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Excerpt from dissertation *Empowering the Female Machine: Remapping Gender Dynamics in Technologically Augmented Dance*

Chapter 2: Analog Era: From weaving rope to dancing objects: Yvonne Rainer's *Carriage Discreteness* from *9 Evenings*

Yvonne Rainer's *Carriage Discreteness*

Black out. The stage lights begin to dim up slowly. In the first set of sequences, Yvonne Rainer instructs Mike Kirby to take the Styrofoam beam to section twelve, Ed Iverson to take a mattress to section five, Rosemarie Castoro to pick up a plywood slab and make a bee line for section eleven, and the directions continue (Figure 14). She divides the space into twenty sections with chalk, clustering the everyday and technical objects together based on their shared characteristics of weight, size, materials, and functionsⁱ. In parallel to the performers' actions, technological objects move around the space in the second sequence that include remote-controlled sculptural forms like the creation of a transparent ball running down from the ceiling, luminous rods, and two films (Jimmy Cagney, W.C. Fields) playing at the back of the stage with all equipment visible to the audienceⁱⁱ. Rainer dispatches instructions to her performers through walkie-talkies from a balcony, telling them to conduct generic tasks with various stage props and asking the engineer Per Biorn to activate the technological components that were programmed within a 67-step trigger system entitled TEEMⁱⁱⁱ, the Theatre Environmental Modular Electronic, essentially a switchboard device to control different functions (Figure 15). Each action occurs individually, where all other elements pause until called upon. Eventually, the taxonomy of the system becomes more chaotic as the dancers continue to move objects around, and as the technical objects disrupt and collapse upon the human movements. The only time the two series of events merge between the performers and technical objects is when a floodlight switches briefly on as Steve Paxton launches from the balcony on a fifty-foot swing towards the audience, a possible nod to space imagery. The performance ends.

9 Evenings Event

From October 13-23, 1966, a groundbreaking performance event merging art and technology took place at The Regiment Armory in New York, NY. Artist Robert Rauschenberg and engineer Billy Klüver organized the event consisting of ten artists (John Cage, Lucinda Childs, Öyvind Fahlström, Alex Hay, Deborah Hay, Steve Paxton, Yvonne Rainer, Robert Rauschenberg, David Tudor and Robert Whitman) collaborating with thirty engineers from Bell Laboratories in Murray Hills, New Jersey (Figure 13). For Klüver, the goal of the event came

from an interest in bringing artists and engineers together to see what role technology could play in the development of artistic creation (Morris 2006, 9).

Art historian Meredith Morse describes Klüver as someone who “passionately believed that art had a role in humanizing technology. In Klüver’s words, ‘artists had the intellectual freedom and sense of personal responsibility which could shape the new technology for the benefit of the individual’”(Morse 2007, 3). In an event that not only attempted to create new technology, but also foster new ways to collaborate productively and efficiently, Klüver’s comment redirects the emphasis upon the artists to produce such utopic visions. In reflecting back on these works, what was the perspective and ultimate aim for both the artists and engineers? What effect did technology have on the process, the creators and users, and, in the final performance, on the audience? How did the work engage with gendered patterns in the context of technology and performance?

In 2006, two major retrospective events took place to commemorate *9 Evenings*’ 40th Anniversary. The first was a major research residence at the Daniel Langlois Foundation in Montreal by art curator and researcher Clarisse Bardiot. Bardiot created an archival webpage and conference event around *9 Evenings*, evolving from the numerous diagrams that were published in the program. She describes *9 Evenings* as “an overarching electronic environment, a network that would connect the *technical* devices involved in the performances, an interface between the technical apparatus and the performers and engineers” (my emphasis, Bardiot 2006, 50-51). The second was an exhibition presented at the Massachusetts Institute of Technology’s List Visual Arts Center in Cambridge, MA in May 2006 curated by Catherine Morris. The exhibition offered a “fresh look” at the performance events where “collaborations presaged the many hybrid art/technology efforts” of today (2006, 6).

In recent analyses of *9 Evenings*, numerous scholars have discussed collaborations between engineers and artists, the dichotomy between art and science, the role of technology, and, in particular, the focus and effect of sound (Bardiot 2006; Morris and Favor 2006; Dyson 2006; Garwood 2007; Oppenheimer 2011). In most of these analyses, however, the main focus remains directed at the technology used while the significance of the gendered body (or any body at all) is left out. In fact, scholar Frances Dyson is one of the only researchers to briefly mention some of the gender dynamics and the resulting consequences had on the process and the production of the works.

This focus on technology (and on the prevalent incidences of technical failures) occluded the difficulties some of the artists faced in working with the engineers themselves. Female choreographers Yvonne Rainer and Deborah Hay, whose works both dealt with remote controlled apparatuses, were the most critical about their experiences working with technology. When Alfons Schilling in 1966 interviewed Rainer, he commented, “I have the feeling that you didn’t make the piece because of technology, but in spite of technology.” Rainer replied, ‘I have that feeling, too; probably the only really essential aspect of the technology that I used was the walkie-talkies, [which] in a way wasn’t essential’” (Dyson 2006, 12).

In another instance, Alex Hay explicitly mentioned gender, stating “The kind of materials and engineering equipment [involved were] very masculine... It was a revolutionary thing, it didn’t just evolve” (Ibid.). For Deborah Hay, the experience working with engineers and technology was “so traumatic that she was unable to work afterwards” (Ibid.). Between 1972 and 1975, Rainer left her role as choreographer and performer in the dance world and shifted her artistic focus to making films. She did not return to dance until twenty-five years later.

Although the collaborations with engineers might have been difficult in the process, the performance works provide the possibility for another story. I argue here that Yvonne Rainer’s work *Carriage Discreteness* can be understood as a successful artistic intervention into queering technology and dance. This is not to pretend that problematic binaries between male/female, man/machine, mind/body did not exist in the context of this time, but rather to highlight how the performance platform offers an alternative method to radically question these bonds. Similarly, Deborah Hay and Lucinda Childs, as the other female artists of *9 Evenings*, created strategies within their own works to also address problematic notions of technological fetishism and objectification.

After the Second World War, ideologies (and reality) shifted around issues of power, technology, and gender. Feminist political movements, nestled sometimes uneasily in the larger social revolutions of the 1960s, put into perspective Rainer’s position, “as a white, unconsciously ambitious artist, oblivious to art world sexism and racism and ensconced in dancing (a socially acceptable female pursuit)” (2006, 386). In this socio-technical climate, the trope of the female machine continued, but a tension was stirring as ambivalence grew in the unknown territory of computational machinery.

To understand all the dynamics at play in Rainer’s artistic work with engineer Per Biorn

and the larger *9 Evenings* event, I unpack the particular situation of women within the context of early computational machinery and the Space Race. In this era, an impetus toward experimentation, a sense of ambivalence, and an emphasis on bodily awareness defined the realms of technology and of dance. Within this context, I see the work of Rainer's *Carriage Discreteness* touching upon the complexities that arise in collaborative projects, detailing how agency, materiality, and gendered subjectivity function differently in the research and development process compared to the performance event.

In the research and development phase of *9 Evenings*, the creative experimentation process was compromised in the name of technological development, which propagated specific gendered patterns and arrangements of power. In the performance event itself, the technical components became surrogate bodies alongside the everyday objects and performers, all decentralized agents in the act of movement in which matter became non-gendered. Despite Rainer's adverse reflections, *Carriage Discreteness* was successful in rejecting the domination of capitalist pressures, technology, and codified, large-production concert dance events^{iv}. By using dance—and due to the art form's lack of representationalism and repetition—she went against profit-directed productions. Additionally, her focus on more task-based, pedestrian movements with an array of different performers counteracted traditional dance productions of codified techniques and virtuosic dancers in proscenium theaters. With technology, she disrupted notions of productivity and innovation.

