and its analysis are rather related to mundane social life^{xi}, to social knowledge creation and recreation, and to their fragmented

nature. Discourses can therefore be found in social processes and in historical, fragmented genealogies (Foucault, 1978).

With respect to the self and her subjection, Foucault's 'subject' is understood to be as "tied to his [*sic*] own identity by a conscience or self-knowledge" (Foucault, 1982, p. 781). This self, as Foucault (1988a) argues, is brought into existence by disciplinary practices. The self is persuaded into existence as a self-regulating subject, not as a 'one' or identical subject (Sökefeld, 1999), but as a product of relationships and interactions. Foucault asks, for example, how a discursive representation of the self "set boundaries and give[s] direction to future creative effort" (Hutton, 1988, p. 122). This question introduces the techniques of ethics and of self-care (LeCoure and Mills, 2008) into this construct of the self. These techniques are concerned with "how an individual is supposed to constitute himself [*sic*] as a moral subject of his [*sic*] own actions" (Foucault, 1984c, p. 352). The question of the technology of self then is not only an ontological question but an ethics/morals/values epistemological question as well.

Foucault charges us to consider how best to tell the multiplicity of 'truths' concerning this subject, the self. In particular, he asks us to study the consequence(s) of subjection. Subjection can be historically-located, as disciplinary processes, which enables a subject to consider themselves as an individual, and how they are constrained from thinking otherwise (McHoul and Grace, 2007). The categorization of a subject via identities, say a 'woman', below another subject who is similarly categorized as a subject, say a 'man', could be a simplified example of subjection. This subjection does not negate the act of resistance, however. The woman, who has been categorized as being under a man, can resist this categorization norm with reverse discourses (Foucault, 1984a, 1984b). Related to these ideas, the subjection of the self consists of a set of processes that includes the influence of the discursive processes between oneself and others, and the technologies of individual domination^{xiii} (Foucault, 1988b, 1993). These technologies of domination can be presented in historical rules, styles, and cultural inventions within a specific formative (values) context (Foucault, 1988a; Unger, 1987a, 1987b). The subject is

therefore in a state of being and of becoming that is self-regulating, influenced and limited by a variety of ideological contexts, including organizations, formative contexts, and multi-voiced, ambiguous histories.

With this theoretical framework of discourses and subjection of the self, the methodological approach must support our ontological and epistemological understandings. We turn now to Foucault's technique of lamination, how we can apply this type of CDA to collected data, and how we can meld this technique with an autoethnography.

Methodology

The methodology we use in this study is premised on answering our research question: what has a Cold War U.S. missile division to tell us about present and future gendered relationships in the North American space industry? At the center of this question is how GMRD's White women are discursively created, within the ideologies of the mid-Cold War phase. We recognize that to surface these GMRD White women, we need to work within a type of CDA that allows multi-voiced histories to speak, and that influence the reader to 'see' these histories in the present and in the future gendered relationships. We acknowledge that a CDA working by itself is insufficient to answer this question. As such, we meld the first-author's recreation of the present, contemporary space industry, with this CDA. To do this, we integrate an autoethnography (Denzin, 2006; Ellis, 2004) with Foucault's technique of lamination (Foucault, 1978; McHoul and Grace, 2007; Phillips and Hardy, 2002). By integrating these two methods together, we investigate what these multi-voiced histories can tell us about present and future cisgender relationships in the North American space industry.

We consider, in this section, these two methods one after the other. We begin by outlining the nature of the data and the method of data collection. We then present our methodology framework, pulling on specific examples from collected data, in order to showcase the how of the technology of lamination. Our goal in presenting our methodology in this way is to make it an attainable device for others.

Nature of Data and Method of Collection

The body of evidence in this study involves two distinct sources: the company newsletter, the GMRD's *Clipper*, collected by the second and third authors from the Pan American World Airways archives at the Otto Richter Library, University of Miami, as part of a larger project; and, the first-author's personal data focused on her experiences within the contemporary Canadian space industry. With respect to the *Clipper*, this newsletter includes highlights of annual reports, key summaries of events, stories of life in and around GMRD, pictures, activities, and humor/jokes, and cartoons. This body of evidence also has multi-voiced stories and narratives that come from a variety of individuals at the GMRD, the *Clipper* editors, and the *Clipper*'s editorial board members.

As for the first-author's personal data, she kept personal diaries, personal photographs and emails, along with notes taken while she worked within the Canadian space industry for close to twenty years. She began to inspect these personal items when she started reading through the *Clippers*, not looking necessarily for parallels in the web of power-relations, but nonetheless finding themes that were parallel to her experiences. She reviewed her work diaries, remembering events or dates, and then moved from these events/dates to other experiences via pictures. She captured these data in her research diary for this study, being careful not to compromise protected, confidential or secret information related to the work that she did while employed in the contemporary Canadian space industry.

Data Analysis

After reading through a total of sixty-one *Clippers* and building the first-author's research diary, we re-examined each individual newsletter. We did this to surface discourses that caught our attention within the notion of cisgender/ethnicity multi-voiced histories, and the mid-Cold War phase. We extracted and grouped data across various themes, keeping a running summary in a Microsoft-Word database. We organized these various themes by date of publication as a way to keep track of these themes, ensuring traceability back to the source once our lamination work was complete. We annotated these themes with our own comments, in anticipation of the application of the technique of lamination and the integration of

the autoethnography to this laminated story. We now turn to a description of this lamination technique, providing specific examples to show the reader how this method can be applied.

