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LEADERSHIP FOR SOCIAL CHANGE:
ILLUMINATING THE LIFE OF DR. HELEN CALDICOTT

LEAH HANES

A DISSERTATION

Submitted to the Ph.D. in Leadership and Change Program
of Antioch University
in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

January, 2015

This is to certify that the Dissertation entitled:

LEADERSHIP FOR SOCIAL CHANGE:

DR. HELEN CALDICOTT: THE UNTOLD STORY

prepared by

Leah Hanes

is approved in partial fulfillment of the requirements for the degree of Doctor of Philosophy in
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Abstract

This dissertation is a biographical study of the life of Dr. Helen Caldicott that details her life and work over the years from 1997 to 2014. The history of her significant role in the end of the Cold War and her influence in public opinion regarding nuclear power and nuclear arms has been well-documented through many books, films, and articles as well as her own autobiography up to this twenty-year-period. My study will help to fill the gap in her most recent life. In particular, I will explore the impact of her activism on society and her personal life in this period. Research methods include interviews with Dr. Caldicott, interviews with her collaborators, archival material, and deep reflection of the researcher. I am interested in what Dr. Caldicott understands now, about her work and her life, that may not have been apparent to her twenty years ago when she wrote her autobiography *A Desperate Passion* and was in the middle of her effort to educate a population about pending nuclear disaster. The electronic version of this Dissertation is at AURA, <http://aura.antioch.edu/etds/> and OhioLink ETD Center, www.ohiolink.edu/etd

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Introduction

My dissertation is a biographical study of Dr. Caldicott's life and influence during the years from 1997 when her autobiography *A Desperate Passion*, was published and 2014. I examine these twenty years considering character, motivations, and the style of her leadership through in-depth interviews and report on what is evident in the body of work by and about Dr. Caldicott. This examination will be centered on her impact on the nuclear debate and the impact of the debate on her personal life. It will explore whether gender had a place in Dr. Caldicott's approach and commitment. The research addressed in this dissertation is meant to illuminate Dr. Caldicott's story rather than predict anything about activism, Dr. Caldicott, or the nuclear industry.

For the purposes of this dissertation, leadership refers to leadership that evolves from a passionate, personal, and structured commitment to an issue or cause. Viewed through this lens, the leadership position of an individual is determined by the stance they take and then by those who choose to follow. In their book *Studying Leadership*, Jackson and Parry put it this way, "Leadership is a function of the whole situation. It is leader identity, leader behavior, follower identity, sociocultural context" (34). These authors go on to describe leadership even more simply, noting, "Certain personalities lend themselves more to demonstrating leadership than others. For example, a person who is organized, reliable and ambitious (high in conscientiousness) is more likely to be seen as a leader than someone who is unreliable and careless" (35). The deeply committed leader is also often a reluctant leader—a leader who has sacrificed, paid a high price, lost a career, and often more as a result of standing up and standing apart. In *Tempered Radicals*, Meyerson describes this aspect of leadership as, "In the course of daily interactions, we all face encounters that implicitly ask us to choose between raising a latent issue or ignoring it" (67).

These decisions, made in favor of others, offer a view of leadership qualities that only become evident as a result of that choice. Throughout the autobiographical presentation of Dr. Caldicott these traits are clearly represented. They are also common in *Nuclear Madness*, *War in Heaven*, *Missile Envy*, and other literature written by Dr. Caldicott regarding her professional and ethical decisions. They are in keeping with research about what is faced by whistle-blowers, and thus worthy of consideration in my dissertation as common leadership traits when examining leadership in the context of social change (Littellmore n.p.; Redekop 279). Amanda Sinclair in *Leadership for the Disillusioned* states, “After two decades of research on leadership and organizational change, there exists no universal set of prescriptions or step-by-step formulae that leaders can use in all situations to guide change” (28). In other words the leader becomes a leader by making decisions that draw followers. Kellerman and Rhode in *Women and Leadership* ask the two questions that drove this research “Does a gendered perspective advance our understanding of leadership?” and “Does it hold promise for closing the leadership gender gap?” (97).

Dr. Caldicott is a case study in effectiveness as a leader and as an agent of change. Dr. Caldicott’s leadership grew out of her decisions to speak out about what she saw as crucial information and these decisions were made out of her awareness as a medical professional of the devastating potential danger in exposure to faulty nuclear power plants, stockpiles of nuclear weapons, and/or nuclear war. Her strident and perhaps stereotypically Australian practicality, and contempt for positional authority, coupled with information, intelligence, and wit were signatures of her style and became elements of the structure of her work. In this chapter I will explain how I came to choose Dr. Caldicott and how I came to view her activism as whistle-blowing.

I have long been interested in spreading the stories of women who have made a difference, some by their willingness to step outside of their comfort zone. Often these women were disclosing a truth to those in powerful positions in challenging and uncomfortable ways as with the three women profiled in *Time* magazine's "Person of the Year" issue in 2002. The "Person of the Year" that year was actually three persons, all women. All three with a common title: Whistle-blower. Sherron Watkins at Enron and Cynthia Cooper at WorldCom reported on large-scale accounting corruption. The third woman, Coleen Rowley, reported on wrongdoing at the FBI. In interviews with *Time*'s reporters all three women explained that they made their decision knowing and fearing the repercussions of their actions. According to Lakayo and Ripley, the authors of the *Time* magazine story:

Their lives may not have been at stake but Watkins, Rowley and Cooper put pretty much everything else on the line. Their jobs, their health, their privacy, their sanity—they risked all of them to bring us badly needed word of trouble inside crucial institutions. (2 of 3)

They each still chose to come forward. Could gender have influenced their choice? Decker and Calo in "Observers' Impressions of Unethical Persons and Whistleblowers" suggest "It may be that females typically have more ethical intentions . . . females willingness to engage in unethical behavior declined sharply as moral reasoning level increased while males' behavior varied only slightly with moral reasoning level" (312). For many whistle-blowers, high level females in particular, the inability to remain quiet drives their decision to take the risk (Rehg, Miceli, Near, and Van Scotter).

This dissertation also has its roots in my 1984 experience producing a television series called *The Hanes Report* about women in non-traditional roles who were experiencing career success. In those early days of women in the business community many questions arose about where women could and could not go in their careers, and what we could and could not do, with

our careers, families, and lives. The television series examined how some women had broken the rules to take on the challenges of what common wisdom said were not options. They refused to stop just because someone said they should. My early reasons for producing that television series are reflected in the motivation behind my Ph.D. studies and my dissertation topic in particular.

The series lasted for five years and some of the women in the series set aside personal comfort and security to take a position on an issue and address an injustice. One woman who fits that description was Buffy Saint Marie, the Human Rights/Native Rights activist who I interviewed in 1984 for this series. For her efforts, she claimed the FBI blacklisted her during Lyndon Johnson's presidency, and again under President Nixon. Her anti-war lyrics were part of her reach beyond her Native roots calling on us all to recognize a global need for individuals to raise their voices for peace. Dr. Saint-Marie has an earned doctorate along with her numerous honorary doctorates, her 1982 Academy Award, and a Canadian Juno Award. The last two were for the song she wrote and performed called "Up Where We Belong." Saint Marie told me in our 1984 interview "I know I pay for my activism in my career but what choice do I have, I have this voice. I need to use it." She did not feel she had an option to be silent. She spoke of the responsibility that goes with visibility. Knowing that there would be retaliation did not stop her. Likewise, other women featured in the series knew they would pay a price and yet continued on to tell their truth in the face of great odds.

Dr. Paula J. Caplan also participated in *The Hanes Report* when she was Chair of Women's Studies at the University of Toronto. Years later, Caplan found herself in a difficult situation as a result of her work on an American Psychological Association's Diagnostic and Statistical Manual's (DSM) committee studying Premenstrual Diaspora which, if it were added to the manual would proclaim women's behavior during the days prior to her period could be

considered part of a mental illness. There were problems with the research, significant problems leading Caplan to believe the diagnosis could not be verified and therefore should not be included in the DSM. It was included in the next publication of the DSM known as DSM IV (Caplan 226). Caplan had discovered that the bible of her industry, the DSM, was based on flawed and often non-existent research. “My observations of the DSM process have taught me that far too little science goes into producing the handbook” (185). Dr. Caplan was faced with a dilemma—not just a professional dilemma, but also a personal challenge. She realized that the most essential text in the field of mental health might contain fraudulent research. People were writing to Caplan story after story of how their lives were being destroyed by a diagnosis from the DSM. Dr. Caplan became aware that these diagnoses were not always based in science. The book that she had used as her academic bible was now a book whose validity she questioned. Everything she believed about her profession was now in question. She wrote a book about the issue titled, *They Say You're Crazy*. Dr. Caplan invited me to a meeting with several individuals involved in diverse areas of the mental health community as whistle-blowers or victims. It was this meeting with Dr. Caplan that first inspired me to follow the research on whistle-blowing. In the room of whistle-blowers I heard story after story of how they had been maligned and misquoted by those within the DSM inner circles and in the press. In part, as a result of this experience, I was compelled to further my study and deepen my understanding of whistle-blowing and the consequences to those who come forward.

Dr. Caldicott, Dr. Caplan, and Dr. Saint-Marie each expected and experienced retaliation. For Dr. Caplan, it has been in the form of public challenges to her work and her credibility like the one I witnessed in 2012 when she spoke to an audience attending a conference in Los Angeles on Ethics in Psychology. As a result of her activism, Dr. Saint-Marie claimed she was

blacklisted by the Johnson and Nixon administrations (personal conversation, 1984). Dr. Caldicott's story of retaliation will be covered in the fourth chapter of this dissertation as part of the interviews, observations, and archival data collection that will be used to create her biography. In spite of the fact that these women expected the retaliation—and in spite of the fact that they ultimately experienced it—each of them stood their ground and has continued to speak out.

During the last decade there have been several high profile cases in which ethical lapses caused great loss to a significant portion of the population. Enron, WorldCom, both previously mentioned, and the Bernie Madoff Ponzi scheme each belong to a long, well-publicized, heavily male list of the many individuals caught in unethical practices. These companies were infected with a lack of integrity and, in some cases, criminal behavior (McLean n.p.).

As a result of the failure of leaders to disclose severe wrongdoing many individuals who worked for or invested in those companies have lost careers and fortunes. In most of the high profile cases reported in each of the organizations listed above, the perpetrators were male. In many cases there were individuals offended by what they witnessed who tried, albeit often with no result, to alert those in charge that trouble was imminent. Such was the case Harry Markopolos who attempted to alert authorities of misconduct in the Madoff case (Brown n.p.). Those who came forward often knew that they were at risk for retaliation. Saint-Marie, Caplan, and Caldicott came forward knowing that it would be at great personal and professional risk.

Situating the Researcher

In reading Dr. Caldicott's autobiography, *A Desperate Passion*, it was clear that early childhood trauma had a significant impact on Dr. Caldicott's career direction and her desire to help others. My earliest memories of self-reflection also emanate from childhood trauma.

Growing up in rural Canada, I had a close loving family who worked and lived on a small farm. The issues of danger and deception in my childhood came from outside my family. In her 2008 book *Leadership for the Disillusioned*, Amanda Sinclair explains that, “Inner integrity and confidence . . . was nurtured in childhood” (73). There is comfort for many, who have experienced childhood trauma, in the possibility that integrity and confidence are the gifts of overcoming these difficult issues in childhood. My parents, unaware of the damage the outside world could do to a child, showered us with acceptance and a belief in our ability. According to Dr. Caldicott’s autobiography, she had the same luxury, at least with her father. According to Sinclair, that is an important element in nurturing effective leadership.

In part, as a result of my parents’ support, I was an activist from long before I arrived at high school. According to my mother, I suggested to the church that they give the collection to a neighbor in need when I was six. I was not aware that this was unusual at the time. I ran most years for Student Council Executive because inevitably there was an issue I cared about like lengthening the school year or lowering the voting age. I won some elections and lost some; usually the loss was to someone who I thought much funnier and better with an audience.

It was the 60s, and girls were not visible in leadership positions. I remember everything about a spring afternoon in 1968 when I became a feminist. I was sitting under a tree with my boyfriend, Brian. We were talking about future plans. I told him I would farm. He explained to me the reality of being a girl on a farm with an older brother. I told him that my brother was not interested in farming. I thought about it all the time. Brian told me I should have a back-up plan. I went home that day and questioned my parents. They confirmed what Brian had told me. I was hurt that they did not take my desire to farm seriously. I may not be able to take over the farm but I was not about to let the fact that I was a girl determine any limitations on my career. Years

later, I was encouraged when I read in Peter Northouse's book *Leadership: Theory and Practice* to gain an understanding that women's style "tend[s] to be more transformational than men's" (267). He goes on to add that women "tend to engage in more contingent reward behavior than men, all of which are aspects of leadership that predict effectiveness" (267). Contingent reward behavior is the bullwhip of parenting. We engage our children in contingent reward behavior when we offer a trip to Disneyland in exchange for a detention free semester or any offer that rewards a change in behavior. This is the kind of data that can be instrumental in allowing women to accept nurturing strengths and stop apologizing for being a nurturer if that is their predilection.