As an artistic event with a strong cohort of female choreographers and dancers, *9 Evenings* acts to both exemplify the tensions and persistence of gendered relations to technology *and* critique those forms of labor. In order to discuss the shifting role of women in politics, engineering and computer science, and dance as it relates to *9 evenings*, I consider Second-wave feminism, the prominent female engineers and programmers involved in the creation of the ENIAC (Electronic Numerical Integrator and Computer), the first computational machine, and the Apollo Guidance computer— a navigation system created for the first space mission to the moon— and the female choreographers pivotal to the creation of modern to post-modern dance techniques.

From Fictitious Female Machines to the Reality of “Female Computers” in the Age of the Space Race

In post-World War II, an expansion of capitalism and globalization emerged linking the world together by the strands of technology. Technological innovation dominated the Cold War culture, spawning a new era of technological fetishism and commodification—the Space Race. As seen previously, the spectacle of technology permeated the cultural imagination as something new, highly anticipated, and grandiose. But in the context of the 1960s, different tensions stirred around issues of power, technology, and gender.

As editor-in-chief of *Artforum* Michelle Kuo argues, a ‘double movement’ was occurring where “new models of cultural and aesthetic engagement were just as quickly co-opted by and in fact isomorphic with developments in capital” (2013, 270). In adapting Guy Debord’s theorization of ‘spectacle’ and Fredric Jameson’s ideas^v around this moment as a “release of untheorized new forces,” Kuo states “sovereign forms of power become more mutable and flexible forces of *control*” (271). In the postwar era, strategies developed to maintain and enlarge aspects of control in all sectors of life. The increase in use and advancement of technology was key to this transformation of power “as both cause and effect” (Ibid.).

This tension offered a small window of time where new methods began to push back against the established and problematic structures of the past including stereotypical roles of gender. When women started entering the workforce during World War II, there was a demand within the field of computer programming for women with mathematics degrees to calculate tables or to translate instructions onto punched cards. On the one hand, within the early development of computational machines, despite its problematic military connections, the initial protocols of computational languages, designs, functions, and more were not codified or prescribed within a specific gender or culture; this is a key factor in how women were able to participate in and collaborate with this domain at the time. The materiality of early computation was based on a binary system. At first, this system operated on the electrical circuits’ capabilities of turning on or off. Later on, and still in use today, the von Neumann Model’s use of a series of 0’s (off) and 1’s (on) coded the functions of the computer. Code is the language of the computer and the “only language that is executable, meaning that it is the first discourse that is materially affective” (Galloway 2004, 165). Code

was not just executable language, as it derived meaning “only in relation to its environment - only to the extent that it defines, formulates, or disrupts environmental networks. Not only is it unconcerned with identity- human or otherwise - its existence is predicated on an explicit shift in focus away from identity and toward systems" (Miller 2012, 23). Previously in the application of electricity, there were clean delineations of the relations of power between technology and gendered bodies. In this moment, the effects of early computational machinery were yet to be fully developed and defined, and even so, the effect on gender was difficult to decipher, as computer code did not rely on any human identity to function.

In one particular project in the late 1960s that dealt with the dependability of code for larger systems to operate, the MIT Instrumentation Lab created the Apollo Guidance computer, a part of the navigation system used to orbit and land men on the moon. This project had a stake in humanity as opposed to the disregard of any form of identity in computational functionality. As MIT Director of STS David Mindell states, “what was special about this computer was people had to stake their lives on it...if this computer failed, if one of the circuits went bad, or crashed or had a bug at the wrong moment, people were going to die and that was really a first to put people’s lives on the line with integrated circuits and hardware – no one had done that before” (*Moon machines:the navigation computer* 2008). For this project, Charles Stark Draper and his lab of astronauts and software engineers would meet and debate on the purpose and functionality of the computer. Memory was a problem (reaching only 72kb) and hardware was fragile and unreliable. For their computer system, they decided to use core rope memory. Mostly male managers sent the instructions for the computational functions to women in a factory who would literally weave the software code into rope memory (the copper rope was woven through magnetic cores to designate a binary ‘1’ and around the core to designate a binary ‘0’). The concept of software was new and engineers basically created the conditions and functions as they were processing it (Figure 17). The end result was the successful return of Apollo 8 back down to earth.

On the other hand, in popular culture, fictitious female machines continually “embodied some of the cultural preoccupations of the period, not only equivocal attitudes about women with extraordinary abilities but also ambivalent attitudes about simulations, technology, and control” (Wosk 2015, 96). In some prominent examples like *Bewitched* (1964-1972), *I Dream of Jeanie* (1965-1970) and *My Living Doll* (1964- 1965), female characters were imagined as witches,

genies, female robots, androids, and more that both upheld stereotypical ideals of suburban American life, but also problematized issues of control, commodification, domesticity, and technology.

In particular, the character of Rhoda, a prototype robot actually named AF 709 built for the U.S. Air Force, in *My Living Doll* exemplifies the technological fascination in her design, but also the consistent rapport of male's domination over technology. The character of Bob Cummings as Dr. Bob McDonald activates and operates Rhoda by emergency control buttons mapped onto her back as beauty marks; she also has an additional "technological feature that men love [...an] 'on and off' button" (Wosk 2015, 107). Inspired, motivated, and funded by military aims, female machines had technical prowess and magical powers beyond the control of anyone and anything, but, at the end of the day, men could still shut them down with the flip of a switch. Consistent with the electric era, fictitious female machines embodied the dialectic of the female empowerment movements occurring alongside the continuing fascination, anxiety, and fear of advancing technology.

In *9 Evenings*, the technological devices in Rainer's and others works depended on earlier computational developments and spoke to the muddling of roles of engineers/artists and male/female participants, rather than to the constraining imaginaries of feminine technological embodiment. For instance, in the 1940s at the University of Pennsylvania, primary engineers J. Presper Eckert and John W. Mauchly were developing a new electronic modular computer called the ENIAC (Electronic Numerical Integrator and Computer) to automate ballistic computations (Figure 16). Initially, six prominent women ran the programming for ENIAC: Kathleen McNulty, Francis Bilas, Betty Jean Jennings, Elizabeth (Betty) Snyder, Ruth Lichterman, and Maryln Wescoff. They were labeled the "female computers" or "computer girls" and are now known as the world's first computer programmers, although nearly 200 women contributed to the ENIAC project (Herbst 2008,14). The production of TEEM in *9 Evenings* was mirrored off of this device to wirelessly network all the different technical components of the artists' works with the male engineers programming and controlling the machine.

With the advent of the ENIAC, gendered implications set upon by historical precedents within the technical appearance itself continued. The ENIAC machine resembled the telephone switchboard, a technology predominantly operated by women. Therefore, it made 'sense' to hire women for this lower-status occupation as machine operators as well. In doing so, programming

became more akin to “handicraft than science, more feminine than masculine, more mechanical than intellectual” (Ensmenger 2010, 123). Programming was associated with lower end clerical work, hence why women were so widely accepted into this field as they were seen as a “cheap, compliant, and undemanding labor” (Ensmenger 2010, 47-48).

Similarly, the creation of the TEEM device within *the 9 Evenings* context fed the hostility that grew between the engineers and artists. The artists had lost control of their aesthetic creation and production, perceiving themselves as cheap labor for technological gain only. The Bell engineers had so many technological tasks that needed to be done that artists fulfilled these requests as “unskilled laborers,”^{vi} relinquishing the authority customary to producing artistic work. As dancer Simone Forti wrote in her journal, “One of the engineers said, ‘What we need is a lot of unskilled labor.’ And there were two dancers and a composer— Cindy, Yvonne, and Cage—stripping wires. It occurred to me...that the activity, the situation, was an engineer-directed one” (1966). Although not so clearly delimited by gender, there was a clear division of labor and of value dictated by the engineers.