Technique of Lamination

The technique of lamination can be broken into six areas of concern, according to McHoul and Grace (2007). These are as follows: building up citation upon citation; juxtaposing official and marginal discourses; quoting at length; rarely making interpretative comments; allowing cited text to carry the work; and, arranging historical fragments such that the order speaks for itself. With respect to this technique of lamination, the reader is cautioned to not confuse this technique with Goffman's (1974) lamination, or Boden's (1994) lamination methods. Goffman's lamination considers layered activities with 'keying' and 'transformations', creating and leading to layers of understanding. Boden's lamination, on the other hand, sees:

members draw from past circumstances, overarching organizational rationalities, or rules and structural forms, and select[ing] those features that are immediate and locally relevant to their behavior. Selections from past practices applied to the here and now laminate or layer one upon the other as conversations unfold, (Fairhurst and Putnam, 2004, p. 17).

Foucault's technique of lamination is a methodology unto itself. Integral to this technique is that we limit our interpretive comments, thus allowing the cited text to carry the work (McHoul and Grace, 2007). In other words, we guide the reader to apply their own interpretations to the cited text. This guide is captured within our presentation of the mid-Cold War phase and our theoretical framework on discourses and subjection. We must also build citation upon citation, resulting in an arrangement and collection of fragments done in such a way that the order, and their arrangement, speaks for itself (McHoul and Grace, 2007). The result of this citation building is "...all that we see is all that there is" (Burrell, 1996, p. 654). The cited text, with a few interpretative comments from the authors here and there, recreates a rich story as the output. This recreation is presented as fragmented temporary 'truths', that are laminated one after another.

By applying this technique, in this way, we are able to embrace Clark and Rowlinson's (2004) 'historic turn'. Specifically, we use their question, "how is history like and unlike fiction?" (Clark and Rowlinson, 2004, p. 331), to reconstruct multi-voiced histories into a story based on fragments. We also acknowledge the 'contentious' nature of history, as being not as well-defined as others would have us believe (Clark and Rowlinson, 2004), within our story. We recognize, in the use of this technique, that histories are 'ambiguous' narratives of the past (Clark and Rowlinson, 2004), where the past is understood as "a realistic record of every event and experience in time" (Suddaby *et al.*, 2010, p. 152). This approach, we believe, allows for reverse discourses to be surfaced along with those dominant discourses that surface the subjection of an individual.

As is to be expected with Foucault's work, the actual application of this technique of lamination is not laid out as a step-by-step activity. That the historical fragments can be built together into uniting discourses, into temporary gendered 'truths' (Foucault, 1969), we believe, can be one way to surface the subjection of the GMRD White woman during the mid-Cold War phase. Also, we believe that Foucault's view of discourses in relation to his history of ideas, one of four of his critical operations (Foucault, 1978), is most instructive. That is, we are able to view discourses in a "describable relationship with the ensemble of other practices" (Foucault, 1978, p. 19). This 'describable relationship' does not involve defining a cause-and-effect type of relationship, but rather provides a view into conditions that are intrinsic to the discourses themselves (McHoul and Grace, 2007). We, in other words, consider interrelationships among discursive fragments and the historical practices, such as the mid-Cold War phase, holding no one individual responsible for the emergence of an event (Foucault, 1980).

Returning to our Microsoft-Word database of themes, each theme that we surfaced, such as the feminine-ideal, provides a foundational laminate for a fragment of our story. Each fragment is recreated one at a time, in order to ensure consistency across the social processes and to help maintain our focus on the mid-Cold War phase. Traceability and reproduction of these discourses are important aspects of this work, where constant verification back to the archival source is done (Mills and Helms Mills, 2018). Once the fragments are considered sound – consistent, traceable and plausibly reproduced - we arrange

the various fragments into a running story, in such a way that Burrell's (1996) notion of 'all that we see is all that there is' prevails.

The following example, based on two *Clipper* newsletters, is used here to showcase how we can approach this technique of lamination:



Figure 1: “Karen [...] makes a visit to Security Administration *pleasurable*”

(GMRD, 1966a, p. 18, emphasis added)^{xiii}

This particular fragment represents some of the security protocols at the GMRD; that is, a need for proper badging, and security screenings, that need to be conducted by a specific organizational division called “Security Administration”. This fragment also presents cisgender practices; namely, using sexual innuendos with respect to the young, White woman who is shown in the picture. She, in essence, makes a visit “*pleasurable*” for the men who visit the security department. This fragment, we find, highlights a moral tradition that enacts, and reconstructs, an individual in daily GMRD work activities. Furthermore, “Karen” is brought into existence for the reader via disciplinary discourses that are at work in this particular context. Notably, her self is presented as a self-regulating subject, who gives men a “*pleasurable*” experience within a business context. Such a subject, who is clearly identified to be there for the pleasure of others, perpetuates the feminine-ideal within a specific context (Foucault, 1988a). “Karen” is limited and bounded by organizational and historical ideologies into being a “*pleasurable*”, subjectified self in the GMRD context.