I co-teach classes on adult developmental theory with Professor Albert Erdynast at Antioch University Los Angeles. I have often thought of this experience as teaching with training wheels. Dr. Erdynast has been doing this, with the student's consistently high evaluations, for more than forty years. This was a great way to learn—under the supervision of my academic advisor. Our combined approval rating has been favorable for us both. I bring a voice that is closer to where the students sit, confused and anxious that they will not get it by the time they need to write a paper and in need of explanations. I am the interpreter between professor and student. I am still a student, a doctoral candidate, but much closer to where the student sits than the forty-year veteran faculty. The same is true for most who will read this dissertation. I will be closer to the non-technical, interested citizen voice than to the scientist who may read this dissertation and with whom I will be speaking. I hope that this ability to bridge the information gap will assist me in making this dissertation of value, addressing Dr. Caldicott's story and whistle-blowing in the first person and activism for a woman at the center of the anti-nuclear debate.

Background on Dr. Helen Caldicott

Dr. Caldicott was a young mother, pediatrician, and anti-nuclear war activist when I interviewed her in 1987. She has been a constant voice in the debate over nuclear weapons and power for more than 40 years. Her activism was informed by what she understood about nuclear issues as a medical doctor. To interview Dr. Caldicott is to become sensitized to the medical dangers inherent in everything nuclear. At the time of my first interview with her, Dr. Caldicott had written *Nuclear Madness* and *Missile Envy*, and was traveling around the northern hemisphere informing audiences about the reality of nuclear fall-out and a consequent nuclear winter. Her authority came from her medical education. Her message was provocative and disturbing. For more than forty years Dr. Caldicott has maintained her determination to educate the population about the dangers of nuclear power in all forms. According to her autobiography *A Desperate Passion*, she was driven to some degree by a belief she shared with Thomas Jefferson as she quotes him regarding the need to educate the population, “An informed democracy behaves in a responsible fashion” (126).

In March of 2013 as I began my dissertation proposal I organized an event for Antioch University Los Angeles at which Dr. Caldicott was the speaker. The message was the same as my first interview with Dr. Caldicott. The only difference being that the world had suffered from several nuclear accidents. Specifically, although there are others, Chernobyl, with more than twenty years of data, and Fukushima, with three years of available data.

During the two days that Dr. Caldicott was in Los Angeles I accompanied her to interviews, luncheons, and dinners. As shared, I had been interested in Dr. Caldicott’s work since I first interviewed her for *The Hanes Report* in 1987. I left that speech and those two days renewed in my interest and determined to gain a better understanding of the medical arguments

for and against nuclear power. In gaining this understanding I was better positioned to offer a meaningful interpretation of Dr. Caldicott's activism.

Dr. Caldicott is an activist whose life's work has had a positive effect on each of our lives which will be clearer to the reader in the fourth chapter with comments made by Arnie Gundersen, a nuclear engineer who claims that Dr. Caldicott is responsible for the ban on above ground testing of nuclear weapons. In the fifth chapter, I will further explain my interpretation of the documentation that leads me to share Arnie Gundersen's claim (personal communication, 15 August 2014).

Dr. Caldicott has been a whistle-blower in the nuclear war and nuclear power field long enough to ruffle more than a few feathers. A pro-nuclear power film by Robert Stone is in limited release as I write this dissertation. Titled *Pandora's Promise*, the film portrays Dr. Caldicott in a negative light. This is not the only source of criticism of Dr. Caldicott and or her work. I have taken care to cover both sides of those stories and be diligent in my effort to be transparent and reveal my own enabling and disabling biases (Gadamer 568). My relationship with Dr. Caldicott as an interviewer and author allow me insight that might not be available to a first time interviewer. The same enabling bias that this describes can be seen as a disabling bias because it might prevent me from allowing that data to inform my conclusions. In the summary of my dissertation I will offer a window into the activism, the ethical decision-making, the role of gender and the personal journey of Dr. Caldicott. The ethical considerations for Dr. Caldicott when facing the decision to come forward were motivated by what she saw as the evidence of widespread danger to human life, and the story lies in how exposure to this information compelled her to make the decision to come forward while others who knew remained silent.

Definition of Whistle-Blowing

For most of my doctoral studies, I have focused on whistle-blowing and the question of ethics with a particular emphasis on the gender of those who step forward. My definition of whistle-blowing is important to the reader's understanding of my presentation, as it is broader than the legal use of the term. I define whistle-blowing as the act of anyone who is willing to hold up a red flag, or blow the proverbial whistle, alerting others to unethical behavior or even a pending disaster. This definition is different from the legal definition of whistle-blower, which is described at length in the Dodd Frank Wall Street Reform and Consumer Protection Act of 2010 (Frank 466) in which a whistle-blower is considered to be an individual inside an organization informing authorities at the Security Exchange Commission of unlawful behavior inside that organization.

My own exploration into whistle-blowing led me to the question of gender. There is an abundance of research attempting to answer the gender question as it relates to the likelihood of whistle-blowing. I have chosen to use the word gender rather than sex knowing it will give some pause. I will address my reasons for this decision in-depth as part of my literature review in the second chapter. Here it is important to note that the choice is conscious. I believe that what we are witnessing in the differences between men and women with regard to ethics is not based on DNA or genetics but on social conditioning and gender identification. And, I would note that the existent literature published after 2000 confirms that women tend to make the difficult decision to report wrongdoing and become whistle-blowers more often than do men (Mesmer-Magnus 285; Rehg, Miceli, Near, and Van Scotter 225).

In "The Incidence of Wrongdoing," Miceli and Near, researchers at the forefront of the current and earlier well-respected research on whistle-blowing, were part of a group that helped

coin the phrase, “whistle-blowing” (69). This is a term that causes me discomfort. The term “whistle-blower” applied to those who witness and report wrongdoing is fraught with negative meaning; however, researchers, the press, and indeed Congress have labeled these individuals as such. Associations with childhood memories of tattle-tales, snitches, and ratting have led many to pause with trepidation in response to the term (Lacayo and Ripley n.p.). This in turn tends to cast those responsible for reporting what is often dangerous behavior in a negative light. This kind of rhetorical baggage can undermine the work of justice. Richard Littlemore, in a blog posting about whistle-blowing for DeSmog, offers a similar perspective. He is reporting on the case of Peter Gleick, a scientist who leaked documents from Heartland Institute, an organization well known as a climate change denier. Littlemore wrote, “Whistleblowers . . . deserve respect for having the courage to make important truths known to the public at large . . . deserve our gratitude and applause” (4). I share Littlemore’s reverence for those willing to come forward with information about wrongdoing and reluctantly call it whistle-blowing.

Regardless of my discomfort and statements like Littlemore’s praising the act, the available data on the subject leaves an abundance of questions. The human stories are what ultimately become valuable in understanding the ramifications of whistle-blowing. Dr. Caldicott’s story offers a first-person account of what led her to this role as an internationally known spokesperson for the anti-nuclear movement, a position that often makes her the target of personal insult and slander from pro-nuclear power groups as was clear in a conversation with Dr. Caldicott and Arnie Gundersen (personal communication, 11 March 2013). I interviewed Mr. Gundersen (personal communication, 11 March 2013) for this research and he explained that in his 30-year career as a nuclear engineer he had never anticipated becoming a whistle-blower against the nuclear power industry. Mr. Gundersen told Dr. Caldicott (personal communication,

11 March 2013) in my presence that he had been led to believe she was a crazy person by those he worked with in the industry. This influenced my motivation to interview Arnie Gundersen for this document. He admitted in that interview that it was not until he became a whistle-blower and looked at her body of work that he realized he had been persuaded by scant evidence (Gundersen). Mr. Gundersen is someone I decided to interview for this biographical work because of his earlier comments regarding his assumptions and current position on Dr. Caldicott and her work. My report on that interview is included in the fourth chapter.

Profile of the Literature and “the Gap” in the Research Literature

It was clear in my review of the research that there are ample quantitative studies covering a variety of elements and perspectives on unethical violations and those who report them (Miceli and Near, “Blowing the Whistle,” 684). Many of those research projects are designed to examine the issues considered, along with the intention to report or not report wrongdoing. Less than 6%, (4 out of 96 studies) reviewed had a qualitative element. The levels of complication involved, regarding career, exposure in the press, and family impact, in the decision to report wrongdoing or to engage in social change movements at great cost to oneself, risking financial stability and family comfort, can often be more clearly revealed through the application of qualitative research. Thus, the lack of such studies leaves a gap.

Sinclair talks about the three “values” she considers imperative for effective leadership, “being reflective; working experientially; and thinking critically” (35). She goes on to say, “Leaders should always be asking themselves about their purposes, their assumptions, and the power relations of which they are a part” (36). These questions require a qualitative approach in order to understand the thinking that brings someone to their action. To understand the current debate regarding leadership and the differences and similarities in male and female approaches

to whistle-blowing as a leadership decision, I reviewed research dating back to 1954 conducted on the subject of gender and whistle-blowing that was both widely cited and peer reviewed.

I include a meta-analysis by Vadera, Aquilera, and Caza, *Making Sense of Whistle-Blowing's Antecedents*. The literature review examines 31 studies in which only one set of researchers out of the 31 claim men are more likely than women to blow the whistle. Miceli and Near, the experts mentioned earlier, were the researchers in this study with opposing results, which, in the context of the group of 31 studies, because of the authors' credibility, I chose to investigate. It was not clear initially why they came to the opposite conclusion from the other 30 studies. It was only when considered in light of the time the data was collected that the findings began to make sense. This will be covered more thoroughly in the second chapter.

Purpose of the Research

Regarding my choice to tell this story in the form of a biography, and why I choose to present Dr. Caldicott's story and not another, I present several ideas and positions. As earlier mentioned there is an abundance of literature about whistle-blowing drawn from quantitative research. Subsequently, the data is collected in the interest of measuring the likelihood of an individual to report wrongdoing in given situations and/or the likelihood of retaliation. There are other questions being asked; however, they are asked in quantitative questionnaires with little room for explanation. There is very little qualitative exploration of the ethical decisions and struggles in first-person accounts from those who have had the experience. The lack of qualitative research leaves one to speculate about the lived experience behind such life-altering experiences of whistle-blowing. I will present a first-person account, from an individual whose activism I have identified as whistle-blowing, and will expose the cost to her own life, hoping to inform and motivate current and future activists in their struggles to speak truth to power.

Jackson and Parry in *Studying Leadership* say “sense making” happens when we internalize a need and make meaning in a way that makes it personal and requires action. “Sense-making enables people to act and not just react; it enables them to take risks and not just avoid risk; it enables people to initiate change and not just accommodate it” (106). I began my research with a desire to understand the “sense making” that propelled and then sustained Dr. Caldicott.

Research Questions

To what degree does Dr. Caldicott attribute her whistle-blowing and activism to her gender and what sustained her throughout her years of activism? And, particular to this research, what in Dr. Caldicott’s experience has changed or remained consistent in the last twenty years? Dr. Caldicott’s experience, as a woman, a mother, a physician, a whistle-blower, an activist, and a social media personality and subject matter expert—in light of her ethical decisions throughout her activism—have been the focus of my interviews.

In the aftermath of that 2013 speech Dr. Caldicott gave for Antioch University Los Angeles, a man challenged her credibility as a medical doctor, stating that she has not practiced medicine for many years. Dr. Caldicott responded by explaining that she had been practicing “global preventative medicine” for several decades. A vital aspect of this dissertation is to address the influence and impact of Dr. Caldicott’s decision to practice “global preventive medicine” and speak-out to governments and against industry regarding the dangers of nuclear power. It is also important to consider the significant influence and impact on her life. My interviews were designed to examine the costs and the benefits in Dr. Caldicott’s life as a result of this leadership role. Her motivations will be considered in relationship to her strengths and her vulnerabilities. Her story will be situated within the literature regarding the ethical decision-

making practices of whistle-blowers. Was Dr. Caldicott aware as she began her activism that her leadership role would require that she put the well-being of others ahead of her own?