The practice of programming was not yet fully defined in academic institutions or even as a legitimate scientific practice in the formative years of computing. Previously, programming was promoted as a particularly good fit for a women’s career. In an article in *Cosmopolitan* by Lois Mandel, he quotes American computer scientist and United States Navy Rear Admiral Grace Hopper as stating, “Programming was “just like planning a dinner. You have to plan ahead and schedule everything so it’s ready when you need it. Programming requires patience and the ability to handle detail. Women are ‘naturals’ at computer programming” (1967, 52). In understanding women’s role in the early development of computation, STS scholar Janet Abbate conducted interviews in the United Kingdom and the United States with white American women who worked during the years between 1940 to 1980^{vii} in the specified areas of programming, computer science, and some managerial positions. She argued that one of the only areas of difference between men and women came down to what they thought the computer was able to contribute to society. Women placed “high value...on having their work contribute to solving real-world problems...[creating] a connection between their technical work and the needs of real users” while men were enticed by computing to achieve technical mastery and to increase their wealth, status, and public recognition (2010, 220).

The development of technology as a field of study in the institution and as an untethered market in industry further gendered the division of labor. Harvard, Massachusetts Institute of Technology (MIT), Princeton, and Carnegie Mellon were some of the first universities to establish Computer Science programs, under the umbrella of Electrical Engineering departments. From institutional research labs and more established companies, programming was “transformed into a high-status, scientific, and masculine discipline” (Ensmenger 2010, 136). In the standard practices of any research and scientific development firms, like Bell Labs, the more male-dominated focus on innovation was encouraged to promote business. The importance on goal-oriented newness in technology could be seen as a drive in the *9 Evenings* event, and as a consequence, a division of labor occurred as well. In this era, a tension existed between the material relations around coding alongside the entanglement of gendered forms of labor versus the imaginaries of female robots. On the one hand, the material gendered relations of technology created room for productive change. On the other hand, the imaginary gendered relations of technology staunchly resisted any new progress.

The Body Politics

In Rainer’s autobiography *Feelings are Facts*, she reflects back on the time period in the 1950s, stating “What is striking as I read this chapter is the paucity of women in roles other than wives, mothers, or performers and the total absence of gay culture and people of color. It was indeed a different world that was about to undergo vast changes, or at least make a great many of us painfully aware that it should” (2006, 113). In the following decades of the 1960s and 1970s, some of the most positively transformative, yet troubling years occurred for socially and politically oppressed bodies in American culture and elsewhere. The civil rights movement, antiwar protests, gay rights movement, and women’s liberation movement^{viii}, to name a few, all radically fought racial discrimination and/or sexism for a more egalitarian and just society. In particular for “women, lesbians, and gay men, a much more concrete body politics was at stake in the 1960s and 1970s...who controlled actual human bodies” (Self 2013, 240). As radical feminist and poet for the antiwar movement Robin Morgan loudly proclaimed in New York’s underground magazine *Rat* in 1970, ‘White men are most responsible for the destruction of human life and environment on the planet today...it seems obvious that a legitimate revolution

must be led by, *made* by those who have been most oppressed: black, brown, and white *women* – with men relating to that the best they can.’ And then the political became personal” (Gitlin 1987, 374). From first-wave feminism’s fight for the vote, second-wave feminism furthered the cause to fight the legal and social restrictions imposed on female bodies and marginalized others by the private and the public sector.

Several positive outcomes coming from the women’s liberation movement included the ideas and actual enactments that happened with regard to “the empowerment of ordinary women to think and speak about their own lives and bodies and to conceive of those lives in relation to structures of power” (Self 2013, 255). The authority to speak from one’s own experience and contribute from this position led to real change in shifting notions of what empowerment meant for women and other marginalized groups. As Rainer reflects herself,

I started reading the angry experiential writing in Robin Morgan’s *Sisterhood Is Powerful* and the fiery polemics of Valerie Solanas...and Shulamith Firestone’s *Dialectics of Sex*...their writings, and those of a welter of other feminists, gave me the impetus to begin examining my experience as a woman – that is, a person positioned in the social hierarchy of patriarchy – but also gave me permission to think of myself as an intelligible and intelligent participant in a culture and society (2006, 386).

Even if women still could not acknowledge their experiences as valid— possibly a socialized trait of women in general to not vocalize their feelings—the permission now was granted and resonated throughout all practices of life, particularly in the field of dance.

After the postwar era, a slew of strong female dancers led the development of new modern techniques infused with emotionally, gut-wrenching movements. Following the trajectories of Loie Fuller, Valentine de Saint Point, *Giannina Censi*, Ruth St. Denis, and Isadora Duncan, this next generation of prominent female choreographers includes Mary Wigman (1886-1973), Doris Humphrey (1895-1958), Katherine Dunham (1909-2006), and Martha Graham (1894-1991). These women advanced modernist dance by their rebellious acts against the demands of ballet in technique and in specific character roles, eschewing pointe shoes that enabled the personification of flighty, distressed, and passive female roles. With all-women dance troupes, they ran the show as managers, choreographers, and performers. They

reconnected back to their bodies and to the earth with weighted, floor-based, and bare-foot movements in abstract works.

Graham, in particular, revolutionized and refocused the cultural epicenter of modern dance in America. Within her work, “Graham redefined the boundaries of what could be thought of as feminine in dance. Rejecting the seductive and illusory as represented, for example, by the orientalism of Denishawn or the weightlessness of ballet, she revealed the materiality of the body by accentuating effort, weight, and force” (Bannerman 2010, 33). Some of Graham’s more renowned company members included Eric Hawkins, Merce Cunningham, and Paul Taylor, who all left to create their own unique techniques, choreographic works, and companies in New York City.

From the more codified modern techniques and separation from ballet, the field of dance progressed even further after a gathering of artists met at the downtown space in Greenwich Village in New York City around July 1962. Under the direction of John Cage and Merce Cunningham, a collective of dancers, composers, and visual artists (Steve Paxton, Fred Herko, David Gordon, Alex and Deborah Hay, Yvonne Rainer, Elaine Summers, William Davis, and Ruth Emerson) began creating and performing works at the Judson Memorial Church. The newly formed collective of the Judson Dance Theater emphasized diversity and freedom in dance. They wanted to refute all previous definitions of dance, the dancer, and transform how dance could be displayed. In accordance with the oppositional politics of the social movements, Judson Dance Theater was an oppositional aesthetic to the current dance canons.

The Performance of *Carriage Discreteness*: Dancers, Everyday Objects, and Technical Apparatuses

As one of the co-founders of the experimental Judson Dance Theater, Rainer created work ranging from the personal to the political in the formats of post-modern dance performances to experimental films. Born in 1934 in San Francisco, California, she later moved to New York City at twenty-two years old. After a brief introduction to acting when arriving to the city, she eventually found a calling in dance, studying with Martha Graham, Merce Cunningham, Anna Halprin, and Trisha Brown. In the late 1970s, Rainer shifted focus to filmmaking to more fully address social and political issues, particularly feminism. As she

recalls, “Writer Audre Lorde once said something like, “You can’t dismantle the master’s house using the master’s tools.” By the late 1970s, I would have rebutted, “You can, if you expose the tools” (Rainer 2006, 446). Ten years later, Rainer started to identify as a “political lesbian,” entering into a world where she was able to disassociate from the “vanities and bodily obsessions” from “dance and heterosexual social imperatives” (162, 437). Her affiliation with queer activism occurred prior to identifying as queer herself in the 1990s, but during the time of *9 Evenings*, she was not queer-identified. Despite any specific sexual identity, the ideas and actions that arose out of the Judson Dance Theater methodologies, and specifically Rainer’s performance work of *Carriage Discreteness*, can both be read as a queering artistic practice, destabilizing normative structures in dance and technology. She created new movement techniques to counteract destabilizing normative ideas around choreography and body images. She challenged prescribed notions of technology by changing the design and function of devices.