We went into considerable detail in this first example to showcase “Karen’s” subjection. Foucault’s technique of lamination requires, however, that we limit our interpretive comments. This interpretive limit allows the cited text to carry the story, as one of the goals of the technique of lamination. To continue this act of lamination, with this limited interpretation, we now move to our next *Clipper* story, that we laminate to “Karen’s” fragment:



Figure 2: “Mrs. Conley’s [receptionist in Purchasing] *mass* arrangement of fresh cut plant materials won a ribbon”, in a section titled “*June is Bustin’ Out All Over*”
(GMRD, 1965b, p. 16 emphasis added)

The “*June is Bustin’ Out All Over*” fragment is permeated with sexual innuendos: her “*mass*” arrangement, and her physical representation as “*bustin’ out*” (that is, of being physically well endowed). Interestingly, while the narrative refers to her as “Mrs. Conley”, the section refers to her as “*June*”. Putting this fragment with “Karen’s”, we invite the reader to reflect on the social values and norms expressed in these fragments, within the larger meanings associated with the cisgender organization (Saleebey, 1994). One reflection could be that the feminine-ideal, as represented by the White Woman at GMRD, is one of pleasure and of being physically attractive to men. Another possible reflection could be that these two White women represent the feminine-ideal candidate at GMRD, regardless of their status as being either married or single: these GMRD White Women are ‘eye candy’ for the GMRD men, with their subjection reflected within their sexuality and cisgender perceptions of what is expected within the feminine-ideal.

Summarizing this example, we provide a cisgender and ethnic ‘historic turn’, in the form of a laminated story of the GMRD White woman. We draw attention to the ‘truths’ or ‘fictions’ of this fragment by the use of bold/italic emphasis, or by our comments before or after, the presentation of the fragment(s). The whole of the story is more than the sum of the individual fragments; they showcase the subjection of the GMRD White women. We also provide room for the reader, within the act of lamination, to consider this whole. Room is used here in the sense that we guide the reader to understand the meso and the macro contexts while looking at the micro experiences of the GMRD White women.

The multi-voiced histories though do not stop with historical ‘fictions’ (Clark and Rowlinson, 2004); we integrate these histories with the first-author’s story, by applying an autoethnography. This is done in such a way to bring these multi-voiced histories forward into the present and into the future. In this way, we consider the influences of these histories on the cisgender/ethnic relationships through time. We now turn to this autoethnographic method.

Autoethnography

The type of autoethnography we chose to use is referred to as a personal narrative, “where social scientists view themselves as the phenomenon and write evocative stories specifically focused on their academic as well as their personal lives” (Ellis, 2004, p. 45). While there can be a degree of fictionalization used in this type of writing (Doloriert and Sambrook, 2009), the first-author chose not to use this framing. She chose specifically to embrace, once again, Clark and Rowlinson’s (2004) understanding of “how is history like and unlike fiction?” (p. 331), the ‘contentious’ nature of history, and that histories are ‘ambiguous’ narratives. The ‘truths’ and ‘facts’, as the first-author saw and experienced them, are reproduced within these ideas of histories being like/unlike fiction, contention and ambiguities. In other words, to the best of her recollection, her personal diaries, her notes, etc., she recreates an understanding of her personal story to share with others.

The autoethnography method helps to frame the first-author’s collection of pertinent data, as we highlighted previously. This method also assists her in showcasing her personal experiences, her varied

identities, and her relationships with the social world in concert with the GMRD White women's story (Boje and Tyler, 2008; Ellis, 2004; Sparkes, 2000). Her voice, represented by the use of the first-person "I", speak to her subjection within the space industry as she constructed this social reality (Doloriert and Sambrook, 2009). Her voice also reflects looking at the 'big picture', of the macro space industry, while looking at the 'small picture' of the self and her subjection. The first-author considers the 'smaller picture', focusing her lens on her self in an attempt to reveal one possible self (Learmonth and Humphreys, 2012). She melds this into a personal narrative to teach, empower, embody, and grow both the writer and the reader (Ellis, 2004). These personal narratives embrace the idea of personal growth that could impact the reader, just as it does the writer. This personal growth, furthermore, involves a responsibility on the part of the first-author to encourage the reader's own self-development, to invite the reader to be an active participant in their own lives, and in their own experiences (Ellis, 2004). The author of the autoethnography then becomes a sort of co-author to the reader's future storytelling efforts, bridging knowledge generation from one to the other, and so on, to other future readers.

Writing in the first-person, within this notion of the 'small picture', is one aspect of producing an autoethnography. The 'big picture', as the other important notion, also requires her to include looking outwardly to the cultural and social realities that influence her, and to her experiences within the particular ideological context of space (Ellis, 2004; Learmonth and Humphreys, 2012). These influences can be historical in nature, such as the experiences of the GMRD discourses in the mid-Cold War phase, or in the contemporary influences, such as the macro contemporary understanding of exploring space for scientific purposes.

Integrating Lamination with Autoethnography

We strive for an epistemological contribution with this combined methodology, of not isolating histories to its own understandings and interpretations. We want to expand our understanding of the role of discourses in larger contexts, incorporating multi-voiced histories to reach into the present and the future. The implication of this epistemological contribution is that undertaking an ambiguous, contentious

historical study, we must enable the examination of the role that these multi-voiced histories can play in defining present and future cisgender/ethnic relationships.