As part of my graduate studies I have been engaged in an exploration of ethics and, in particular, the differences and similarities in the way men and women approach ethical choices and challenges. The literature, in particular Miceli and Near's study "Incidence of Wrongdoing," suggests that women are affected differently than men by the issue of ethics and indeed the reporting of wrongdoing (93). Rehg and Van Scotter, in their collaboration with Miceli and Near in 2008, "Antecedents and Outcomes of Retaliation Against Whistleblowers: Gender Differences and Power Relationships," offer evidence that being female is associated with retaliation, especially with more serious wrongdoings. Rehg et al. state that,

Women who blow the whistle behave in a way that is inconsistent with their role as women and are likely to be more severely punished for this behavior than are men, for whom whistle-blowing may be viewed negatively, but not as role inconsistent. (224)

With the men in the study greater individual power, in other words the higher their ranking in the organization the less the likelihood of retaliations. This was not the experience of female executives who report wrongdoing; there was no less retaliation with greater individual power in the organization (235). I have applied that lens to my exploration of Dr. Caldicott's work in the nuclear arms race and the nuclear power industry. As a place to begin, I attempted to understand and explain what she and others perceived to be the influence of her gender on her decisions and choices in a time when others knew what Dr. Caldicott knew yet did nothing. In proceeding, the question arises: what role did gender play in Dr. Caldicott's decision to act?

Methodology

Biographical research offers the researcher a vehicle for studying the crucial moments of a life. In this case I use this methodology to illuminate particular aspects of the life of Dr.

Caldicott and the moments in the last twenty years that led to her activism and dictated her recent approach to her activism. Zinn writes in *Introduction to Biographical Research*:

Biographical research is a wide field of different approaches and research strategies with blurred borders and overlapping areas...it is not necessary that one follows a specific approach absolutely, rather these approaches are examples to illustrate different strategies, which could be modified for your own purposes. (3)

The latitude offered by Zinn to the researcher encouraged my exploration with Dr. Caldicott.

Richard Flacks wrote in *The Question of Relevance in Social Movement Studies*:

Biographical study was once a popular topic in the study of social movements. As a result, there is a very considerable literature on the personal development of activists, but work on this theme lost favor in social movement studies as the resource mobilization/political process paradigm became dominant. (10)

The value of biography in telling the story of Dr. Caldicott became evident with the writing of Zinn and Flacks.

Examining whistle-blowing as activism through a first-hand account from Dr. Caldicott opened a host of possibilities. Additionally, further examining her life through interviews with several other individuals who have worked with Dr. Caldicott, including Arnie Gundersen, a nuclear engineer turned whistle-blower and now part of Fair Winds, S. David Freeman, an engineer appointed by Jimmy Carter to head the Tennessee Valley Authority as well as having run The Los Angeles Department of Water and Power, and others who worked in the field during the time of her activism. Flacks also states that there are benefits to studying activists that go far beyond the documentation of a life:

Efforts to understand activist biography can provide insight into central issues of human personality and its socialization, of ideological hegemony and its contradictions, and the relationships between culture and experience. Studying activist motivation and persistence provides important counterweight and challenge to overreliance on rational choice models. (11)

Biographical research will allow for an examination of the effect of Dr. Caldicott's choices in her own life. In order to do justice to her story, a basic understanding of the science and medical issues behind nuclear weapons and nuclear power will be necessary. I will offer the research findings and education regarding the dangers, in language and terms understandable to a non-scientific community.

Biographical research offers a vehicle through which to explore, expose, and inform those interested in activists and, or, activism. Qualitative studies in general assist with this effort. Portraiture as described by Sara Lawrence-Lightfoot and Jessica Hoffmann Davis in *The Art and Science of Portraiture* (41) has influenced my approach to this biographical material and provides a platform from which the research for this dissertation was conducted.

Lawrence-Lightfoot and Hoffmann Davis caution researchers, "In presenting the story, the portraitist is ever mindful of the intentions of the original storyteller and the responsibility of retelling another's story" (118). Lawrence-Lightfoot and Hoffmann Davis insist the researcher be aware of the first person enabling and disabling bias he or she brings to the study (99). I will explore and declare that bias when appropriate or relevant. Their advice has influenced my approach to biographical research, which will be especially apparent in the third chapter, where I support my decision to use biographical research to shine light on particular aspects of Dr. Caldicott's life.

Summary of Chapters

In this chapter I have introduced my topic, activism and whistle-blowing over a forty-year period in the life of Dr. Helen Caldicott with an emphasis on what they have revealed to Dr. Caldicott during the last twenty years. I have attempted to give the reader enough information about my approach to Dr. Caldicott's work by sharing personal interest when

pertinent. I have given the reader a basic explanation for my attraction to aspects of biographical research as a methodology while I outlined the path I took from studying gender and whistle-blowing to narrowing my focus to one person's journey and what that journey can tell us through reflections on the quantitative data on ethics and the motivation of a whistle-blower. My research on whistle-blowing, ethics, and gender led me to Dr. Caldicott, and, as a result of my choice of a single participant engaged in a single focus, the nuclear energy debate plays a role in this biographical study.

In the Literature Review I offer a survey of those areas as they intersect. I unwrap current thinking in the field of whistle-blowing as activism, gender, and ethical decision making, and offer input from experts in their fields regarding the arguments for and against Dr. Caldicott's claims regarding nuclear energy.

In the Methodology chapter I present my considerations and reasoning behind the choice of aspects of biographical research as the methodology for this dissertation and explain how I applied the methodology. In this chapter I explain the process of gathering the data, and present the questionnaires developed for the interviews with the intention of collecting relevant, new data in personal interviews with Dr. Caldicott.

The fourth chapter, Results of the Study is a comprehensive report on my interviews and data collection. The fifth chapter, Discussion, includes an analysis of the data and recommendations for future research. The final chapter addresses the implications of my research for leadership and change.

Literature Review

My study began with an interest in whistle-blowers and the question of whether gender affects the ethical thinking that appears to be essential to whistle-blowing. Examples of research studies included in this review regarding ethics, gender, and whistle blowing are: participants reading a scenario or answering questions about how they would act if they were the actor in the scenario. A decision to blow the whistle when witnessing a wrongdoing, or the decision not to report the wrongdoing, constitutes an ethical decision and is usually addressed in the first person. This approach to ethics is relevant to my dissertation, because ethics would seem to play a significant role in the actions of activists, a category that I view as including many whistle-blowers.

Whistle-blowing actions are varied and in this study include whistle-blowing on a global scale intended to warn society of pending danger. Dr. Helen Caldicott, a woman practicing “global preventative medicine,” alerted the public of international nuclear danger. My research aims to shed light on this one woman’s activism as leadership and how this activism changed her life. My questions are designed to elicit insight regarding how ethics have played into her decision to become a whistle-blower, and to consider whether factors related to her gender might have contributed to her decision to blow the whistle on what she saw as pending danger?

The research for this section has two distinct areas of concentration, whistle-blowing and gender. This was my early focus leading to a more specific area of social activism in nuclear power and nuclear war as defined by Dr. Caldicott’s activism. First, I will briefly outline the current debate in the research regarding male and female differences and similarities in ethics and whistle-blowing. I will then discuss the literature that relates specifically to Dr. Caldicott’s activism regarding nuclear war and the nuclear power industry and then discuss the leadership as

activism literature as it relates to Dr. Caldicott. Throughout this chapter I will compare the research from these different areas as they relate to Dr. Caldicott's story. I will begin with the male and female question. I am challenged by this question when considering that others knew but Caldicott acted. One of my enduring questions is why, in medicine, a heavily male field, did others not come forward with the fierceness of Dr. Caldicott?

Gender Differences and Whistle-Blowing

Vadera, Aguilera, and Caza conducted a widely cited literature review on whistle-blowing that concludes the research about the differences between the genders regarding whistle-blowing is in a state of confusion. Vadera, Aguilera, and Caza claim, "The findings regarding gender and whistle-blowing are inconsistent" (556). The confusion and claim of inconsistencies center on whether the gender of the whistle-blower plays a role, and, if it does, are men or women more likely to be whistle-blowers? Although this is not the sole focus of my research, whistle-blowing is of value as a lens through which to view Dr. Caldicott's version of social activism and a lens through which to examine the research on ethics and gender with individuals who witness wrongdoing. In *Making Sense of Whistle-Blowing's Antecedents* Vadera, Aguilera, and Caza, among other considerations, address the question of whether the gender of an individual plays a role in reporting wrongdoing. The authors state that they have found conflicting data and therefore do not have sufficient evidence to conclude the role gender plays in the decision to become a whistle-blower (555). I question the claim that there are insufficient data as will be clear in the next few pages. In all but one of the studies included in this meta-analysis, women were more likely to be whistleblowers, and yet the authors state that there is insufficient data to conclude if women are more likely to blow the whistle. A single study, in which men were more likely than women to blow the whistle, gives the authors cause to question.

As I examined the research I was compelled to dig deeper into the analysis that led the research team of Miceli and Near in “Individual and Situational Correlates of Whistle-Blowing” (267) to make the claim that men may be more likely than women to blow the whistle. The fact that Miceli and Near authored the study made the data more compelling. On closer examination the reason for their comment became clear, as true in the time frame the data were collected, and yet questionable in relation to data collected in the most recent twenty years.

Miceli and Near’s data from “Individual and Situational Correlates of Whistle-Blowing” used archival material collected between 1954 and 1984 (268). The data was collected and reported in a document by the U.S. Merit Systems Protection Board. Miceli and Near report that men were more likely to intend to blow the whistle, or to actually blow the whistle, than were women (274). The weakness of the research is that in 1984 there were not enough women in workplaces who had access to information worthy of whistle-blowing (Bureau of Labor). According to the Bureau of Labor in the 2014 report “Bureau of Labor Spotlight on Statistics—Women at Work,” The three decades beginning in 1954 were a very different business and governmental environment with regard to the number of women in positions with access to information to report on or a clear system in which to report the wrongdoing without experiencing severe repercussions. Miceli and Near’s findings are the only ones identified by Vadera, Aguilera, and Caza as relevant to their claim of confusion on this topic of gender and whistle-blowing. That confusion may have been warranted in 1989, however, the balance of the research included in my study offers more convincing evidence for the argument that women are more likely than men to blow the whistle on wrongdoing.

In contrast to Miceli and Near, and in keeping with the majority in the Vadera, Aguilera, and Caza data, the Sims and Keenan study “Predictors of External Whistleblowing” indicates

that women are more likely to come forward at great risk to self than are their male contemporaries (412). The researchers gathered data from 248 participants of which 45% were women. Sims and Keenan state their data demonstrate that women are “More likely both to intend to report and actually to report wrongdoing than are men” (416). Sims and Keenan’s data were collected in 1998, more than a decade later than Miceli and Near’s most recent data. More women were in the workplace in 1998 in positions where they had access to information worth blowing the whistle about than they were during the 1954–1984 period included in Miceli and Near’s study, which could account for the difference in these findings.

Mesmer-Magnus et al. conducted a meta-analysis of whistle-blowing in organizations consisting of 26 studies that included 1,131 female and 1,707 male participants at a variety of levels in organizations (286). This is even more recent analysis than that of Sims and Keenan. The research included in the meta-analysis spans the three decades leading up to 2005 and addresses whistle-blowing in the following ways (1) intention to report wrongdoing, and (2) action taken to report wrongdoing through available channels. They report statistically significant difference in the data that “gender is positively related to whistle-blowing for women” (285). These data, as analyzed by Mesmer-Magnus et al., add credibility to the argument presented by Sims and Keenan that women are more likely than men to blow the whistle and begin to foreshadow the conclusions drawn by the majority of the research studied for this dissertation. This is of interest as evidence that there is a growing consensus among researchers that gender plays a role and women are the ones more likely to come forward with reports of wrongdoing than their male contemporaries (Mesmer-Magnus et al. 285; Sims and Keenan 411).

The meta-analysis *Gender Differences in Ethical Perceptions of Business Practices: A Social Role Theory Perspective* by Franke, Crown, and Spake is based on 385 studies with a total

of 11,144 men and 9,095 women. Franke, Crown, and Spake included studies in which the researchers address the question, “Was this an ethical thing to do?” (923). Franke, Crown, and Spake included only questions that were of generally accepted concepts of right and wrong behavior. They excluded anything that required more complex analysis. For example, to steal is right or wrong, but euthanasia involves more political consideration. They limited their choice of studies to the fifteen years between 1971 and 1996. Franke, Crown, and Spake state that women judged more things to be unethical than did men when given descriptions of questionable business practices with a statistically significant difference. “Compared with men, women were particularly critical of rule breaking and misuse of insider information” (926).