To understand the relationship between queer theory and art, I relate the concept of queerness to art practices and the concept of assemblage to the body and technology. As Barad eloquently defines it, “queer is itself a lively mutating organism, a desiring radical openness, an edgy protean differentiating multiplicity, an agential dis/continuity, an enfolded reiteratively materializing promiscuously inventive spatiotemporality” (2012, 29). Queer is not an identity, but a position of action to radically question fixed notions of identity and subjectivity. Queer art is “produced as a contrast against which normalcy is produced and codified,” writes Jeremy M. Barker in his discussion of the 2012 Queer New York International Festival, and continues, “Hence, queer art never is, it never fully arrives. It is always, disrupting, refusing, and resisting the ever-shifting power of normativity and dominance, in an effort to carve out more material, affective, and aesthetic space for anyone who is brave enough to want it” (2012, 3). Artistic works can act to produce temporal and spatial distance from fixed boundaries of problematic binaries. Though this “deferral and a gap,” a possibility of agency opens up to all participants where “various embodiments and fantasies can be experimented with that are neither restricted by norms nor do they become imprinted into the body as new norms. Connections can be created or entered into that initiate processes of self-transformation and self-fashioning” (Lorenz 2012, 20). The relations between dichotomies such as “natural and artificial, animate and inanimate...tends more to produce connections to others and other things than to represent them. What becomes visible...is not people, individuals, subjects, or identities, but rather assemblages”

(21). In queer art, the action of undoing is crucial, a way to unpack how normalized conditions exist and to reconstruct them otherwise.

The concept of “assemblages,” detailed by feminist cyberspace theorist Diane Currier, makes legible the relations of power in Rainer’s work. For Currier, active elements compose assemblages instead of “unified, stable, or self-identical entities or objects” (Currier 2002, 531). An assemblage depends and is constituted by the “forces and flows of components” which encounter and link up with “forces and flows of other elements” (Ibid.). In this relationship, subjects are never stable entities because “assemblages are always in motion and cannot be kept stable in any semiotic grid. This human is a being in motion, an effect of many processes...[that] cannot be the sites of fixed sexual, or gender, identities with determining functions” (Landström 2013, 393). The main emphasis is on the *affects* the *relationship* between these different elements produces, to destabilize problematic categorizations of identity and subjectivity. The concept of the assemblage addresses the multiple factors of relationality occurring within the context of the Judson Dance Theater and Rainer’s performance works.

I understand the Judson Dance Theater and their collective as an assemblage. The “rigidly constructed, individual-oriented, hierarchical society” constricted people in all situations and the Judson Dance Theater were looking for other ways through “spontaneity and improvisatory methods to provide a better life” (Banes 1978, 45). To challenge the restrictive political and social systems in play through aesthetics, they redirected authority, emphasized process over product, and developed different methods of generating movements. From theory to practice, Judson’s dancers opened up a queer space to try to unravel traditional power structures of gender, dance, and technology.

After the initial concert of the Judson Dance Theater, Steve Paxton and Yvonne Rainer organized weekly workshop meetings to exchange ideas and show work. Lowen writes: “The idea was to have an open and free situation without any central authority or hierarchical structure: anybody could come in, any movement could be accepted, and any material could be legitimate and used in anyway desired...Painters, sculptors, and others untrained in dance were accepted as dancers and choreographers, some with no prior performance experience, others having studied dance, in a concentrated way” (Loewen 1975, 24). Any prescribed notions of what a choreographer was and should be were eliminated, challenging prescribed identities and subjectivities. In the act of creation, the relationship between animate and inanimate objects

became the impetus for new movement. When they included technology, the artists regarded these objects “in terms of their qualitative contributions – to be worked with and around as materials with unique properties, similar to the way that they worked with wood planks, rubber balls, stairs, mattresses, texts, voice, and bodies” (Morse 2007, 4). An assemblage was created visibly on stage, an experimentation of connections between human-non-human phenomena to reconstruct gender, dance, and technology otherwise.

These ideas translated into Rainer’s performance event as well. In *Carriage Discreteness*, Rainer and Per Biorn created intersecting different movement patterns between technical apparatuses, everyday objects, and performers. Rainer initiated the actions one at a time, both the technical components and the performer’s tasks, through walkie-talkies and receivers. Any cross-links between these two sequences occurred randomly. The performers were a mix of both dancers and non-dancers of both genders, dressed casually: Carl Andre, Becky Arnold, Rosemarie Castoro, William Davis, Letty Lou Eisenhauer, June Ekman, Ed Iverson, Kathy Iverson, Julie Judd, Michael Kirby, Alfred Kurchin, Benjamin Lloyd, Meredith Monk, Steve Paxton, and Carol Summers. There was neither a hierarchy between nor a pre-determined role for each gender, dancer or non-dancer, or for any of the specific objects (technical and other) in the performance. In *Carriage Discreteness*, performers moved objects and their bodies in accordance with the weight and effort of those materials to designated, spatial locations. In acknowledging the effect and actions of the different materials in play (everyday objects, technical devices, performing bodies), Rainer challenged traditional notions of identity and subjects on stage.

Rainer’s intention, with her use of more than a hundred objects and sixteen performers, was to destabilize norms in dance on stage and in creation. In removing the body as the star, Rainer disrupted bodily ideals of virtuosity and form. By mixing different methods from an array of practices, including Cage’s chance procedures, influences from visual artists such as Robert Rauschenberg and Robert Morris, and fellow dance colleagues, Rainer was able to develop movement, departing from codified techniques, highly athletic tricks, and habitual movement patterns. Additionally, improvisational sessions with fellow dancers Simone Forti and Nancy Meehan piqued “Rainer’s interest in repetition, social contact, unusual positions, and fragmented movement” (Banes 1993, 12). Her creation of movement came from improvised moments with various objects, a more task-based and object-oriented method. Movement

sequences were formed by the manipulation of objects, and reciprocally, the objects affected the performers' gestures, weight shifts, phrasing, and other components beyond their control (Banes 1978, 43). This work had no narrative arc, as the task-based movements were the purpose of the dance.

Not only did this form the method for her creative process, but also “the unadorned execution of movement tasks” acted as her “finished performance material” (Morse 2007, 5). Departing from highly choreographed stage productions, Rainer purposefully created shows in front of an audience to demystify the process of movement creation. Movements were pedestrian-like, a more accessible, democratic performance^{ix} that transpired from the everyday performer to the spectator. The performance was an embodiment of object-oriented dance to create connections and reciprocal transformations of both human-non-human phenomena.

She attained the goals of her infamous “NO Manifesto” from 1965, proclaiming, “NO to spectacle no to virtuosity no to transformations and magic and make-believe no to the glamour and transcendence of the star image no to the heroic no to the anti-heroic no to trash imagery no to the involvement of performer or spectator no to style no to camp no to seduction of spectator no to the wiles of the performer no to eccentricity no to moving or being moved” (1974, 51). In another form of queering, her manifesto clearly outlined her intention to disrupt, refuse, and resist normative and dominant ways of doing anything. In both forms of movement and text, these performative acts shifted normative behaviors and experiences.

With regard to technology, Rainer's decentered strategies pushed against the focus on the technological aspects of the performance over more distributed and mundane actions. In a previous work, *At My Body's House* (1964), Rainer collaborated with engineer Billy Klüver with the intention of performing with a device that could transmit her heartbeats sonically in real-time, but the technology wasn't possible at that time. Instead, she wore a wireless contact microphone designed by Klüver that amplified her breathing. The dance began in stillness, followed by “small, rapid footwork” and her voicing a story from *The Diary of William Bentley* about an eighteenth-century elephant (Rainer 1974, 295). Rainer's intention was to “reveal more of the body in the *effort* of dancing” through this technological device by expressing inward bodily phenomena outwards (Bardoit 2005, *my italics*). In the amplification of her breath, she was able to transmit a particular kinesthetic element of her body. As the sound of her body resonated in the space, her choreographic work “emphasized the kinesthetic rather than the visual

sense, inviting spectators to respond empathetically to sensations of movement and touch” (Reynolds 1999, 297). Additionally, the work showcased her specific aesthetic of paralleling multiple mediums and actions (text, sound, movement, technology) at the same time to create sometimes absurd and other times abstracted connections.