The notion of the first-author being a co-author with the reader is integrated into the technique of lamination to achieve this contribution. By providing room for the reader to first build an understanding across various themes of the GMRD, and then second to be part of the ‘small’ and ‘big’ picture, we develop the reader’s knowledge and their interpretative abilities with respect to the production and reproduction of a cisgender/ethnic ‘historic turn’. These multi-voiced histories are contentious, ambiguous, and a ‘fiction or not’ tale that influence and transform social orders in a particular context. The combined methodology then develops not only the authors’ experiences of multi-voiced histories, the present, and the future, but also the reader’s experience of travelling through time.

We now present the findings and results of our application of the technique of lamination. The autoethnography, where we move to a first-person account, follows in the discussion section, integrating the experiences of the first-author to those of the Cold War GMRD White women.

Findings and Results: The Cold War and the GMRD White Women’s Fragmented Story

We found the following themes across the *Clippers* we examined: the Cold War; the economics of the Cold War; the feminine and masculine-ideals; and, emergent science and technology discourses. Due to space limitations, pun intended, we could not present in detail all of our findings related to each theme. As such, we chose to focus on two themes. The first, the findings related to the Cold War, is presented briefly, to give the reader an idea of the discourses, and supporting our untangling of the early and mid-Cold War phases. The second theme, of the feminine-ideal, is presented to showcase cisgender/ethnicity in the ‘historic turn’.

The early and mid-Cold War phases

Some of the Cold War rhetorics we extracted had similarities with the earlier phase of the Cold War. Notably, the ‘traditional’ Cold War rhetorics, such as the “Free West”, “Occupying Powers” (GMRD, 1965a, p. 25), and “keep[ing] our Country strong and free” (GMRD, 1966b, p. 2) were found. The early

Cold War theme, which sees a reduction in the responsibilities and roles of women in organizations following the Second World War, provides a counter point to an increase in weaponry production, and an overemphasized technology focus.

However, we also found interesting rhetorics that emphasized our mid-Cold War phase of change such as establishing “manned colonies” and “colonizing another remote wasteland” (that is, the moon) (GMRD, 1965c, p. 6, p. 4). We also found discourses surrounding industrial preparedness, at various Cape’s, with respect to a nuclear attack that are poststructurally different than those of the early phase, such as the following: “a nuclear attack is the least likely to occur, but is, of course, the most catastrophic disaster we may face. ‘It is also the disaster for which we are least prepared, Fisher commented.” (GMRD, 1966c, p. 15). We also found discourses showcasing the juxtaposition of missile testing and the beauty of space bodies, such as:

The tracking sites on the island have probably seen more reentries than any others, for they cover the end of the ballistic flight of several families of ICBM’s. The nosecones and following parts burn into the atmosphere there at night like clusters of meteors, (GMRD, 1966a, p. 5).

We found discourses surrounding the Vietnam war, which demonstrate the presence of reverse discourses with respect to this controversial war: “The soldier finds sleep where he can – mostly on the wet earth. It brings blessed, but only brief oblivion from the nightmare around him [...] P.S. It sure isn’t fun over here” (GMRD, 1966d, p. 14).

Interestingly, we found no evidence of reporting on accidents, failures, or challenges with respect to space initiatives. Case in point, the Apollo 1 fire occurred in late January 1967; the only reference to this tragedy was a few commemorative words dedicated to the three astronauts in the *Clipper* of March 1967. The editorial board of the *Clipper* began incorporating a new section entitled “A glimpse into the past” (e.g. GMRD, 1967b). These glimpses did not include human tragedies or failures but rather focused on physical structures as contingencies of the Cold War. These structural-based glimpses included mostly the first launch of a rocket or a missile.

GMRD White Women's Fragmented Story

The theme of the feminine-ideal, we found, could be broken across sub-themes that included the cisgendering of space structures, the role of the White women in the GMRD and at home, their eroticization, and their resistance discourses with respect to this feminine-ideal. The discourses surrounding the first sub-theme, which compared space structures to the cisgender feminine-ideal, includes the intervention of men. These interventions showcased a wish to control the feminized space structures. At times, some aspect of these feminized space structures would be dramatized, sexualized, or, in some cases, romanticized, as the following two examples show:

*Gentle Giant:[...] Capable of lifting 60 tons of missile hardware, **it does the job with the tender loving care of a mother holding a child** [...] Even for smaller jobs, a minimum of five **men** are needed to operate the crane of a type known as a **stiff-leg derrick** [...] Oddly enough, the **man** at the **control console** may never see **the load** he is moving about, (GMRD, 1965d, p. 10, emphasis added).*

*Cape Night spectacular: By day this space hub of the **free world** lends **glamour** to even the most mundane tasks. And by night the Cape takes on a special **glamour**. It's a **beauty** enhanced by the shroud of darkness and **tempered by the occasional flaring thunder of a missile** piercing the night as it rumbles down the Eastern Test Range [...] Along with sophisticated photographic equipment operated by Pan Am, RCA, and Technicolor photographers, are advanced techniques and a few special effects 'tricks' thrown in to **enhance the true beauty of missiles and gantries**, (GMRD, 1967c, pp. 5–8, emphasis added).*