All but one of those studies reveals women to make more ethical judgments than men, the exception being that same lone study, “Individual and Situational Correlates of Whistle-Blowing” by Miceli and Near (1988), showing that men were more likely than women to be whistleblowers, which was conducted before many women were employed, especially in middle-level or upper-level positions, in the organizations that experienced whistle-blowing (Mesmer-Magnus et al. 258; Sims and Keenan 411). This is evidence of how some research remains in circulation well after its relevance.

Baker and Hunt explore the impact of gender on a team’s ethical judgment. The teams were formed randomly, except for the gender make-up of the team, which was deliberate but was done without the participants knowing it was part of the experiment. Some teams were composed solely of women, some solely of men, and some with both women and men. The teams were charged with making judgments to resolve a situation presented in the scenario. Participants were first tested individually prior to forming groups and then tested again as teams. The authors’ show statistical significance in the gender difference in individuals’ scores as well as the

difference between the all-female and all-male teams. Women, when tested individually, score higher than men tested individually. "All-female teams scored significantly higher with regard to moral orientation than did groups made up of all males" (Baker and Hunt 115). Also of interest was that all female teams scored higher than females' tested individually and all-male teams scores were lower than that of males tested individually. The data demonstrated a statistically significant difference between the all-female and all-male teams. The authors make the point that women score higher on ethical judgment than men individually and as teams. Teams that were mixed male and female were lower than the all-female teams and higher than the all-male teams.

In "Gender and Values: What Is the Impact on Decision Making?", Crow, Fok, Hartman, and Payne gave scenarios to 186 students in an undergraduate program and 45 graduate students, 48% were women. Crow et al. state that the only significant difference they found in ethical judgment was that women scored higher than men (257).

Beu, Buckley, and Harvey in "Ethical Decision-Making: A Multidimensional Construct," gather responses from 231 industrial psychology and business student participants, who were split into four randomly selected groups in an effort to measure the degree to which being accountable affects ethical judgment. The 133 men and 98 women read scenarios and then answered questions. Beu et al. state that, "Females in this study were significantly more likely to report ethical intentions than males" (101).

In "Gender Differences in Business Ethics," Stedham, Yamamura, and Beekun present the results of a relatively small study with 44 graduate students. The participants are asked to read three scenarios and answer the questionnaire that accompanies each of those scenarios. Stedham et al. state that they found women to be more likely than men to judge the scenarios as representing unethical behavior. They also claim that when men and women both judge a

situation as unethical, women are “less likely to be involved in the unethical behavior than are men” (169).

In “Gender Differences in Ethics Research: The Importance of Controlling for the Social Desirability Response Bias,” Dalton and Ortegren engaged 196 students, 64 female and 132 male. Dalton and Ortegren acknowledge that the literature indicates that women make stricter ethical judgments than men. They present the question, “Do women still score higher in ethical judgment measurements when considered against a strong desirability?” Dalton and Ortegren question if the research about women making ethical judgments more often than men is valid. The source of their question is based on females measuring a higher score on the BIDR instrument, which is designed to measure desire for likeability. In their opinion a desire to be liked informs and often corrupts the participant’s answers.

The conclusion drawn by Dalton and Ortegren, that there is no gender difference in ethical judgment when the BIDR results are applied, seems a stretch from the data. Dalton and Ortegren claim that a desire to be liked automatically translates into less ethical judgments. There is no clear link to that conclusion from the data.

In “Gender Differences in Double Standards,” Vermeir and Van Kenhove attempt to measure gender differences in ethical judgments using a student and non-student population of 184 females and 172 males between the ages of eighteen and sixty. The authors, using standardized scenarios, claim a statistically significant gender difference, with women in their study much more likely to classify a form of behavior in the scenario as unethical than are men participants (501).

Lund, in “Gender Differences in Ethics Judgment of Marketing Professionals in the United States,” presents the question, “Does gender affect marketing professionals’ ethical

judgment” (514)? The study included 370 marketing professionals, 52.5% of whom were women; all were members of the American Marketing Association. Lund claims that his research data show that men and women differ significantly as marketing professionals in their ethical judgment with women often making ethical judgments when men saw no ethical issue in the scenario. Lund reported that the only significant difference in his study was that of gender (514).

In “Investigating the Effects of Gender on Consumers’ Moral Philosophies,” Bateman and Valentine collected 283 questionnaires completed by graduate and undergraduate students, 43.8% by women. The authors state that there was a statistically significant difference in how men and women state their ethical intention, with women showing higher ethical intention than did men (413).

In *Personal Characteristics Underlying Ethical Decisions in Marketing Situations: A Survey of Small Business Managers*, Marta, Singhapakdi, and Kraft conducted a study of 226 participants who were members of the American Marketing Association and small business managers, 46.9% of whom were women. The participants were asked if the person’s behavior in the scenario is ethical or unethical. Results showed that women managers are more likely than men to classify questionable behavior as unethical. Women also answered that they would behave ethically if they were the person in the scenario more often than the male managers in the study. “Specifically, the results indicate that female managers tend to have a more ethical intention than male managers” (599).

In “The Ethical Decision Making of Men and Women Executives in International Business Situations,” Valentine and Rittenburg examine ethical intention with a population of 56 women and 166 men from the United States and Spain. All participants were executives in their organizations. The authors claim that females registered a greater intention to behave ethically

than men. The authors call for further research to better understand the difference stating this “needs to be examined further in order to understand why females display a greater intention to act ethically” (130).

Beekun, Stedham, Westerman, and Yamamura’s research suggests similar patterns with regard to gender differences in “Effects of Justice and Utilitarianism on Ethical Decision Making: A Cross-Cultural Examination of Gender Similarities and Differences.” Beekun et al. engaged 161 respondents in three countries; Germany with 22 men and 21 women; Italy with 28 men and 17 women; in Japan 46 men and 17 women, all of whom were graduate students with some work experience. They find that women report an intention to behave ethically more often than men in the study (309). The sample size is small, however, the cultural diversity makes the findings interesting in light of the fact that these data are consistent with previous work included in this chapter.

In “Intelligence vs. Wisdom: The Love of Money, Machiavellianism, and Unethical Behavior across College Major and Gender” (2008), Tang and Chen investigate the effect of a short ethics intervention (a three-hour lecture about ethics) on students’ intention to behave ethically. There were 198 students in the study, 128 men and 70 women. The students took a test at the beginning of the semester and then, four weeks later after the ethics intervention, they took a second test. They were given scenarios in which a person behaved in an ethically questionable way. The participant was asked the likelihood that they would behave in the same way as the individual in the scenario. Tang and Chen found that gender was indeed a moderator indicating women had a higher intention to behave ethically than did the men, especially when it comes to money. “The love of money is directly related to unethical behavior for business students and male business student, in particular” (17). They also report there was an increase in intention to

behave ethically after the ethics intervention in the post-test for women but not for men. Tang and Chen suggest that women respond to ethical scenarios and questions with higher intentions to behave ethically than do men and women adjust their behavior as they learn new information.

Finally, in “Fair Trade (FT), Ethical Decision-Making and the Narrative of Gender Difference,” a study conducted in 2010 by Morrell and Jayawardhena, the participants consisted of 688 retail shoppers in England, 368 of whom were women. The authors examined the differences between genders when it came to the purchase of Fair Trade, telling other people about the purchase, and then telling others about the value of Fair Trade and Fair Trade products. The authors found that there is a significant difference, with women being more likely in all three to purchase, tell others of the purchase, and inform others of the value of Fair Trade to the workers. “The gender differences we found are not easily explained away...women in our sample were more likely to report that they would offer word-of-mouth recommendations and would act as social advocates” (401).

This study was of particular interest in part as this population is chosen randomly as prospective participants were departing from a shopping experience. It is relevant to my dissertation as it speaks to the question of activism as a result of ethical decision-making. The women in this study applied their learning into action regarding Fair Trade as it impacts the community both as consumers and suppliers more often than the men in the study.

My interest in the study of ethical decision-making is fueled in large part because of a desire to understand the motivation of women whistle-blowers and activists in general and Dr. Caldicott’s whistle-blowing and activism in the last twenty years in particular.

Research on Gender and Ethics

As a guide while reviewing this literature I relied heavily on *Thinking Critically About Research on Sex and Gender* by Caplan and Caplan. This is the same Paula J. Caplan mentioned in the first chapter as a participant in the television series *On Women and Success*, along with her son, Jeremy B. Caplan, also a Ph.D. in psychology. The authors suggest that some scientists have been influenced by studies on gender from the past that are unproven or even disproven. Often the research that becomes the base of much of the study on a subject is research that attracted significant media attention, leaving many scientists believing what they hear or read, and they often do not invest the time and effort to rethink, investigate retractions, or fact check their belief. The authors offer a word of caution to those who analyze the data, “Scientists, no matter how well credentialed, are not completely objective and they are by no means infallible” (77). I found this council helpful when reading the research on gender and ethics. A researcher making a claim does not make the claim valid and one study cited by many researchers in many studies can be flawed as appears to be the case with Miceli and Near’s study “Individual and Situational Correlates of Whistle-Blowing,” which states women are less likely to report wrongdoing than men (Mesmer-Magnus 285; Sims and Keenan 412).

I am satisfied in this review that there is a significant difference between the genders regarding ethical thinking. Women, it would seem from the literature, consider ethics as part of the evaluation process of decision making more than do men. This poses the question, where does the difference come from? DesAutels, in “Sex Differences and Neuroethics,” her review of the science on brain differences between the genders, claims that these differences in approach to ethics are not determined by brain functioning. According to DesAutels, there is little evidence

that there is any significant difference in brain functioning as a result of gender. She points to culturalization as the key differentiator:

Women and men are creatures with human brains about which neuroscience has something to say, but they would emphasize in addition that we are also creatures embedded in particular social structures with learned patterns of behavior that contribute to how our brains are organized and shaped. (96)

DesAutels, as well as Caplan and Caplan, suggest that we do not have definitive answers about brain functioning to say anything about the similarities or differences between the genders. Both claim that measurements attempting to discover the differences report minimal results and much of what would be needed to better understand the differences is not yet available in the scientific literature. For this reason I have limited my study's conclusions to the gender impact on ethical decision-making rather than considering differences as a function of the male or female sex.

According to DesAutels, "Objective facts about sex differences are, in general, difficult to come by. Neuroscientific facts about sex differences are no exception" (96).

What we do know from the literature is that there are differences in the way men and women approach and experience ethics. Understanding those differences could have profound effects on the way we approach future education and culturalization of boys and girls. This is an area ripe for future research.

The Ethical Challenges in the Nuclear Industry During Dr. Caldicott's Activism

With this research I hope to gain a background understanding of the culture in the nuclear field and the practice of medicine that Dr. Caldicott found herself in at the beginning of her career. Following that thread I will examine the role Caldicott played in response to the threat and what impact that involvement had on her life and in the international culture regarding nuclear armament. I will then follow the research for the last two decades of Dr. Caldicott's activism.

Some of Dr. Caldicott's concerns are addressed by Collins in *Behavioural Differences in Irradiated Persons Associated with the Kyshtym, Chelyabinsk, and Chernobyl Nuclear*

Accidents;

1948, the USSR began operating a plutonium production plant called Mayak in the Kyshtym/Chelyabinsk region. In 1949-51, an accident released 3 million Ci of radiation into the Techa River. A second accident occurred in 1957, southeast of Kyshtym, when improperly ventilated storage tanks exploded, and 20 million Ci of radioactive waste were released into the atmosphere. (Collins 548)

As a result all of the food and water were contaminated;

The people were neither informed of the accident nor of their internal or external exposure to any form of ionizing radiation. Consequently, all the food and water consumed during this time period was contaminated with radiation isotopes . . . of 38 villages along the Techa River before the accident, only 4 are safe to inhabit today. (Collins 449)

Because the population was not warned the study offers clear evidence of the impact. The incidence of acute myeloid leukemia in the region is double that in the control group. A host of other cancers are, compared to the rest of the population, five to ten times higher in the region where the accidents occurred (Collins 450).

We still have news of Fukushima, not much any longer about Chernobyl, and even less of the finding from these Russian accidents. The people of these regions are reminded daily of the ongoing dangers of nuclear power; the lumber in the region cannot be harvested, the river water carries contaminated water into larger bodies, and they cannot grow their own food (Larson 227).

Chernobyl—The Medical Realities

According to Trundle, author of "Biopolitical Endpoints: Diagnosing a Deserving British Nuclear Test Veteran," most of the soldiers affected did not know about the Chernobyl disaster until the voices of the anti-nuclear movement were heard in the 1980s (882). In "Brain Damage Following Exposure To Low Doses Of Ionizing Radiation As A Result Of The Chernobyl

Accident,” Konstantin Loganovsky makes the claim that “excess dysfunctions was found among Chernobyl survivors exposed to low doses of radiation *in utero*” (203). In a subsequent paper titled “Disrupted Development of the Dominant Hemisphere Following Prenatal Irradiation” Loganovsky et al. concluded that “Exposed children were found to have neuropsychiatric disorders, left-brain neurological signs, lower full-scale and verbal IQ” (274). The authors call for more research to better understand the relationship between radiation and developmental problems.