Although she previously sought out technical innovation from Klüver for her creative works, in Rainer’s correspondence about *9 Evenings* with Claire Bardoit in 2005, she says that she “wasn’t interested in technology...Now, I am a techno-hysteric...really, I’m not comfortable with technology” (2005). Despite her vocal proclamations about disliking technology, it was only through this apparatus that she could achieve the effect of revealing her body’s inward efforts on stage to the audience. Additionally, she had previous experience in collaborations with engineers and with the use of technology in her work. As soundwalk artist and researcher Andra McCartney states, “the discourses of technology are particularly objectifying, representing the relationship between artist and work as one of gendered power and control” (2000, 317). During the production process, gendered situations arose that negatively affected the collaborative relationship between the engineer and the artist, as well as the tension between innovation in technology and the aesthetic outcomes.

Between the engineers and artists, the extreme focus on technical innovation^x heavily strained the collaborative spirit and ultimate aesthetic outcome. With the development of computer technologies that could replace jobs and the capitalist insistence on newness and productivity, Bell Labs still had an impetus to produce. In this event, they were not interested in creating patents and did feel their collaborations with artists were more ‘play’ than ‘work,’ but they were also aware of the possibilities of new discoveries that could lead to “new industrial applications – and hence new market sectors – for the company” (Kuo 2013, 274). The combination of the drive for innovation alongside the divide of labor roles between engineer and artist altered collaboration process. In Rainer’s 2006 memoir, she reflects on her experience of the event, stating “...it became apparent that the technicalities of the venture were overwhelming for everyone...I was assembling hundreds of objects that were to be moved either electronically or by my performers, ranging from a single sheet of typing paper to six mattresses and two fifty-pound Otis elevator weights” (2006, 275). In contrast to dance, where the star of the concert dance is usually the prima ballerina in ballet or the choreographer in modern dance, the star of the show in *9 Evenings* was technology.

Another challenge, as Bardiot states, was the inability of engineer and artist to find a common language to discuss the technology and the artistic intentions: “Artists frequently had the impression that the engineers had assumed too much control over the artwork and that their preoccupation with technical matters threatened to constrain the aesthetic impact of the performances. For their part, engineers found that the artists did not have a realistic understanding of the technical complexities of their ideas” (2006, 46). Rainer’s inability to possibly understand how technology traditionally worked presented the opportunity to alter the prescribed function of the device. Biorn spent a significant amount of time figuring out how to shift a synchronous motor’s function of rotation so as to control the directionality of an object (make it go up and down). Biorn and Rainer jokingly labeled this machine a space spider (Figure 18), a reference to the Space race combined with the actions of a spider. The development of the space spider was an affordable device that altered the traditional functionality of the device.

In collaborations between dance and technology, an array of complications can arise that debilitate the artistic outcome. First, the amount of time in the rehearsal process can become uneven, focusing on the development of technology to the detriment of movement creation. This can present a problem when there is no dialogue and collaboration occurring between technologist and choreographer during rehearsals. The process of conducting “open heart surgery on the motors,” as Biorn described, took “a huge proportion of time...kept me busy” (2004). Rainer identified herself as “Biorn’s errand girl, going back and forth to Lafayette Street to buy motors, transistors, circuit boards, and other paraphernalia required for the programming of the remote controlled ‘events’ in my piece” (2006, 275). But even in the process of her work, roles became muddled. Rainer might have identified herself as an ‘errand girl’, in keeping with how women perceived their role with technology more generally, but she also put significant pressure on Biorn to uphold her artistic intention regardless of technical finesse.

For example, although Rainer now emphasizes her hostile attitude toward technology during this time, some of her ideas around what to devise were quite profound. After the showing of her films in *Carriage Discreteness*, she wanted the screens to topple down, removing the stability and the prescribed functionality of the device altogether. As the engineer Biorn observed, “The idea that you would build something that would fall apart . . . in a programmed way . . . turned my whole idea of engineering upside down” (Bonin 2004). In the world of engineering, the notion to disrupt or destroy does not correlate to their practice and idealization

to fix. Additionally, in an increasingly capitalistic system, the ideal is to create and repeat profitable products, not the other way around. In art, the structures of performance allow an opportunity to express and to challenge ideas, relatively, in an open, imaginative and experimental space of the theater. The ephemerality of performing challenges forms of representation and repetition (Phelan 1993) by offering resistance to production and innovation.

Within the performance event, more problematic divisions of labor dissipated as an unexpected juxtaposition of power occurred during the first showing. As dance scholar Sally Banes argues, the “dance stage has often reflected and reinforced, but has also formed and in some cases criticized cultural conceptions of corporeality – in particular, conceptions of women’s bodies and identities – and that through dance, men’s attitudes toward woman and woman’s attitudes about themselves are literally given body on stage” (1998, 1). In *Carriage Discreteness*, Rainer removed her body from the stage altogether, placing herself on the balcony to give directions through walkie-talkies to her fifteen performers (Figure 19). The technology enabled this departure. The device generated her presence onstage through her voice, but removed the visibility of her actual body.

Although Rainer undertook a directorial position, an uncommon role in the majority of her work, the technology restructured this act. As she remembers, “The walkie-talkies didn’t function. Nothing seemed to be happening...Rauschenberg suddenly appeared on his hands and knees at my feet to tell me that the electronic events weren’t working. Finally all I could do was instruct the performers to move the objects at random” (2006, 275). The failure of technology combined with her removal from the stage all created a particularly temporal and spatial distance from the act of objectification.

Although Rainer sees herself at the time in a controlling authoritative position, her removal^{xi} from the stage suggests something different. As she recalls,

On the evening of the performance I sat with my walkie-talkie in the remote balcony overlooking the 200x200 performing area like a sultan surveying his troops on a vast marching field. (The choice of this imperial position has been a source of much subsequent embarrassment for me). Why couldn’t I have allowed the performers to move the objects in any way they pleased? After all, the piece was about ‘the idea of effort and finding precise ways in which effort can be made evident or not’ But no, I had to exercise my controlling directorial hand (2006, 275).

Rainer was clearly appalled not only by the military historical implications and contexts in which this technology is used, but also by the specific situation of female artists under the power of the male gaze. In hindsight, this provided Rainer with a strategy to both evade objectification of her female body and to give space to other resonating agencies. Previously, in her most renowned work *Trio A* (1966), she choreographed movements in which the performer never acknowledged the spectator's gaze. Afterwards, she would continue working with this strategy in her film works, where she states, "I later brought this to a cinematic extreme – under the influence of feminist film theory – in my 1985 film, *The Man Who Envied Women*, via the strategy of eliminating the physical presence of my female protagonist, thus removing her from a sexualizing gaze, both on and in front of the screen" (2006, 243). Acknowledging the extremity of removing the female body altogether at this moment in time, this strategy operated as a productive counter-attack against the norms of objectifying female bodies on and off stage and screen.

Additionally, the failure of the other technical elements focused attention on Biorn's position, where not only did the proscenium stage and intensity of the moment destabilize him, but caused quite a visceral reaction in his own body as well. In a 2004 interview, he recalls the first performance after working tirelessly through the night with Rainer. He was situated in the control booth to manage all the technical elements in her work. All the functions were wired into the TEEM system, mirrored off of the ENIAC machine, but the wiring was configured backwards. While attempting to run the different technical events, he comments, "my stomach just literally dropped to the floor" (2004). Under the stage lights, he had to understand the problem and come up with a solution extremely fast which led him to control the show by jamming the stepper-switch with a screwdriver when hearing Rainer's direction. This experience really shook him up. He recalls,

I dislike being on stage and in that sense, *9 Evenings* was a nightmare, I really don't like to be in the lime light, but the artists, I know, performing artists, that is where they want to be...we didn't want to be there if things go wrong... engineers don't accept that bridges fell apart... get the heck out of the way, we aren't performing... apart from that, there was a lot of technology I never worked with before... kept these things in mind later on for design (2004).