The next sub-theme, focused on the GMRD White women's role, centers on her attractiveness and her role in work and home-life:

*An **attractive** woman recently walked into the Pass and Identification office at the South Gate requesting a new badge. Security employees noticed she already was wearing a badge and inquired why she wanted a brand new one. 'I've had my hair style changed and friends say **the picture on my badge doesn't look like me anymore**,' she replied [...] the **Pan Am badge men** [have] no intention to*

draw the ire of the ladies upon [them], Brown concedes **the gals** are more **fussy** than men when it comes to having a picture snapped [...] 'Most will powder up in the rest room,' he said. 'One woman **combed her hair and put on makeup right in front of the camera,**' **Brown chuckled,** (GMRD, 1965c, p. 15, emphasis added).

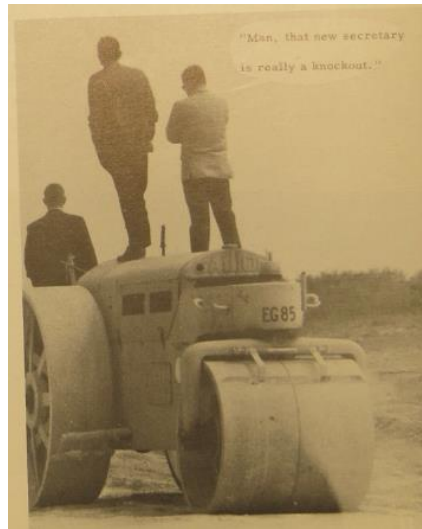


Figure 3: Komic Kaptions: Man, that new *secretary* is really a *knockout*,
(GMRD, 1966e, p. 11, emphasis added).

The GMRD White woman's role in work and at home, surfaces some elements of her subjection:

Just plain Vi: *From People to Propellants: Viola Nash (better known to her friends as Vi), a former Ohio welfare worker who dealt with sensitive human problems, is now a staff clerk in GMRD's Liquid Propellants section dealing with sensitive fuels. Of course Vi does not work directly with the propellants, although she does keep inventory and issue records and handles all other clerical duties for the section. She is quick to say that while she doesn't have the technical background necessary to understand these exotic fuels, she nevertheless thoroughly enjoys hearing her supervisor Tom Parsons and the other men discuss the various properties and uses for the propellants they handle [...] Vi takes great pleasure in meeting people and making new friends and she considers herself*

*fortunate to have a job where **she can meet and talk with many different people**, (GMRD, 1965d, p. 8, emphasis added).*

Still within this idea of the feminine-ideal and the role of the GMRD White Women, the organization celebrated these individuals through Secretaries Week. During this celebration, one White GMRD woman was chosen as the ‘universal’ representative of this feminine-ideal in the workplace, fulfilling the role of an efficient office ‘hostess’:

*For **Secretaries Week**, a *Clipper* feature on [...] **Linda Frye: Linda Frye is featured this year representing all GMRD secretaries. Linda, the Administrative Secretary for Contract Administration, started her Pan Am career in 1959 [...] Each girl is assigned to work for one of the contract administrators, but Linda sees that the overall work load is properly distributed [...] Linda is a charming person with a keen interest in and concern for people and this, coupled with her secretarial abilities, make her a first rate secretary in the best Pan Am tradition**, (GMRD, 1965e, p. 13, emphasis added).*

Sometimes that feminine-ideal was not defined just by a secretary fulfilling her occupational role, but could also be seen in other stereotypical cisgender feminine-ideal responsibilities, such as those emphasized in the previous fragment of being ‘*charming [...] with a keen interest in and concern for people*’. The following fragment also supports this expectation:

***Queens of the road: Seventeen Pan Am lady drivers are on the job ‘round the clock serving contractor personnel at launch complexes, industrial areas and virtually any place at the space center where fixed food services are not available**, (GMRD, 1966f, p. 14, emphasis added).*

Carrying this further, as Dye (2006) found, Pan American Airways events and celebrations invariably included beauty contests of some sort, "thus supporting the requirement for beauty" (p. 121). Not surprisingly, GMRD, as a division of Pan Am, also assigned value to these beauty contests. The *Clipper* referred to these beauty contests extensively, and would showcase either White Women employees, or

daughters of GMRD employees. One such example, '*Miss Sun and Space*', was indicative of this sub-theme:



Figure 4: *Miss Sun and Space Takes the Cape: A pretty blue-eyed blonde was the guest at Pan Am facilities at Cape Kennedy recently to launch a weather rocket and communicate with a satellite in outer space. Paula Balberchak, 20, named Miss Sun and Space during September festivities in the City of Cape Canaveral, visited Atlas Complex 36 [...] The willowy blonde is employed as a security receptionist with Lockheed at the Cape. As the pictures on this page will attest, she's a welcome visitor to Pan Am... anytime,*

(GMRD, 1967d, p. 6, emphasis added).