The researchers in Novikov et al.’s “Changes in Cerebral Bioelectric Activity in the Chernobyl NPP Accident Liquidators” describe accelerated aging as common among the studied group. Kholodova and Zhavoronkoya make the claim that after “Twenty years of observation of the health of the 1986-87 Chernobyl nuclear power plant accident cleanup workers revealed time-dependent increases in impairments to physical and mental health” (26). They present figures that are more than double the instance in the control group. Also, Nikiforov et al. in “Characteristics of the Electroencephalogram in Chernobyl’s Clean-up Workers in the Remote Period,” state that studies show “pronounced changes in the cerebral bioelectrical activity in Chernobyl cleanup workers in the remote period after the accident” (699). In layman terms, accelerated aging.

In a 1996 paper titled “Depleted Uranium: A Tragedy of the Commons,” Christina Larson explained the danger of the cleanup this way “ingested or inhaled, particles accumulate especially in the kidneys, lungs, liver, bone tissue, and reproductive organs. Health hazards of exposure include cancer, kidney damage, and genetic defects” (218). Numerous other scholars confirm her work (Gofman 162; Solnit 3). Larson went on to point out that “Workers and neighbors near military bases and more than 50 domestic U.S. sites where DU has been

manufactured, assembled, disposed of, or tested are also at risk” (218). Larson quoted a statewide survey (Flanders 292) by the VA in Mississippi that “revealed that 67% of the children conceived by Gulf War veterans since the war have been born with severe illnesses or deformities” (Larson 221). This study implies that the problems with nuclear weapons are not limited to the first round of exposed victims.

Larson quotes O’Dwyer’s Public Relations Services Report, a well-known trade journal in the public relations industry, suggesting that a public relations for the military “is a key weapon in the Pentagon’s arsenal” (223). Larson also reports that by the end of Reagan’s second term \$100 million was being spent annually “to manipulate the public’s impression of the military-industrial complex” (225). This contributes to the general public’s lack of awareness of the dangers of nuclear production and begins to explain the powerhouse that Dr. Caldicott has faced in opposition to her message.

Fukushima: Three Years Later

In “To Fukushima with Love: Lessons on Long-term antinuclear citizen Participation from Three Mile Island,” Angelique and Culley compare the experience of the activists that came out of the Three Mile Island accident with the realities facing possible activists from the Fukushima disaster. The authors state, “technical disasters, such as plane crashes and nuclear accidents, are typically blamed on failed technology and human error” (210). Both play a role in the Fukushima experience. Social scientists have begun to refer to some of these disasters as “na-tech” (209) meaning there is both nature and technology to blame. A tour of the Fukushima plant the day before the tsunami and earthquake would have included a view of the state-of-the-art system of tidal wave walls and generators for back-up. However, the wall was built to withstand a tidal wave one-third the size of the ten meter high waves that hit the plant. Also, the generators failed because they were

below the plant and destroyed by the flooding. Nature, yes, technological failure, yes, as a result of human error in judgment. The first-time activists that were interviewed after Three Mile Island and from Fukushima almost all made statements about “their emerging sense of obligation to fight on behalf of others, especially children” (215). These first-time activists found “the idea that they had been misled by government and industry was unbearable and demanded action . . . women, in particular, noted the condescension infuriated them” (217). Many of the participants in the study mentioned the “stress associated with the complexity of nuclear technology coupled with an influx of contradictory messages” (217) pushed them to gain an understanding of the technology and share that understanding to educate the base. The authors lay bare their reasons for and bias in the research in the following quote:

As a matter of academic discourse, we aimed to illuminate theory and research to promote action, but as people who have both lived in the shadow of Three Mile Island for years, we are more than community researchers. We are also embroiled in our nuclear communities. (224)

On March 11 and 12 of 2013 I attended a symposium organized by The Helen Caldicott Foundation and Physicians for Social Responsibility at The New York Academy of Medicine at which numerous scientists presented research findings indicating concerns springing from the Fukushima accident in 2011. There were a significant number of activists from Three Mile Island in the audience who made themselves known. The former Prime Minister of Japan, Naoto Kan, addressed the audience via video with a sobering narrative regarding the decisions and reaction of the Tokyo Electric Power Company and the Japanese Agency in charge of nuclear power plant. Kan, who was prime minister at the time of the Fukushima disaster, explained his understanding of how to be safe moving forward with nuclear energy in Japan and around the world, “I am convinced that not having nuclear power plants is the safest nuclear power policy and energy policy” (n.p. 264.55.).

Dr. Timothy Mousseau, who spoke the first morning of the conference, is a researcher who has been conducting studies of the long-term health impacts of nuclear accidents originally at Chernobyl and now adding Fukushima to his research. As I write this document Dr. Mousseau was an expert consulted on a *60 Minutes* item on Chernobyl. He lists among his major findings that most organisms living in these areas show damage in reduced fertility rates, for example, to a level of 40% of birds, as well as reduced lifespans/early aging and smaller sizes. The more contaminated the area the greater the damage measures. The effects on biodiversity are evident in the data. Indirect and speculative questions that arise originate in Chernobyl because of the fact that, ironically, the radiation levels are low enough to allow for survival and thus we have data indicating that the damage remains in the offspring. Secondly, the effects of nuclear contamination are not like a black hole that kills the organism immediately, but rather we see the effects of mutation in areas that have not seen radiation (Timothy Mousseau, personal communication, 11 March 2013).

Also among the speakers was scientist Arnie Gunderson, a pro-nuclear engineer for more than thirty years who became a whistle-blower in the 1990s as mentioned briefly in the first chapter. Gunderson remained pro-nuclear power until he became a whistle-blower. Gunderson built Fukushima rods, and worked on over seventy nuclear power sites consulting on reactors. I will elaborate on his career in the fourth chapter when I report on my interview with Gunderson about Dr. Caldicott's work.

Gunderson went to Japan. He took measurement equipment and took samples from, among other places, a playground after de-contamination. His instrument measured dangerous levels while the instruments of the local officials measured safe levels. He explains in as simple terms as possible that cesium is dangerous in any amount and exists for a long time, much longer than any of

us. Then he told us “there is more Cesium in Unit 4 than in all the bombs in the 30s, 40s, 50s, and 60s combined. That meltdown would wipe out Japan” (n.p.)

Also speaking to the audience were two U.S. Navy quartermasters (retired), Maurice Enis and Jaime Plym, who both suffered radiation exposure and subsequent health damage while serving on the USS Ronald Reagan during a Fukushima aid and rescue mission (Maurice Enis and Jamie Plym, personal communication, 11 March 2013). Enis and Plym gave accounts of their experience, explained the lack of warning from officials in Japan and the U.S. Navy. Enis and Plym also explained the details of “the lawsuit they joined against the nuclear plant’s owner, Tokyo Electric Power Company (TEPCO), for misleading US officials about the extent of radiation released” (n.p.).

The debate in the public sphere is limited regarding health risks from nuclear accidents. What we hear is often delivered with passion and anger. The material reviewed for this dissertation leaves little room for doubt about long-term health risks from nuclear power and weapons.

The remaining question is why Dr. Caldicott acted on this information when others remained silent. Some of this may be explained in the previous research in this chapter regarding gender and whistle-blowing. In light of the overwhelming amount of evidence that women, more often than men, will report wrongdoing in the face of likely retaliation, Dr. Caldicott’s activism becomes clearer.

Activism as Leadership

Biographical research, as a means of considering activism as leadership, offers a method of including both breadth and depth to the exploration of a career or life dedicated to a cause. Amanda Sinclair wrote in *Leadership for the Disillusioned* that “Individual experience can only

be explained fully when it is seen as part of the social and cultural context” (66). Flacks wrote that “One of the defining characteristics of activists is that they are *people whose actions are not interpretable simply in terms of situation*; they are people who act against institutionalized expectations, accepted belief, conventional values, and goals” (10-11). In *Truth and Method*, Hans-Georg Gadamer describes biographical studies in a poetic and, at times intimidating way, “like the coherence of a text, the structural coherence of life is defined as a relation between the whole and the parts” (227). Dr. Caldicott’s life will be examined as a whole and as the rhythm of the parts present themselves. Dr. Caldicott has not lived in isolation from the issues covered in the section on Chernobyl and Fukushima nor has she had any form of solace in knowing she was right. There have been costs and, most likely, benefits throughout the years of her activism, a factor that is better understood in relationship to the whole of her experience. Much of Dr. Caldicott’s experiences of the last two decades have been carefully protected. In Stewart and Ostrove’s *Women’s Personality in Middle Age* the authors state:

Midlife may often be a period of change or transition but one that is neither universal nor necessarily as dramatic as “crisis” suggests. Instead, perhaps many individuals make modest (and some not so modest) ‘corrections’ in their life trajectories—literally, “midcourse corrections.” (1188)

Her early experience with Physicians for Social Responsibility (PSR) as described in *A Desperate Passion*, her autobiography, ended in heartbreak (284). Her marriage was also reported in the autobiography, a casualty of Dr. Caldicott’s success and public profile (317). My approach to the interviews was in keeping with the way Gadamer describes the gathering of data and the application of biographic research in an effort to highlight a life or a life’s work. In this case it is both (227). Dr. Caldicott’s life and her life’s work are separate parts of the whole. Both are worthy of study.

Benjamin Redekop writes of Helen's early passion in *Physicians to a Dying Planet*, "Dr. Caldicott was moved to take international action by her first meeting with Randall Forsberg" (281). Dr. Caldicott confirmed that what she heard from Forsberg about nuclear strikes and how close we were to nuclear war left her without an option. She had to speak out. Caldicott's depth and breadth in the medical field as a Harvard pediatrician gave her the credibility and the audience. She wrote in her autobiography that if we could harness the care that a mother feels for her baby we could solve the world's ills (223).

In *A Desperate Passion*, Dr. Caldicott spoke of the difference in her motivation before and after meeting Forsberg. Until meeting Forsberg, Caldicott claims she "had not understood the complex and satanic brilliance of the technology invented solely to destroy the earth" (154). Following this first meeting, Caldicott began to consider the international issue created by the nuclear arms race and put all of her energy into fighting this cause. According to Redekop between Caldicott and Forsberg, Caldicott was more emotive, passionate, and feminine (290). Forsberg was the methodical scientist who could document her claims and talk to other scientists but not necessarily carry the message to the community outside of her political and scientific contingency (290).

In *Closing the Leadership Gap/Add Women, Change Everything*, Wilson cites a study conducted by the Inter-Parliamentary Union regarding women's involvement in, and effect on, governments. They state that women address "human rights issues that directly affect their lives . . . but they don't stop there—they also raise quality-of-life issues affecting everyone" (12). In "Thinking She Could Be the Next President," Rios, Stewart, and Winter look at the influence of female role models in nontraditional positions, suggesting that "there are positive effects of introducing female exemplars into a domain where they are not anticipated. . . women living in

states with female representation scored higher in political efficacy than women who lived in states where there were no female representatives” (329).

In *The End of Leadership* Barbara Kellerman makes the point that there is no one-size-fits-all solution, “we do not know which particular pedagogy best suites which particular circumstance; nor have we reached consensus on what could be considered a core leadership curriculum” (173). She is pointing a finger at the industry in which she teaches and practices, suggesting we are not effective if we measure our effect by our impact on the culture, at least not in North America. She offers the experiences of Angelo Mozilo, formerly of Countrywide Financial and James Cayne, of Bear Sterns, and countless others as examples of unethical leadership in the financial sector. These men are examples of the misguided behavior that ushered in what Kellerman quotes from Ben Bernanke as “the worst financial crisis in global history, including the Great Depression” (172). It is not that women are immune to unethical practices but what is clear in Kellerman’s book, and in the previously covered research on whistle-blowing and ethics, is that male perpetrators dominate unethical practices in most professions (Lund 510; Nguyen 442; Sims 413). In *The End of Leadership*, Kellerman poses a question; can leadership be taught?