The artistic process certainly aided in the engineer's ability to work with different technological devices, forcing him to dismantle the prescribed functions to create a new apparatus altogether. But the technologies also affected both Rainer and Biorn in different ways. The technical failure that occurred in the process, and even worse, on stage during the performance, reconfigured problematic binaries of power between 'human and the machine', 'male and female', and 'subject and object'. The TEEM machine and all other mechanical operations, were housed in a designated control booth, hidden from the audience in a central location in the Armory. To promote the spectacle nature of technology, the engineers placed the TEEM specifically to render the inputs of the machine invisible so only the outputs were visible onstage. A jarring moment happened in Rainer's performance that revealed the hidden components of technology. The programming of the events was organized backwards and Biorn had to react in the moment, a shift in how engineers usually operate — designing the tools and either having the artists operate the machines or letting them run automatically. Biorn had to improvise to keep the machine running, causing alarm and awareness, and, whether uncomfortable or not, connecting him back to his body.

The technology revealed its fallacy, where Biorn was the switchboard operator caught in the failure of the machine. Biorn had to adapt Rainer's queering of dance in the act of performance by the use of improvisation and kinesthetic knowledge. The failures of technology alongside Rainer's strategies with changing the functionality and design of the devices all created an opening up of space that deflected agency away from the typical auteur position of engineer or choreographer and toward a more material and discursive performance. The relationship of the various components of bodies, everyday objects, and technical objects allowed different behaviors and experiences to arise separate from the conventional components of narrative ballet and modern dance. Rainer was successful in queering dance and technology through strategies of improvising task-based movements in dance and of reconfiguring the functionality and design of technology. Although problems arose in the creative process, the constant tension altered behaviors and roles for a more productive performance. Within the performances of her work, an "assemblage" was created that avoided gender essentialism and

technological fetishism. The disruption continued even against the spatial confines of the Armory Space.

Challenging Audience Reception in the Armory Space

In the reception of *Carriage Discreteness*, critics and the audience were quite harsh, partly due to the preconceived expectations of a mega spectacle fostered by the exchange of art and technology and by the large, imposing scale of the Armory space. In one such common critique, critic David Bourdon stated, “I’d expected magic... For the technical things to be astonishing... [the audience was] ready, able and willing for a lot more than they were given” (1966). In Steve Paxton’s *Physical Things*, John Cage’s *Variations VII*, and Robert Rauschenberg’s *Open Score*, for example, audience members were invited to participate by becoming interactively involved or by moving through the works in close proximity to the technological inventions. In another comment about audience expectations, Deborah Hay stated that the audience was judging the event as the debut of “Art and Technology” and “were approaching it with a certain amount of – to use her expression – “greed.” They seemed to be saying, “OK, show me what you got!” It was as if the performances had already entered the circuit of consumption, were like a trade show or (as many people described them) a circus” (Dyson 2006, 12). This sentiment seeped through all of the performance works even if not intended. In another attempt at disrupting capitalist aims, Rainer confronted the normative behaviors of the audience.

In one pivotal moment during *Carriage Discreteness*, the audience became increasingly restless and rowdy by the multiple failures and mediocre use of technology. In this moment, Rainer decided to take action and directed Michael Kirby to walk toward the audience to deliberately confront the hasty crowd, which, in turn destabilized their power to objectify. Kirby, reflecting on his experience stated,

Soon, it seemed that all 1500 people in the audience were venting their anger at us. I had the impulse to turn my back, but that seemed like a cowardly thing to do. I folded my arms and stared at the clamorous packed stands, at least trying to indicate that I believed in Yvonne and what she was trying to do. They were exceedingly uncomfortable moments for all of us. At last the noise subsided, but one could not help but feel that

simplistic notions of ‘audience participation’ were being promulgated far too widely (Kirby 1968, 152).

The audience’s expectations were not met with the technology or with the performances shown. Rainer stayed true to her agenda, confronting the problem by her simple directive to Kirby. His walk, with no other material in hand or technical device moving, was the purest move to challenge the debilitating structures of space, audience, and technology in play.

From the beginning of their practice, the Judson Dance Theater was no stranger to working in unconventional settings, away from the traditional, proscenium stage of concert dance. In these contexts, artists were able to play with distances between audience and performers, focusing on the small nuances of movements that occur in the body intimately or those more exaggerated movements that are completely visible to the audience, whether from sitting formations around the stage or woven (placed) into the performance space. The spatial distance between the audience and actions on stage in the Armory space, however, erased such intimate moments and details of the performer’s body. In the case of *Carriage Discreteness*, the movement still revealed effort, and Rainer still followed her proclamations from the “NO Manifesto”. As such, the work still successfully upheld her intentions and prodded the audience to think further on their own position and place in this event.

In commenting about the spatial structure, Rainer sarcastically remarks, “the hand of God changed the hugely dispersed configuration into a slightly different configuration” (1974, 83). In this work, “[in] the arrangement of performers in a space in relation to the audience’s registration of its reconfigurations over time, we can hear in Rainer’s comment an awareness, dryly humorous, of the fantasy of control – ‘the hand of God’ – that was linked to the audience’s inability to fully perceive how the production was controlled” (Morse 2007, 15). Klüver decided that no explanation of the technology would be given, although most devices operated wirelessly and therefore the operations of the mechanisms were invisible to the larger audience. Biorn disagreed with hiding this information, stating, “I felt, at that time, if we had explained a little of it, that we might have ---that the criticism would have been a little less – instead of disharmony at the armory and those kind of things ---there would have been an appreciation that we were trying to use technology together with art to create things you couldn’t do... we might want them to appreciate the technology of what they are seeing” (2004). In *Carriage Discreteness*, the

visibility of the dancers' bodies, technical objects, and everyday objects was not as important as revealing the processes of "chance, disruption, and disarray [that] provided a piquant counterpoint to the predominant theme of control" (Garwood 2007, 40). Rainer was successful in causing such a reaction amongst the audience, diminishing issues of control that permeated the whole of the performance event.

The history and scale of the Armory Space echoed the problematic themes prominent within the *9 Evenings* event: the dominance of technology, the lack of visibility and intimacy, and control. Given the Armory's enormous size (some 150 feet long x 120 wide with a 160 foot ceiling) and acoustic properties (like long reverberation times), it makes sense that many of the artists in *9 Evenings* were interested in the use of wireless, remote control devices. As engineer Herbert Schnieder recalls, "Echo and reverberation times were as long as 5.5 seconds. Working on this large scale, many artists became interested in the use of remote control for various props and effects (Schnieder, as quoted in Kuo 2013, 272). In both Hay and Rainer's performances, the artists utilized remote controlled technologies as a strategy of reaction against the dominating power of the Armory space.

In addition to the problematic sonic conditions and large-scale area, the Armory embodied power in the art world and in the military. The Armory exhibited one of the largest modern art exhibits to come to America in 1913 and served as headquarters for infantry regiments of the United States Army: "the site was charged with a twofold impetus for art *cognoscenti* and the general public, although some *9 Evenings*' protagonists sought to make a strong point by using warfare technologies for artistic *cum pacific* aspirations" (Lacerte 2005, 2). In an era of advancing military technologies propagated from World War II to the Vietnam War, the Armory was an unlikely space for the Judson Dance Theater artists in their strategies to disrupt traditional concepts of art and politics for newly configured ways of working and showing. Yet, with the embedded histories instilled within the Armory, the artists and engineers still conjured up productive ways to collaborate and showcase a new frontier of artistic work. The strong reactions against these works reveals their success in challenging the dominant structure of space in its connection to high art and to military contexts. In particular, all three female artists of *9 Evenings* worked to destabilize elements of power reinstated by the large-scale architectural gaze through their attention to agency and materiality.