The next sub-theme of the feminine-ideal, the blatant sexual references and the erotization of the GMRD White woman, were extensive across the *Clipper*:



Figure 5: *They have 10,000 patients [...] Medical Records: The girls dip in and out of them some 300 times a day [...] That's a big job, but Jean, Carolyn and Cathy enjoy meeting new*

*challenges [...] In a moment's notice, Medical Records' McMasters, Lee and Waltman can **turn up the file** of any employee, (GMRD, 1966c, p. 14, emphasis added).*

Mills (2006) found that the eroticization of women working within various airline companies, in the 1960's, was used for commercial/marketing purposes. We found that such arguments did not hold for the GMRD, and their presentation of the White women. The plausible 'truths' surrounding the eroticization of GMRD White women are left to the reader to reflect upon.

There were some exceptional discourses that didn't seem to 'fit', which we categorized as a sub-theme of resistance discourses with respect to the feminine-ideal. These exceptions are important to consider in these laminated stories since they demonstrate that there is evidence of reverse discourses (Foucault, 1984a, 1984b) during this mid-Cold War phase. One *Clipper* section, entitled the "Cape Cool Spots", pictured a secretary in her bikini sitting on a massive ice block. Underneath this picture, there was another picture of a man in a full parka in the same ice vault as the bikini-clad GMRD woman. This woman, a secretary in this photo, exclaimed in the caption to this picture that "***Bikinis are fine for the beach***", Sue said with a chatter, ***'but not in an ice house'***" (GMRD, 1966e, p. 8, emphasis added).

Another interesting fragment, that stood out from the repetitive feminine-ideal discourses, was from a missile range missionary. This fragment, reproduced below, provided a glimpse into life on the range for the GMRD men:

*Missile Range Missionary: 'The typical personality down there is a myth,' he says. 'The men have the same kind of problems – **financial, marital, emotional release** – that we in the states [sic] have. But there is a desire in part of man to **get out of the regimentation caused by industrialization – to revert back to the individual type of life**. The beatnik does it by painting his house black and growing a beard. Some people drink, or try other escapes. There is **a man who resents the competitiveness modern life forces us into**. Just how man is to retain his individuality in face of growing regimentation is one of the severest problems facing modern society. There is a line of demarcation between conformity and compliance; the downrange man defines this line a special way of **compromise**, (GMRD, 1966a, p. 9, emphasis added).*

By 1967, evidence of subtle changes with respect to the subjection of GMRD White women started to be reproduced in the *Clipper*:

Two Lively, Lovely Livesays: Take equal parts of sun, surf, and sand. Add two tanned, beautiful girls. Toss in national fashion modeling and beauty honors plus high scholastic averages, and you'll have some idea of the busy, glamorous lives of Mark Livesay's two daughters – Karen and Viki. Mark, an 11 year GMRD veteran [...] has served extensively as Base Operations Manager at various stations on the Eastern Test Range [...] Karen is a freshman at S.M.U. majoring in electrical engineering, (GMRD, 1967c, p. 12, emphasis added).

The following fragment underscores an extension of this idea, that a White woman could indeed pursue a technical degree (while fully clothed):



Figure 6: *Scholarship for two: Marlo, a 'straight A' student [...] now a sophomore at Stetson University, Marlo attended Melbourne High School and the University of Florida. She is majoring in bio-environmental engineering [...] The scholarship awards, presented at the August meeting of the Pan American Management club, are representative of the Club's program to recognize outstanding and deserving students of Pan Am 'families',* (GMRD, 1967e, p. 14, emphasis added).

There is a visual shift to the feminine-ideal, in this fragment and in others after this one, in addition to an emphasis on grades and the pursuit of engineering degrees. The shift from the barely-clothed GMRD White women, to this reverse discourse on educational and recreational pursuits had some vestiges of good looks and being representative of a feminine-ideal. However, there appeared to be a shift towards

acknowledging that women, whether daughters of employees or employees themselves, were no longer ‘objects’ that were office ‘hostesses’, or that could be eroticized in the workplace. These fragments heralded shifts in the *Clipper* articles well into 1968, where scholarship and education pursuits were beginning to be part of feminine-ideal discourses.

We now move to the first-author’s autoethnography, presented in the first-person. She framed this as a discussion, moving among the ‘big picture’ and the ‘small picture’ issues.

Discussion: An Autoethnography of my Experiences in the Contemporary Space Industry

I must take a moment to situate my self for you, the reader, in the present-day. I am a White, highly-educated, science professional woman who, until very recently, worked in the space industry. I was, in ‘fact’, the only Canadian woman working as a Life Sciences Mission Manager, leading and managing scientific, operational life sciences missions into space. To give you an idea of what this means to be a Mission Manager, I led two life science-based mission on the International Space Station (ISS). As such, I oversaw all his Canadian life sciences research responsibilities, planning and de-conflicting these activities with other international space partners who wished to use Commander Hadfield’s time in space. I also simultaneously led two missions, ‘At Home In Space’, and ‘Wayfinding’. The first mission studied how astronauts could create a culture during their six-month stay in space. The second mission studied how our visual-perception changes as a function of being in space. Adding another layer to my self and to the role I fulfilled in the space industry, I was also the Head of Mission Planning. I was responsible for a satellite payload that took images of the Earth, and delivered these images to global clients. I supervised and managed a cross-functional dynamic team of engineers, IT professionals, and scientists, all working in an operational environment of 24/7 responsibilities.