In an attempt to answer this question Kellerman offers:

Four fundamental answers: first, leaders should develop certain skills, negotiating skills, and decision making skills; second, leaders should acquire awareness in particular self-awareness; third, leaders should have experience, for example, in mobilizing and managing; and, finally, leaders should learn the difference between right and wrong—though how exactly ethics, or character, should be taught remains unclear. (179)

With all of the questions regarding how to teach leadership we find a host of examples of those who have either learned leadership qualities or assumed them. In Barsh and Cranston’s *How Remarkable Women Lead* (2009), the authors offer council from Shelly Lazarus the

Chairman of Ogilvy & Mather on how to begin practicing leadership, “Live your values...stand up, do what you need to do, and smile about it. Look them in the eye and say, ‘if you don’t like it, fire me, and I will go find another job,’ because I’m talented enough and I’m committed enough” (197).

In the Introduction I briefly mentioned that followers help to define a leader. In *Leadership for the Disillusioned*, Sinclair puts it this way, “leaders and followers collude in the imagining of leadership as heroic feats that will fix problems and usher in a new era. These practices are seductive because they release individuals from the work of leading themselves” (8). This is particularly relevant to Dr. Caldicott’s story as her goal was to inform a public so that they would in turn pick up the torch and carry it on to a larger audience. Her leadership was not meant to replace individual action but to inspire it. Dr. Caldicott, if she were to choose a style of leadership, would likely have chosen transformational leadership, as her effort was to transform the listening with facts and evidence-based information about the safety of their future in the presence of nuclear power and nuclear weaponry. Sinclair offers that transformational leaders “work by tapping into and inspiring the higher motivations of followers...such leadership raises followers to higher levels of moral consciousness—independently of its context, task or purpose” (23).

It seems fitting to discuss transformational leadership in relationship to Dr. Caldicott, since Mezirow’s first writing about leadership that transforms occurred as a result of his interest in the dynamic presence in adult women learners. Mezirow identifies “disorienting dilemma” as the key to effective transformational experiences (13). Dr. Caldicott has a story of her “disorienting dilemma” and discovering these events was part of my interview challenge.

Mezirow argues that this dilemma is the first of “ten phases of learning” that are present in the transformational process. They are:

- A disorienting dilemma
- Self-examination
- A critical assessment of assumption
- Recognition of a connection between one’s discontent and the process of transformation
- Exploration of options for new roles, relationships, and action
- Planning a course of action
- Acquiring knowledge and skills for implementing one’s plan
- Provisional trying of new roles
- Building competence and self-confidence in new roles and relationships
- A reintegration into one’s life on the basis of conditions dictated by one’s new perspective. (Mezirow 13)

These stages were the base of the inquiry in our interviews. What effect has Dr. Caldicott’s role as a wife and mother had on her leadership style? Marie Wilson, author of *Closing the Leadership Gap*, presents the idea that perhaps being an effective leader in the home is where we learn to lead outside the home. “One of the best training grounds for leadership is motherhood” (9). In the same way a manager or mentor’s role is to enhance the professional experience of his or her protégé, we assume that as mothers, our charge (among others) is to maximize our child’s potential. Yet with this reality, great training for leadership, honorable intentions, not much has changed since Sara Ruddick’s claim in her book *Maternal Thinking* that “women’s and mothers’ voices have been silenced, their thinking distorted and sentimentalized”

(127). Joyce Fletcher, in her book *Disappearing Acts* (1999), makes it clear that as women, there is a danger that our work can be easily ignored if we are not diligent (12). Dr. Caldicott was on a mission to inform and was not easily ignored when she arrived armed with facts and informed fellow medical professionals and the public of pending danger. It was very difficult for the nuclear power and weaponry industries to ignore the work of Dr. Caldicott so they made other efforts to rid themselves of her impact. They took on the affront by accusing Dr. Caldicott of hysteria and inappropriate anger directed outward (Stone n.p.; Arnie Gundersen, personal communication, 15 August 2014; Stephen Nemeth, personal communication, 16 October 2013).

To understand Dr. Caldicott's activism we will need to understand her intentions her motivations and her anger. Judith Jordan wrote in *Women's Growth in Diversity* that anger "notifies the people in the relationship that something is wrong and needs attention, and [can] move people to find a way to make something different" (202). Anger as motivation for change is the challenge of Jordan's article. She starts with quotes from people she has interviewed

"Wars kill poor people and makes rich people richer," says one immigrant worker. "The boss is nothing but a thief in a suit and tie," says an African-American union steward. "Why lobby the government for change when corporations control everything?" (41)

Dr. Caldicott did not make the decision she made to become a "star"; this was a decision to arm a public with facts. Her efforts on behalf of many people she doesn't know are in response to claims like those of Jordan's interview subjects. Jordan states that there is "so much disinformation pumped through our collective consciousness, surely the mission of providing accurate information is an utmost priority for any social movement" (42). Colleagues in medicine, as well as adversaries in the nuclear power and nuclear weapon's field, witnessed Caldicott's determination, charisma, and ability to convert an audience from unaware to active. According to her autobiography, *A Desperate Passion*, colleagues embraced her message by the

thousands as was clear by the momentum in the organization Physicians for Social Responsibility, which she reinvigorated (282). The organization had been established in 1961 but remained dormant until 1978 when she and her team recruited 23,000 doctors from whom she solicited their commitment to educate the public about the dangers inherent in all things nuclear and then armed them with research (*A Desperate Passion* 282). This was the group that Dr. Caldicott worked with in 2013 to plan and execute the New York Academy of Medicine symposium on the second anniversary of Fukushima. Dr. Caldicott's passion and charisma caused some tension within the organization and in the mid-1980s. That tension caused her to relinquish her position in the organization. She made this difficult decision in order to forward the message.

In "Defining Social Justice in a Socially Unjust World," Reisch quotes Richard Caputo's claim that there is a "growing dilemma of how social justice can be achieved in a political economic environment in which market forces are ascendant" (351). The question of the impact of social justice work in the face of a capital system would benefit from more research.

As was evident in my interview, at this relatively young stage in her career and her life, Caldicott made the decision in favor of the message rather than her own career (see Caldicott Second Interview below). In *Third Chapter*, a book by Sara Lawrence-Lightfoot about the twenty-five years of life that comes after our fiftieth birthday, the author states that we are more likely to be "other" centered in our decisions during this "third chapter" (36).

On the subject of public profile and activism, in the article "Reconceptualizing Rhetorical Activism in Contemporary Feminist Contexts," Sowards and Renegar point out that many "have chosen a kind of activism that operates in the private sphere or in less public arenas in

comparison to the activist measures described in extant literature on social activism” (60).

Sowards and Renegar insist that telling personal stories of activists who are doing their activism in the course of their own lives can make a difference in the overall impact to others who hear the story, citing “personal experience as a bridge to larger political and theoretical exploration” (66). They also note that “Another central idea behind this version of activism is that individuals can be activists in the process of simply going about their lives” (67). The authors state that this brand of activism “embodies a wide range of rhetorical practices that are powerful, personal, and self-created. Because these activities are defined by the individual activist, they are also not prescriptive” (70). The need to share stories and offer evidence of lived experience is not a new phenomenon, Afra Kavanagh in *Women in/and Storytelling*, explains

Women’s relationship to storytelling is historic...women continue to promote story telling’s many benefits in the professions, and as a result of social changes brought about by modernity and feminist activism, they are also among the scholars that study storytelling and it’s practice. (91)

The author states that storytelling has “been put to use with a positive emphasis on women’s leadership and achievement” (92).

Heifetz, Grashow, and Linksy in *The Practice of Adaptive Leadership* make the point that a leader must decide on their loyalties and make their decisions based on those choices, stating:

Recognizing how you have prioritized your loyalties is an essential step in exercising adaptive leadership...one of the best ways to diagnose how you have prioritized your loyalties is to rely less on what you say to yourself and others about your loyalties and to begin watching what you do. (189)

From everything I have learned about Dr. Caldicott , I believe that she assigned primacy to the message over her role in distributing that message. Heifetz, Grashow, and Linsky also offer advice to leaders who are passionate about their cause “there is no reason to shoulder the difficult work of leadership if you do not have compelling, higher purposes to serve” (233). Dr. Caldicott

has endured great pain as a result of her activism (A Desperate Passion 315). I suspect that it has been her dedication and commitment to the cause that has fueled her work. To be sure the considerations were complex and the impact considerable on her career and family life (A Desperate Passion 317).

Uhl-Bien, Marion, and McKelvey describe the framework of complexity leadership theory as something that “includes three entangled leadership roles (i.e., adaptive leadership, administrative leadership, and enabling leadership) that reflect a dynamic relationship” (298). The authors offer this as the basis of what is needed for organizations to thrive. The same could indeed be said about individual activists. They go on to identify the three areas of administrative, adaptive, and enabling leadership as the combination that is most effective. The need for adaptive abilities is constant. The one thing of which all leaders can be sure is that constant change will be experienced and the ability to adapt to the change will dictate a person’s likelihood of success.

I would like to conclude this section with a discussion of Robert Greenleaf’s servant leadership. My first reaction to servant leadership as a feminist was strong and negative. It is a practice I can see as relevant in certain circles. Those circles, in my opinion, are mainly male. It is far too easy for women to be disappeared in the midst of servant leadership. As mentioned in the first chapter, Joyce Fletcher makes the case for women being disappeared in her book *Disappearing Acts*. Fletcher claims that women’s natural way of being is devalued to the point that it has been disappeared. Women are “expected to act relationally, to meet emotional needs intuitively, to support others’ achievements, and to create conditions in which others can grow” (16). Fletcher asks “how women might be expected to behave this way and not be rewarded for it, or how this work might be invisible to others” (18). Fletcher

raises many questions, such as: Is there a real danger for women as servant leaders that the effectiveness of our endeavors may result in our remaining invisible?

For many generations women have filled the role of servant leader in the family. Often, this is done so well that it appears easy and effortless. If a mother has been effective, those she is serving might feel that they have done most of the work themselves. She strengthens the self-image of her children and helps them become self-directed and “self-authoring” (Kegan 199) as adults. All the while this mother may appear to be doing nothing at all. This particular brand of leadership can be a dangerous ground for women. Greenleaf’s description of servant leadership includes a comparison of leadership as we know it and servant leadership in this phrase: “The difference manifests itself in the care taken by the servant-first to make sure that other people’s highest priority needs are being served” (Greenleaf para. 4). This statement, in light of the research on ethics, is of particular concern in the higher ranks of corporate America. A woman’s instinctive way of being is not always marketable. In *Closing the Leadership Gap*, author Marie C. Wilson describes a conversation with Daniel Goleman, who wrote *Emotional Intelligence*. Wilson asked him if he wasn’t describing women’s intelligence. He responded with a comment about wanting to sell books, so he couldn’t call it that. He confirmed for Wilson “intelligent men know it is a risky venture to feminize a topic” (8). The idea, according to Wilson, will be met with an immediate dismissal if it is considered a woman’s natural way of being. Wilson offers more third-party evidence that women make a positive difference as a natural course of events.

The Inter-Parliamentary Union, a worldwide organization that serves as a focal point for parliamentary discussions on a broad range of issues, researched women’s involvement in government and found that it brings about a shift in political behavior and priorities. (12)

In an article titled “Broadening the Security Paradigm: Indian Women, Anti-Nuclear Activism, and Visions of a Sustainable Future,” Runa Das offers evidence of that claim. When women engaged in the anti-nuclear movement in India the issue became more “people centric” (1). An organization was established in 1999 called Women’s Initiative for Peace in South Asia (WIPSA). There were chapters established throughout South Asia built on a “people to people” (5) mobilizing people, mostly women, against the nuclearization of India. They provided “continuity over time and connection across regions to build a united movement AGAINST a nuclear India” (5).

Finally, Deborah Eicher-Catt in “The Myth of Servant-Leadership: A Feminist Perspective” suggests that servant leadership

Appeals to women leaders because of its apparent participatory orientation and its inclusive connotations. Servant leadership is currently operating as a reified social construction within organizations, infused with a deceptively innocent discourse that is ultimately patriarchal. (23)

Eicher-Catt goes on to say, “the best leader is a person who is a visionary; a person who genuinely authorizes new, effective and appropriate systems of organizing that ignite members’ creativity and passion” (24). She concludes, and I agree “We need more leaders—male and female alike—who engage not in sedimented speech, but in “authentic speech” (24). I believe this describes Dr. Caldicott’s speech, her writing, and her brand of activism in general. Her message is impassioned and authentic.

In concluding this section, what the research in this literature review indicates is that the fact that Dr. Caldicott is a woman may have had a significant impact on her willingness to carry the message at the cost of her career and family. This is not to say she was aware of that price when she launched her work nor does it imply that she made some agreement to take on the cost, only that Dr. Caldicott’s gender and her ethical make-up may have given her the courage to say

yes when she was confronted by what she knew and with the question of taking action on that knowledge.