The two other female artists of *9 Evenings*: Deborah Hay and Lucinda Childs

Given the fact that there were two other female artists involved in *9 Evenings*, how does their work compare or support the same type of strategies Rainer employed in her artistic work? As Meredith Morse states, “Although Rainer and Hay would consider ‘energy’ rather differently in their later work, we can see a common interest at this time, as in Childs’ ‘Vehicle’, in the energy commensurate to a particular activity, and the movement of energy between forms and processes” (2007, 9). In the development of their work, all three female participants opened up the possibilities of agency by focusing on the affective and material potential of technology through bodily movement.

Hay’s *Solo*, for example, consisted of twenty-four performers (sixteen moving performers and eight remaining stationary) and eight remote-controlled moving platforms. Both moving performers and controlled platforms enacted movement through a walking motif, attributing “equal time and visual prominence to all the elements of the performance” (Bonin 2006). The program notes indicate that Hay had an “interest in creating a middle ground between seeing and not seeing” (1966). The performers could position themselves in any form on the platforms or not, as both elements could be either passive or active. The work was divided into three moments, with the musical composer directing all the “stationary” engineers on stage that controlled the remote-controlled platforms (Figure 20).

Art critic and feminist writer Lucy Lippard was quite critical of Hay’s work. “The statement is to some extent wishful thinking. The light was never so white, the evenness never so striking, but then, Miss Hay was another victim of technological failure...only three of eight of her remote control platforms, were working correctly...Deborah Hay was the most active performer (too active in contrast to the others); the rest varied as to quality. Something didn’t work out” (2006, 72). Although all of the platforms were not working adequately, this apparatus was not the only object on stage in action.

I disagree with Lippard’s overall critique of her work. Instead, it seems that Hay was playing with destabilizing the power of vision in multiple ways. Vision has been categorized as the most “cerebral of the senses” upholding the Cartesian division of mind over body. Feminist scholars have highly criticized the sense of vision due to its powerful association with the mind and “distanciation from the body,” as well as its power to objectify and control the seen object

(Marks 2000, 133). What is important to note in dancing, so often labeled a visual medium, is that the different components of the body in movement contain and emit more knowledge than what is visible. Dance can disrupt the hierarchy of vision over the other senses.

For example, in *Solo*, the performers were dressed all in white, positioned on or around the remote-controlled white platforms. On the side, all of the platform operators were in a row across the length of the stage. Hay's intentions were to attribute "equal time and visual prominence to all the elements of the performance, from the dancers and props to the lighting and soundtrack" (Bonin 2006). The moving bodies embodied the moving robotic platforms, alongside other sensual elements of lights, sounds, and space that created a particular affective experience for the audience. The crucial element of the bodies and technological devices moving in contrast to the stationary element of the orchestration of engineers was a provocative statement about objectification. The performance raised awareness about the power of who is able to see and what is being seen. Although the performance might not have gone as planned, the strategy was useful in its attempt to disrupt the power of the gaze, to reveal all human-non-human phenomena as agential participants, and to demystify the spectacular, magical component of technology.

Through different strategies to open up possibilities of agency and to disrupt power structures, Lucinda Childs's *Vehicle* was divided into three movements to explore parallel situations that played with the qualities and limitations of each stage element (technological tools, performers, space, light, and sound). Her work consisted of three dancers (William Davis, Alex Hay, and herself) weaving in and out of the various technological objects and spaces. Two main technological tools were invented specifically for this work: the Ground Effect Machine and the Motion Music Machine. The performer Alex Hay entered into the Ground Effect Machine, a slightly raised cubicle driven by two vacuum cleaner motors (Figure 21). The motors slightly lifted the cubicle from the floor, where anyone standing inside could move the device, depending on their weight, from side to side. The engineer Manfred Schroeder invented the other technical device, the Motion Music Machine. Schroeder stated, "Dancer Lucinda Childs was asking for things to translate body movements directly into sound, so that she could actually create her own accompaniment as she danced. We came up with a device that reflected ultrasonic waves from her body, then converted them to audible sound" (1967). The real-time creation of

the sound was projected by way of a visualized waveform on a screen behind Childs and transmitted through twelve speakers surrounding the space of the Armory.

In *Vehicle*, Childs generated an atmosphere more akin to recent works with digital technologies by creating apparatuses that enable performers to influence other outputs in real-time. Her focus in translating bodily gestures into sounds is one of the foregrounding motives behind much of the recent developments in motion capture technology to sensor-based devices. Through the Motion Music Machine, the movement of her “arms, torso and assorted objects (plexiglass cube and three buckets) suspended from a metal structure was intercepted by the beam, and sound waves were emitted that varied according to the different angles and speeds” (1967). In an intra-active relation, Childs’s movements changed the materiality of sound while the feedback received from the sonic outputs changed her movement patterns.

In discussing the relationship between bodies and interactive technologies, Johannes Birringer views “artistic practices that respond to technical interaction” as creating “an entirely new poetics [that] emerges when performers ‘navigate’ interactive environments, dive into data-based information...when the body becomes an instrument of a dynamic environment in which realities are generated and processed” (2008, xxiii). In this type of practice, the emphasis is no longer focused on the body as object, but on the reciprocal process between the “shifting relational architecture that influences her and that she shapes or that in turn shapes her” and the environment (112). As is evidenced by the engineer’s discussions, Childs was active in not only navigating this new environment using her body and the buckets to create the sonic soundscape, but also in creating the initial idea behind the development of the technological devices. In turn, she herself was motivated by the system she created, through how her body and the buckets moved.

In the case of *Vehicle*, subjectivity or even the notion of a gendered body was rendered inconsequential to the reciprocal interactions that occurred between the performing bodies, objects, and technological devices. In earlier works of Childs, she “devised her own method of evolving movement material by manipulating objects” with a sense of energy created by everyday experience (Banes 1979, 134). The motifs around energy, effort and the use of objects, bodies, and technology follow this trajectory in creating a complex web of entangled agents ricocheting off each other to create the performance event.

Furthermore, in solidarity with both Rainer and Hay, Childs's work also raised concerns around issues of visibility: What are technology and the body doing? What are their purposes, and how are they displayed to the audience? Curator Catherine Morris, who was responsible for a large scale retrospective of *9 Evenings* in 2006, comments that Lucinda Childs's "technological experiment succeeded in making the animate nature of electrical frequencies visible to the human eye, transforming them into a vehicle for dance-like movements" (2006, 11). Yet, not all critics were completely convinced of the relationship established by Childs between bodily movement and the resulting transduction into visualized patterns. Lucy Lippard argued that "there were all kinds of fascinating effects in operation, but the visual result was not as clear. Ironically, the concept was blurred by technology and technology by action. Yet this is one work which attempted to utilize electronic devices in an entirely new way...it did move into an area of pure scientism with the daring expected of an art" (2006, 72). The actual critique of Childs's work solidifies her success in disrupting the power of vision, blurred by the action of technology and the body, working in movement together.

Furthermore, Childs's *Vehicle* predates many of the ongoing investigations of visibility in interactions with technology, asking whether audiences have a desire to understand the importance of real-time manipulation or not, and whether this changes the intention, the narrative or content, and the aesthetic components of the work. In interactive systems, the question of whether there is a need to make systems transparent (visible) or receptive (understandable) to an audience which otherwise might be "invisible (the mapping from input to various forms of output)" is debated (Birringer 2008, 146). As seen through the commentary from Morris and Lippard, two different perspectives emerged on how technology did or did not make visible the effects that it was producing. In Childs's work, the movements of her body and that of the buckets created actual sound waves and projections, signifying that such technological processes can be made visible by viewable images, but how close the connection between the sound being processed to the waveform image is unclear.