I recognize now, after presenting my research at academic conferences (e.g. Ruel *et al.*, 2015a, 2015b), completing my doctoral dissertation research (Ruel, 2017), and after this particular study focused on the GMRD, that I used to adopt certain discourses in the workplace that are troublesome. These

discourses are not influenced solely by the lack of ethnic and/or raced, gender, sexuality, etc. diversity within this industry, but are also I believe influenced by discursive practices in humanity's race to the Moon, as I began to 'see' with the stories and the accompanying themes my co-authors and I found within the *Clipper*. I must admit that what surprised me the most while doing this particular study was our discovery that, for close to 20 years, I too embraced the cisgender discourses, assigning the feminine to various space structures. This exercise that I would reproduce on a daily basis included: naming satellites – 'Oh no, she's acting up again!'; computer systems – "Darn it, she crashed while I was trying to plan something!"; microgravity vehicles – 'The Falcon is out of oil. She won't let us do anymore parabolas for the day". I don't remember the first time I assigned the feminine to a space structure, but I did note down when I stopped this practice. This awakening occurred when I read "*Countdown for a Modest Matriarch*" (GMRD, 1967e, p. 14), in the *Clipper*, which I reproduce in part here:

*There **she** stood – cables to **her** top, cables to **her** feet, and cables to **her** sides. The countdown began. Newspaper men, photographers, men and women workers, drivers and the wrecking crew watched expectantly to see a **gallant old lady**, the Complex 11 gantry, tumble in ignominy. **She had watched as one of her babies (an orbiter) left her arms** in December 1958 to see the world, carrying with it a Christmas message from the President of the United States. This **mother of modern Atlases** had opened **her** arms for the training of civilian and Air Force launch crews [...] Pounds and pounds of rustproofing **make-up** had been applied to **her** skin over the years, and once a complete sand blasting made a new base for **her face-lifting** [...] Still proud, and **not feeling overweight despite her 400 tons, the camera-shy, sturdy dame stood her ground** [...] On a quiet Sunday, when there were no reporters or photographers to view **her** demise, **the grand old lady swooned as gently as possible. Without the aid of man, she finally knelt on the ground, her girders draped around her.***

While this story was and continues to be a powerful and romantic dramatization of the act of demolishing an Atlas gantry, I recognized at the time that it was also a powerful tale of Man controlling Woman.

While reflecting on this story and others in the *Clipper*, I slowly started to recognize that the feminine-ideal continues to be practiced in the present-day space industry. Perhaps these practices are not as blatant

as expecting women to don bathing suits and sit on top of missiles or in ice block houses, but there are more subtle practices in the day-to-day activities that need to be surfaced. Worse still perhaps, I like other women in this industry, use these feminine-ideal discourses without realizing we do so.

There are three small stories I would like to share, at this time, that showcase these feminine-ideals in the contemporary space industry. The first example centres on a meeting where I, as usual, was the only woman at the table. One of my male colleagues and I were arguing a rather technical, contentious point. He all of sudden challenged me to an arm wrestle. Most people want to know what I did; I obliged him, we laughed it off, and continued on with the meeting. I had enough sense to capture this exchange in my diary, not quite sure at the time, what it meant but aware enough that ‘something’ was happening with respect to cisgender. Some people point out to me that this was a sign of respect, that I was considered ‘one of the guys’ to be challenged in such a fashion. But did ‘I’, a White science-professional woman, not have a say in how to resolve an issue without reverting to being ‘one of the guys’? Why was the masculine-ideal something that I had to strive to achieve in order to be accepted in this workforce?

The second small story, also within the setting of a meeting, goes to the other side of the cisgender spectrum; this time, I was singled out as representing the feminine-ideal, the office ‘hostess’ as we saw in the previous section (e.g. GMRD, 1965e, p. 13). I was asked to get a cup of coffee, by a visiting European White man. I let another White, professional man defend my position at the table; that is, I was chair of the meeting. I was mute; I could tell you that I hid, trying not to acknowledge that I did not ‘fit’ in. I could also say, possibly, that my male colleague spoke first, not giving me a chance to speak up. The ‘truth’, as I recall it from my notes of this meeting, was that I didn’t know what to say: part of me wanted to get up, and get this visiting dignitary a coffee; the other part of me was frustrated that I wasn’t recognized as a technical expert at the table. Again, ‘I’ appeared to be lost within the cisgender feminine-ideal.

My last small story focusses on a brief narrative, in an interaction in the hallway before going into a meeting. I was told by a senior executive that it was great to have a woman at the table, and that he was

counting on me to act as the nurturing and caring voice. This is similar to other ‘caring’ discourses found in the *Clipper* (e.g. GMRD, 1965d, p. 10, 1965e, p. 13). I did my best to assume this temporary feminine-ideal, in this male-dominated meeting, noting down that this had been asked of me (and sharing in my notes how excited I was to fulfil this role!). Apparently, ‘I’ was THE representative of the feminine-ideal, in this particular situation, in such a way that the men needed me to be that ‘*only girl*’ (Ruel, 2019) so that they do not act up, following stereotypical extremes for the masculine-ideal.