Methodology

The Research Questions

My primary research question in this research is: "To what degree does Dr. Caldicott attribute her whistle-blowing and activism to her gender and what sustained her throughout her years of activism? And, particular to this research, what in Dr. Caldicott's experience has changed or remained consistent in the last twenty years?"

The Research Method

According to Denzin, biography is not a research methodology that can easily be described or prescribed. Instead it can be written about in terms of desired outcome and curiosity about specifics in a life that may have influenced the broader choices of an individual. Denzin writes in *Interpretive Biography* that the method "Involves the studied use and collection of personal-life documents, stories, accounts, and narratives which describe turning-point moments" (18) and we write about these things mainly in an effort to enhance our collective understanding. In a working paper called "Introduction to Biographical Research," Dr. Jens Zinn describes the methodology as a "Wide field of different approaches and research strategies with blurred borders and overlapping areas" (3). Hollway and Jefferson describe getting to the "gestalt" of a person's self-image and story through open-ended questions and the flow of narrative delivered through the lens of first-person accounts. In considering the validity of a person's unique perspective of their lived experience and the impact of that experience on the community at large, the authors offer that a life story is developed "from a combination of unique biographical events (in which unconscious dynamics are crucial in determining a person's relation to external reality), and socially shared meanings, interactions and situations" (104). They also insist the researcher

be aware of the position they hold in the research and the influence that carries into documenting the story.

In *The Vulnerable Observer: Anthropology that Breaks Your Heart*, Behar goes even further to address the need for researchers to claim their place in the research. Her encouragement is to understand that our presence, regardless of how un-biased we claim our observations and analysis/interpretation to be, alters the facts. I cannot help bringing myself to the research. Behar encourages the researcher to be aware that we may not know how, when, or where, but that influence is present (24). Biographic research, from the first interview to the analysis/interpretation, makes room for the researcher to claim and explore his or her own enabling and disabling bias, as part of the process. Few people are constantly aware of their impact on others. Behar offers a lens through which to explore a story or a subject or an individual claiming your position with the data and in the analysis/interpretation (47).

Another strong influence in my approach to this biographical research was Sara Lawrence-Lightfoot's description of portraiture in the book she co-wrote with Jessica Hoffmann Davis, *The Art and Science of Portraiture* (15). Portraiture is an influence on my inquiry and informs my approach to my interviews with Dr. Caldicott. Portraiture, although not a complete fit for me as a storyteller, did offer examples of scholarly work using portraiture that meld with my biographical research. My rationale for choosing biographic research began with my exploration of portraiture. This exploration along with the advice of my dissertation committee influenced my choice of methodology. The summary of this chapter includes a description of my interview process and methodology.

I have been impressed with the existing data dealing with the cost of what the media and legal community have called "whistle-blowing" in what is demonstrated in the second chapter as

an abundance of quantitative research. Much of that research has focused on the likelihood of an individual to report wrongdoing and gives little insight into the experience from the individuals who have made the tough choice. As was clear with the women who were profiled in the 2002 *Time* magazine person of the year feature, often that decision is made with full knowledge of what will happen to them and their career, when they report on wrongdoing (Miceli and Near “The Incidence of Wrongdoing” (102). The decision-making process and the elements that are particular to an individual can be made clearer through qualitative research and a first-person account.

In my review of the research for this dissertation it became clear that there are ample quantitative studies covering a variety of elements and perspectives on unethical violations and those who report them. As with the research on whistle-blowing, many of those research projects are designed to add to the data exploring issues involved in the intention to report or not report wrongdoing. Less than 10% (four out of ninety-six) of the studies considered for this research had a qualitative element. It was this review of research that convinced me that more qualitative research is needed to better understand what the quantitative data indicates. It then became my intention to adopt an academically rigorous qualitative method of inquiry to further understand the quantitative data. Could first person accounts of ethical behavior in others encourage ethical decision-making in those exposed to the stories? I pursue this line of questioning as I am convinced that it can be a strong vehicle to that end. One of the most convincing points for me came from a conversation with Dr. Carolyn Kenny, who as chair of my dissertation committee has been supportive of my desire to consider what methodology would best support my effort to document and report on the last twenty years of Dr. Caldicott’s experiences. In this conversation during March 2013, Dr. Kenny offered that this qualitative voice often attempts to illuminate

rather than predict. The concept of illuminating the life's work of Dr. Caldicott has remained a strong motivation.

Ethical Considerations

Whenever interviewing individuals regarding sensitive topics there is a risk of offending or opening old wounds that the individual may have thought he or she had dealt with long ago. There is thus a need to be vigilant and sensitive in an effort to gather valid data while being aware of the emotional burden this places on Dr. Caldicott. Dr. Caldicott has been through the raising of three children, burying a parent, divorce, career sacrifices, and more during her 40-year fight against nuclear issues. The current conversation regarding her presence in the recent documentary *Pandora's Promise* adds a dimension of personal pain that could be problematic for Dr. Caldicott and for the research. The director of this documentary goes beyond criticism of Dr. Caldicott's work and includes personal insult regarding her age and hair. Dr. Caldicott acknowledged that the documentary had been effective at causing damage in her career and some degree of hurt, however, the cause was more important than the time she might have taken to nurse the pain (personal conversation #1).

I took care to address this concern in the interview protocol. The emotional well-being of Dr. Caldicott was of primary concern. Some of what has been said about her is offensive and personal. In the course of our interviews I asked Dr. Caldicott about these slurs and encouraged her to seek a refuge and council when needed. She was also given the option to pause the interview at any time if needed.

Qualitative Process

I chose to focus my biographic research on Dr. Caldicott because in my opinion she is an exemplar of an effective leader for social change. Dr. Caldicott has made significant sacrifices in

her life to educate a population about pending danger. I propose to add to the knowledge available through the quantitative data with a perspective made possible through deep personal considerations and recordings. Biographical research in the case of Dr. Caldicott, allows for a first-person account of blowing the whistle and the impact of that action reflected through the lens of the twenty years since the publishing of her autobiography.

The interview protocol for semi-structured interviews is included as Appendix A. My analysis/interpretation process is designed to discover themes emerging from the interview transcripts. Some of the nuances of the experience of reporting wrongdoing, or whistle-blowing, may be better understood in a combination of quantitative and qualitative research. New understanding of the data may be available through narrative stories told in the first person by people who have had the experience.

Some scholars, to address questions unknowable through quantitative data alone, with some success, have used qualitative research to fill in significant content in an effort to paint a more complete picture. Carol Isom presents an example of this in her dissertation *Not So Black and White: The Color of Perception in Corporate Layoffs*, arguing the perception exists that African Americans are disproportionately impacted during corporate layoffs and attempting to understand the perception in order to validate it or diffuse it. Dr. Isom offers as her rationale for qualitative inquiry and for positioning the research in this way:

Both methods, phenomenology and auto ethnography, rely upon observation, developing or emerging theory, interpretive reflection of meaning, connection of self to culture, narrative development, and pattern identification to understand the human experience. My insider role as a researcher who used field notes and observations from a similar lived through experience as my participant's insider experience brought a strong interpretive viewpoint to methods of comparable tenets of data collection. (56)

Isom offers insight and examples from her own experience in an effort to inform organizations about the underlying bias and in turn to influence decision making during organizational layoffs.

In this admission Isom reminds us of what Ruth Behar suggests is inevitable, the researcher's position is a major tenet of the research (47).

Carolyn Leung's 2009 dissertation *Intellectual Landscapes* uses qualitative research to examine how three female Asian American scholars describe their experiences in social justice causes and how that experience is impacted by racism in higher education. Leung conducted her research in an effort to better understand the experiences of racism through the first-hand accounts of three women scholars. Leung explains her use of qualitative research explaining that, qualitative research, "gave me the tools to capture the complexity of my participants personal and professional experiences" (29). Leung continues her justification for her choice noting, "I have sought to capture this complicated story of how, why, and with what tools Asian American women practice social justice research" (29). My interest in Leung's work began with the stories of three women demonstrating activism as leadership for social change. My curiosity also extended to Leung's use of first person narrative to draw in the reader.

Emery Marc Petchauer, in *Welcome to the Underground: Portraits of Worldview and Education among Hip-Hop Collegians* asks if hip-hop can be an effective pedagogical tool and considers how hip-hop might shape "the manner through which students and adults construct, make meaning of, and engage in domains outside of themselves" (7). Petchauer submits his theory through the use of semi structured interviews with eight hip-hop colleges who are active members of institutions of higher education in the United States. Petchauer proceeds with the goal of contributing to the body of work available for developing new methods of engaging a growing urban population pursuing degrees in higher education. The assumption put forward by Petchauer is that "open-mindedness and critical questioning are two common refrains from this study that form an emerging framework for educating hip-hop collegians" (332).

Open-mindedness, as described by Petchauer, critical thinking, and questioning are the bedrock of biographical inquiry and, in this case, offer a convincing platform for including music in higher education and punctuating the value of first-person accounts through qualitative research methods.

Debbie Carroll's 2007 article "Portraiture and the Role of Researcher: Reflections and Questions" also provides a fitting framework for music in higher education and for articulating the role of researcher. Carroll presents the voice as a research instrument. She has applied six categories for interpretation of the data that became the framework of my approach to the analysis and interpretation (155). Her categories suggest using voice as witness, voice as interpretation, listening for voice, voice in dialogue, voice as preoccupation, and voice as autobiography. As will be apparent in my analysis/interpretation, Carroll's writing had a meaningful impact on my approach as I prepare to conduct my interviews. My analysis/interpretation of the data has been influenced by the six versions of voice outlined by Carroll.

Kammann used qualitative inquiry as a means of contributing to leadership theory in the aftermath of childhood trauma in his 2003 dissertation *Portraits in Resiliency*. Kammann's goal "was to contribute to the literature on adult resiliency by addressing the following general question: how do adults overcome the impact of early adversity" (8). He very eloquently, and effectively, described the impact and aftermath of childhood traumas through first-hand narrative of individuals he deems to have demonstrated resiliency in his or her career or personal life in a manner that informs and motivates. These are the same outcomes I hope for from my biography of Dr. Caldicott.

In his 2004 dissertation *Portraits of Professional Vulnerability in the Principalship: Exploring an Aspect of Humanistic Leadership*, Gary Kiltz applied qualitative research principals to capture the “complexities and dynamics associated with the phenomenon of vulnerability within the principalship” (19). Kiltz explores emergent themes common in the stories as they relate to a humanistic concept of leadership. Ultimately, the analysis provides a sense of how wounds can and have formed, and been healed, for five leaders involved in education. Also, to examine first-person accounts of what strategies these principals adopted to introduce healing and move forward to become leaders of note.

Having been introduced to Lawrence Kohlberg’s work by Professor Al Erdynast, a student of Kohlberg’s, and my academic advisor while an undergraduate student at Antioch University Los Angeles, I was inspired to further explore adult developmental theory as it relates to ethical decision-making. John Rawls along with Kohlberg had both been professors to Dr. Erdynast; as such both have had a profound impact on my studies. I applied a research questionnaire designed by Dr. Erdynast and Wendy Chen to measure adult development in a non-gendered manner (Appendix B).

Carole Gilligan had also been a student of Kohlberg’s. My inquiry into Gilligan’s theory through her book *In A Different Voice* piqued my interest in the question of gender and ethics. My approach to studying ethical decision-making has been focused on gender differences and similarities as they relate to social activism and whistle-blowing. Gilligan’s book is one of the early challenges to Kohlberg’s approach to studying ethical or moral development regarding gender. Gilligan’s work, although heavily criticized, offers an alternative approach to moral development “given the differences in women's conceptions of self and morality, women bring to the life cycle a different point of view and order human experience in terms of different

priorities” (22). Considering feminist leadership theory through Dr. Caldicott’s story opens the door to a deeper level of inquiry regarding gender issues. Biographical research offers a qualitative window for exploration and Gilligan suggested a new view of the voice I might listen for and from. Ruth Graham defends Gilligan’s approach in an article she wrote for the *Boston Globe*, “Through her research, teaching, and conversations with students, she (Gilligan) awoke to a problem that no one else had clearly identified: Psychologists weren’t studying women, and they didn’t understand women’s supposedly unique moral development” (2).

My study of ethical decision-making, particularly in women, led me to Helen Caldicott. Gilligan’s work offers a provocative and challenging point-of-view for my data analysis/interpretation. In considering differences between the genders, Gilligan begins with the premise that there is a difference, and that difference is not generated by women’s inferiority or a lack of ego as implied by Freud’s writing but from a difference in the way we are socialized. Gilligan argues that this socialization is what informs our approach to life, “girls emerge...with a basis for ‘empathy’ built into their primary definition of self in a way that boys do not” (8). Gilligan further states that as a result of this “male gender identity is threatened by intimacy while female gender identity is threatened by separation” (8).