The coupling of sound and gesture has quite an extensive history in the field of music and was not particularly new. Yet, the difference was in considering the whole body within a responsive environment. The need to adapt to a dancing body shifted the technical design and predated recent technology used in the creation of digital dance performances. The impetus to destabilize the power of vision was a strategy of the time to disrupt objectification of the female

body, which had been overtly sexualized in dance. But it also provided an opening to consider the other elements in action, to account for their agency and affective components to their bodies, to the audience, within a specific time and space.

Conclusion

The event of *9 Evenings* still haunts the dance and technology spectrum to the present day, specifically as it challenged stereotypical gender roles and the development and use of technology. *Carriage Discreteness* historically roots my investigation within the early development of computational devices in the era of the Space Race. Within this decade of seemingly limitless technology, where disciplinary vigor and codification of techniques were not yet defined, the era was ripe for transformations. The materiality of computer code was based on a binary system, but did not rely on any particular gender to function. Women's work included the job of programmers. Furthermore, the focus to the body in politics spurred by the social movements of the 1960s presented opportunities for marginalized others to speak up and to challenge traditional conventions in array of different systems. The climate of ambivalence and disarray opened space for the Judson Dance Theater's female artists to interrupt the disciplining of the female body machine.

Rainer, Hay, and Childs all created works that were "examples of feminist dance actions, of body art which escapes phallocracy" (Export 1989, ed. Robinson 2014, 352). In revealing the process and effort of all agents in the performative act, all three female choreographers demystified the spectacle by shaking up the dominant modes of technology, dance, and gender, influenced by John Cage's teachings of chance operations and by Judson Dance Theater's interest in the *everyday* and task-based movements. In questioning what is feminist about technology in performance art practices in the *9 Evenings* event, all three female choreographers investigated questions of authorship and intentionality on the part of the choreographer, performer, objects, technical apparatuses, and spatial configurations. Particularly in Rainer's work, the process and performance queers structures of gender, technology, and dance, providing a more hopeful and egalitarian way of making and presenting performance art.

Yet, in the process, prescribed gender roles persisted in labor roles. Artists performed menial technical tasks as cheap workers, and, in turn, lost control of their formidable auteur role

of choreographer. In collaborations between the engineers and female choreographers in particular, issues and tensions arose that further disturbed the creative process and focused too much attention on the creation and execution of the technical devices.

Despite these downfalls and particularly within the aspects of dance, gender, and technology, however, Rainer made important strides toward destabilizing power structures, even within a male-dominated event such as *9 Evenings*. With technology, Rainer took Biorn out of his comfort zone by redirecting engineering —asking him to destroy technical objects rather than produce something new. In dance, Rainer took the process into the performance event with her improvisational directives, everyday movements, and task-based choreography.

Within the performance event, technical devices were elements in an assemblage that only operated by the forces and actions of other elements (performers, Biorn, Rainer, and the everyday objects). The equal weight she places on all entities enables their agency to change the whole of the performance experience. The action does not rely on one object alone, but the continual process of all entities to shape and change the spatial and relational configurations.

Rainer thus created a dynamic entwinement of agency, where through the action of these specific objects (human and nonhuman) the “ongoing reconfiguring of both the real and the possible” (Barad 207, 177) is generated. Rainer broke down the hierarchical power structures involved in the relationships between technological apparatuses, everyday objects, and human bodies, mirroring that of agential realism. Her performance was a successful intervention, shown by the hostility of the audience, in queering structures of dance, gender, and technology within the space of the Armory.

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ⁱ For more information about the specificity of the work, please see Vincent Bonin's description at <http://www.fondation-langlois.org/html/e/page.php?NumPage=626>

ⁱⁱ For a list of the two sequences, see http://www.fondation-langlois.org/pdf/e/carriage_discreteness_en.pdf

ⁱⁱⁱ As editor-in-chief of *Artforum* Michelle Kuo describes, the Theatre Electronic Environmental Modular (TEEM) was a "system for wireless remote control of lights, sound, video, and other effects. It was the master network of *9 Evenings*, comprised of nearly three hundred components and used in some manner by all the artists in their pieces. Klüver described TEEM as the first electronic system built for onstage use and a step toward the possibility when the computer could be part of an actual performance" (2013:272).

^{iv} The work of Hay and Childs in *9 Evenings* reveal strategies similar to Rainer.

^v Fredric Jameson argues that the forces in play during the 1960s are “new ones, on which the older methods do not necessarily work. We have described the 60s as a moment in which the enlargement of capitalism on a global scale simultaneously produced an immense freeing or unbinding of social energies... Yet this sense of freedom and possibility—which is for the course of the 60s a momentarily objective reality, as well as (from the hindsight of the 80s) a historical illusion—may perhaps best be explained in terms of the superstructural movement and play enabled by the transition from one infrastructural or systemic stage of capitalism to another” (1984:208).

^{vi} For more information on this matter, see the journals of Simone [Forti] Whitman, “A View of 9 Evenings: Theatre & Engineering,” 1966, manuscript, 20, E.A.T. Records 940003, box 2, folder 16, where she comments on the situation of the artists undergoing “engineer-directed” activities.

^{vii} After the 1980s, women’s participation and involvement in computer science steadily decreased.

^{viii} Within the women’s movement, three distinct groups forged the path to end inequality within both the social and political realms: white, middle class women either in liberal organizations such as the National Organization of Women (NOW) or more radical movements within the New Left; African-American, Puerto Rican, and Chicana women in addition to their fight against racial and class injustices within the civil rights movements; and lesbian feminists. Liberal, white feminists “worked through accepted political channels to seek equality for women in the existing system...while radicals sought to remake that society” (Bailey 2001, 127). In NOW’s Statement of Purpose, written by Betty Friedan in 1966, demanded equal pay and equal employment opportunities regardless of sex, race, religion, and national origin. They included other oppressed groups within their political aims, but were not equipped to deal with highly troubling issues of abortion, rape, sexual harassment, and more. Representing the New Left, student activists formed the newly named Students for a Democratic Society in the early 1960s where women were increasingly productive as effective organizers and as managers across both racial and class divides, but problems were on the horizon. Their “background, education, ideology, and experience all primed the New Left women for equality. Yet their experience in the national movement was confusing, grating...in public, at the big national meetings, women had trouble making themselves heard...Ambition, expected in a man, looked suspiciously like ballbusting to the male eye” (Gitlin 1987, 367-368). Within a typical gate-keeping boy club attitude of fraternities and tough competition, it was difficult for women to find their place even in an atmosphere supposedly supportive of their cause.

^{ix} Referred to more as Cage’s children than Cunningham’s, the teachings of Zen Buddhism, chance procedures, the collective process, and the value of the everyday heavily influenced the diverse range of choreographic styles that grew out of the Judson Dance Theater. One such choreographic style was labeled postmodern dance, defined as a practice of objectivity incorporating a diverse amount of artistic practices, and an analytic expression governed by concepts, rules, problems, and more (Kirby 1975; Banes 1980; Bertens 1995).

^x In a pertinent discussion around innovation, historian scholar W. Patrick McCray raises important concerns from this decade on how innovation has and is defined from academy to national policies. Historically, “automation and innovation, from the 1920s through the 1950s, displaced tens of thousands of workers” by the increase in research and development policies supporting goal-oriented technological achievements, from the space race to the electric computer (2010, 6). Currently and “albeit a narrower form of newness in technological

innovation,” political leaders depend on this ability to foster “jobs, prosperity, and economic growth (Ibid.). Innovation is tied to a national agenda, although the collaborative teams and ability to produce always foster a transnational team to get the job done.

^{xi} It was not uncommon to see a range of both male (Forsythe) and female choreographers (Childs) using technological apparatus to dictate movements from an offstage position.