I finally ‘see’ these discourses I was a party to, and subjected to, and how they contributed to my sense of ‘fit’ into/with the dominant group of White men I worked with. This sense of ‘fit’ came at a cost; ‘I’ became lost trying to navigate the daily demands of being acceptable, of navigating the spectrum of cisgender-ideals. I also now understand that some of the historical discourses of the space industry, that inspire and ignite the imagination of the world, made its way into the contemporary context. The problem with this state of being, as I ‘see’ it, is that these subjections will continue to help perpetuate discriminatory practices in this industry. We are at risk of losing our potential to explore the stars, in the future, while we embrace such extreme cisgender relationships. Case in point, I left the industry because I could no longer play the game, as it was defined so many years ago and how it is played in contemporary times. Other White STEM-professional women and White corporate/administrative women are also leaving, as I found not only in my research (Ruel, 2019) but also in the academic literature (e.g. Hewlett *et al.*, 2008).

I shudder at the idea that this may be the legacy for White women working within the space industry. This says nothing to the ethnic minority women who also work in this industry - their numbers are embarrassing low, even in today’s space industry (Catalyst, 2013). The dividing practices, along feminine and masculine-ideals, and ethnicity, will continue to be perpetuated if all we strive for is the technological framing of being amongst the stars. To be clear, the feminine and masculine-ideals are not solely based on the mid-Cold War phase; there are important influences that run further back in time also. However, by taking a fragment, and then another, and again another, a multi-voiced story begins to emerge. This story,

unfortunately, showcases the lack of development and progress for White and for ethnic minority women in the North American space industry, even in 2018.

Conclusion

In this study, we write White women back into Cold War space histories, taking an important step towards a multi-voiced, gendered/ethnic 'historic turn'. Our approach embraces this idea of an 'historic turn' to shine a light on possible discriminatory practices that can be systemically reproduced in daily everyday social interactions. We also recognize that this 'historic turn' can surface reverse discourses that problematize these practices. We bring these multi-voiced histories of the GMRD White women forward to the present and to the future, revealing the subjection and the discourses and how they can influence relationships within the contemporary North American space industry.

A CDA, such as the technique of lamination, cannot work by itself in this type of work as this methodology alone does not allow us to travel through time with respect to refashioning the social. The first-author's recreation of the present space industry via an autoethnography, melded with this technique of lamination, permits us to investigate these multi-voiced histories building a richer experience of these data. As such, we are advocating, with this work, for an awakening with respect to the role that multi-voiced histories can play in defining cisgender/ethnic relationships in the present and in the future. We are inviting others who work in various ideological contexts, such as medicine and health care, to consider integrating the cisgender/ethnic multi-voiced histories with the present in such a way to surface important influences on relationships.

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Endnotes:

ⁱ We embrace cisgender as a performance of gender roles, across the spectrum of masculine and feminine-ideals, that are socially constructed and are enacted in the day-to-day (Boje, 1991; Butler, 1990).

ⁱⁱ We are using cultural allegiances to characterize White and Black not as an essential, binary representation of two collectives. We are underscoring here that White women, as a cultural influence, can be studied within ethnicity discourses (Friedman, 1995). We are also making a point that the experience of the GMRD White woman, who typically worked in an administrative role, cannot have had the same experiences as that of the Black women who worked in the GMRD.

ⁱⁱⁱ The notion of identity comes to us via many different schools of thought. We frame our understanding of identities via the social-interactionist perspective, which later becomes the symbolic interactionism perspective (Anderson, 2016). This is to say that we embrace that a social world is always evolving, and how individuals are shaped by that social world is also evolving.

^{iv} Experience is used here in an anthropological sense, where “knowledge and experience are not monolithic, but rather are reliant on the cultural perspectives of both the observer and the population being studied” (Grant, 2016, p. 238).

^v The National Aeronautics and Space Administration (NASA) was established in 1958, and would assume responsibility for the Cape and Merritt Island shortly thereafter (Anderson, 1981).

^{vi} The ethnic minority women, who were part of the GMRD, must also be the subject of further study. Their experiences and roles are beyond the scope of this present study.

^{vii} Hereafter, we refer to this newsletter as the *Clipper*.

^{viii} In 1955, both the U.S. and the U.S.S.R announced that they had plans to build satellites. By 1957 and 1958, designated the International Geophysical Year, scientists from 66 nations agreed to jointly conduct worldwide studies of the earth’s environment. This scientific collaboration is one of the primary reasons why scientific communities in various countries were able to record the beeps of Sputnik within hours of its launch (Jelly, 1988).

^{ix} The transition from one theme into another does not necessarily flow linearly in time. As such, by maintaining the notion of an ideological context (Durepos *et al.*, forthcoming) for the Cold War, we cannot state explicitly that the

mid-phase began at the end of 1965, after what some consider the end of the early Cold War. Time is not the central issue here; however, we recognize that the reader may need this framing at this point.

^x There is an important branch to this 'second wave' of feminism, radical feminism, that took form during this time.

We specifically chose to narrow our focus to liberal feminism.

^{xi} Social life refers to the "interconnected networks of social practices of diverse sorts (economic, political, cultural, family and so on)" (Fairclough, 2001, p. 27).

^{xii} Technologies of the self takes this notion further than technologies of self-management (e.g. Foucault, 1988a).

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