Prior papers served as my instrument for evaluation of qualitative data, as a method of fulfilling my research needs for my dissertation, this work by Gilligan influences my approach. Gilligan’s theory and Sara Lawrence-Lightfoot and Hoffman Davis’s portraiture approach to qualitative study have affected how I will interpret the data collected. Erdynast and Chen’s use of the stages of development is less gender bias than Kohlberg’s and has been developed over a period of years using mixed gendered adult students as the base of study. My study serves to

confirm the academic rigor, and draw positive conclusions of the fit of biographic research with my own personal style.

Summary

Indeed, the writings of Gilligan, Behar, Erdynast and Chen, and Lawrence-Lightfoot and Hoffman Davis have influenced my direction in the use of biographic research as the methodology for my dissertation. This methodology offers a vehicle for personal growth as an interviewer. In considering differences in the genders, Gilligan agrees with DesAutels and Paula and Jeremy Caplans, mentioned in the literature review in the second chapter, that the difference in the way we are socialized is what creates the divide in ethical thinking.

My evaluation of biography, as a method of fulfilling my research needs for my dissertation, is confirmed along with the academic rigor. There is clearly a positive fit between biographic research and my own personal style.

Interviews

I developed a series of open-ended questions (see Appendix A) for one on one, semi-structured interviews with Dr. Caldicott designed to capture specific insight into her experience in ethical decision making leading up to her speaking out about the offences she saw in the nuclear war and energy fields. Our long (twenty-plus years) relationship offers a confidence that the stories she shares with me will be handled with the care they deserve. I have used biographic research methods to gather data and record reactions from her peers. Zinn makes the statement that “the link between social context and individual could be best analyzed by single cases and their individual experiences” (8).

I have been influenced by Zinn's description of a narrative interview. I have analyzed the data using a combined lens of Zinn's approach to biography and Carroll and Gilligan's council on voice.

From material compiled by Deborah Baldwin and Carolyn Kenny I selected research studies, articles, and dissertations using or describing biographic research and have included only a few of them in this chapter. The open-ended nature of the questions were offered to create a venue in which Dr. Caldicott was able to explain her activism, her role, and her personal impact on the nuclear field.

Data Analysis/Interpretation

Encouraged by Zinn in his description of *biographical identity* or *biographical structuring* research this field is focused on an individual's evolution during the course of their life. In order to best approach this last twenty years of Dr. Caldicott's life I have undertaken a study to help me understand Dr. Caldicott's story, from her perspective, up to 1997 when she last wrote about herself. Her list of books that I reviewed included *Nuclear Madness*, *Missile Envy*, *A Desperate Passion*, *Nuclear Power is not the Answer*, *War In Heaven*, *Loving this Planet*, and *Crisis Without End*. My reading also included: feminist leadership theory like Fletcher, Kellerman, Rhode, Sinclair. This literature and research has been considered in an effort to gather basic information about how Dr. Caldicott explained her concerns and her experiences prior to 1997.

Debbie Carroll writes about voice as the key to interpreting qualitative data and offers that listening in one of several voices the researcher can consider a variety of perspectives while analyzing data, stating that "voice as witness" (155). This approach applies a broader perspective on hearing the story in all the detail shared. No interpretation or evaluation, not even grammar, is

corrected in this pass. This is simply the first position sharing of details through the writing of her books. Carroll's theory is presented in her article "Portraiture and the Role of the Researcher: Reflections and Questions."

The second pass with my data was to apply what Carroll calls the "voice as interpretation" (148). This view of the data consisted of more engaged dialogue with the data. In this pass I was linking emergent themes and logging questions based on what the data prompted. This is when tone and demeanor came into focus. I was encouraged not to make judgments or decisions about what I was reading and seeing, choosing rather to make notes about what I observed. The exemplar work of Kohlberg, Erdynast, and Gilligan influenced my interpretation of the data. Dr. Caldicott's voice, her enthusiasm, pain, and pride were all a part of those notes. In this pass of the data I remained conscious of Lawrence-Lightfoot and Hoffman Davis's direction to "listen for voice" (99) as opposed to listening to voice. She describes the difference as the difference between listening to a story and listening for a story. The latter being a more active form of listening. Voice in dialogue was the next sensitivity to be applied to the data; this refers to the voices of both the researcher and the research participants. Applying an ear to the data using voice as preoccupation as described by Carroll required that as the researcher, I be attuned to my own bias and assumptions and finally voice as autobiography "the belief that who we are determines the qualities of our interactions and the intensity of our questioning. Our actions are inseparable from the assumptions, motives, values, and understandings that drive them" (156). Voice as biography was the final pass at the data in which I was reminded to tell the story as the original teller would want it told (Lawrence-Lightfoot and Davis 157)

Applying this approach to my data gives me confidence that the academic rigor involved in biographic research will enhance my study, inform my analysis/interpretation of data, and, hopefully, serve to illuminate particular aspects of Dr. Caldicott's story.

Results of the Study

Introduction

In this chapter I will report on the biographical interviews and my data collection to tell the story of Dr. Caldicott's activism and life in the years since 1997 at the completion of *A Desperate Passion*, the often-mentioned autobiography. Most of what she shared with me is included in this chapter, but not everything. This is an authorized biographical study. I have agreed, and do so without hesitation, to eliminate details of any experience Dr. Caldicott did not want to make public. It is her life and I respect her desire for privacy. Mark Twain himself insisted his autobiography not be printed until one hundred years after his death (Adams n.p.). I offer the same privacy to Dr. Caldicott. In the case that important details of an event are not available for publication I have attempted to share the experience through stories and metaphors while respecting the wishes and privacy of Dr. Caldicott.

I asked several people to answer questions about Dr. Caldicott. Some I interviewed about her as a personal friend, and some to question her science. I have recorded those comments and shared them with Dr. Caldicott. I was moved by her willingness to be vulnerable in her responses to the feedback regarding her life's work. I conducted in-depth interviews with several industry experts, personal acquaintances, and fellow scientists.

Arnie Gundersen, a nuclear engineer, admits he believed the negative stories shared within the nuclear power business about Dr. Caldicott. He told me that he later grew to distrust those stories when he went from nuclear engineer to whistle-blower. I also interviewed, Maggie Gundersen, Gundersen's wife, and founder of Fairewinds Energy Alternatives, Maggie Gundersen is someone who crossed the line from pronuclear, a publicist for a nuclear power

company, to an outspoken antinuclear voice as a result of Dr. Caldicott's work. There is much more to say about this couple as will be clear in the report from each interview.

I requested and was granted an interview with Dr. William Heidbrink a Plasma Physicist at the Department of Physics and Astronomy at University of California Irvine. I made this request after hearing Dr. Heidbrink on a panel with two other nuclear scientists at National Public Radio (NPR) in Pasadena California in August of 2014. I interviewed Stephen Nemeth, one of the producers of the documentaries *Pump* and *Fuel*.

I interviewed Dr. Paula J. Caplan, an author and whistle-blower in the mental health field, and Rudy Langlais one of the producers of *The Hurricane*, *Who Killed Atlanta's Children*, *Redemption*, and *The Tookie Williams Story*, among other films. Langlais has been working with Dr. Caplan on a screenplay she is writing about her whistle-blowing experience. These two interviews along with several others appear at the end of this chapter and were conducted in response to Dr. Caldicott's reaction to the term whistle-blower. I interviewed Dr. Caldicott first, during the other interviews, and again as the last interview before writing up my findings. I asked Dr. Caldicott questions regarding her role in addressing the nuclear question before interviewing the others. I found Dr. Caldicott to be reflective and thoughtful during the process of the interviews and at the conclusion of the interviews when sharing details with her regarding the comments made and impressions shared of her work by her colleagues and associates.

It will be apparent in this report that there is no clear dividing line between Dr. Caldicott and her work. A question to Dr. Caldicott intended to draw out her personal feelings is often met with her feelings intertwined in comments and facts about her concern for the issues she has been talking about for forty years. As is apparent when I report on those interviews, Dr. Caldicott is

forthright. She is not hiding, she is fiercely focused on issues that she considers to be of the most urgent matter facing humanity and she has a difficult time separating her life from her work.

Dr. Helen Caldicott First Interview June 29, 2014

This June interview with Dr. Caldicott was conducted while Dr. Caldicott was in her home in Australia. I was in my office in Los Angeles using Skype. My intention was to spend the time exploring personal thoughts and feelings. It is not easy to engage Dr. Caldicott in a conversation about anything other than her concerns regarding our nuclear future and the health of the human race. The majority of Dr. Caldicott's conversation focuses on issues rather than personal considerations, however, there were moments and comments that offer a glimpse into the current reality of thought for this feisty, outspoken, Australian Doctor regarding her own role in the issues and momentum behind those issues.

My questions were unstructured but were based on several key areas of interest. What, if anything, has changed in reflection of these twenty years? Has time given her a different perspective on her decision to leave medicine? Dr. Caldicott was considerate and deliberate as well as measured in her responses in our interviews. She was forthright while guarding the privacy of those closest to her. She told me she regrets being quite so frank in *A Desperate Passion*. She shared stories about her family and personal life in that book and was open and direct about the repercussions for her and her family when addressing this in our interviews. She was open knowing I will be publishing this biographical study in open-access libraries. She is not trying to set a record straight. It would seem that she has little time for that. She is on a full-out mission to educate. She repeats this in many texts and in each of our interviews. It is important to repeat, Dr. Caldicott does not easily spend time talking about herself.

We talked about the issues and we talked about how her attention to these issues has affected her life. She talked about violating the children's right to privacy when sharing their stories in her autobiography *A Desperate Passion*. That decision was lost for the children in the telling of those stories shared in detail in that very personal autobiography (personal communication, 11 March 2013). Dr. Caldicott lost a marriage and a career leading up to, and following 1997. My interest was to attempt to understand, and articulate in this document, what has happened since 1997 that informs Dr. Caldicott's current brand of activism and what is that brand?

At the time of this first interview *Pandora's Promise*, an unapologetic pro-nuclear film was attacking Dr. Caldicott online. The director of this film portrays Dr. Caldicott as wrong with her science. When I asked her about the portrayal she said,

That film *Pandora's Promise* was made about the wonders of nuclear power... they took me, and this speech that I made on a cold windy afternoon at a NY rally and it had just started to rain and people were tired, so was I, out of context and I look a bit crazy.

Most of the comments online are coming from what Dr. Caldicott refers to as "thorium trolls." These are, in her opinion, individuals with an agenda usually guided by financial investments or incentives. "I'm a bit flamboyant in my speeches, I say things to make people laugh so that's all over Twitter right now. I'm being attacked big-time which means I don't get speaking engagements. It's all being put out by thorium trolls." Dr. Caldicott referred to them as "evil" "The media is compliant. They're putting on all these bloody neocons John Bolton and Wolfowitz, who initiated the Iraq war and now they are all over television. Murdock is the most wicked man in the world." This is not the only report that implies or outright accuses Dr. Caldicott of being wrong. I will expand on this when I report on my interview with Arnie Gundersen.

Pandora's Promise goes much further. It presents Dr. Caldicott as an extremist and offers experts speaking to their own need to rethink what they thought they knew about nuclear energy. They are not the only critics; they are just the most recent with the highest visibility. The inference, although not accompanied by actual accusations, requires investigation and it is to that end that I pursued interviews with several of the experts quoted in this document.

When I asked Dr. Caldicott about the toll this kind of attack takes on her, she says it has changed over the years “I’m beyond it, this used to take a big toll but now I don’t really give a stuff because they’re wrong and I’m right.” The scientists I interviewed for this dissertation and those whose papers I read confirm that Dr. Caldicott’s science is sound. Dr. Caldicott states clearly that this kind of attack does not hurt like it once did, yet does not deny the fact that there is still some emotion attached to the comments. I asked Dr. Caldicott if she ever just wants to give up? “Well, actually for a little while, perhaps a week or so but then I get busy and move on.... The point is, I enjoy it, I love the research. I enjoyed doing that article on Thorium that got the trolls talking. I have to be a scholar. People need to hear this stuff.”

Dr. Caldicott does not give up. She gets busy. She is working on her next book—this time she is writing about men. Specifically, she will be writing about why men kill and why women let them. In our interview she referred to her research and approach as follows:

Men have a special place in their midbrain for killing. There’re two centers in the midbrain in men in particular, which produce dopamine, one is sex, and that lovely feeling after you’ve had an orgasm, and the other is violence. They’re very close together spatially. It may be connected with the reason why men rape women after war, all of that sexual stuff related to violence.

Dr. Caldicott believes this comes from a sociobiological origin but has been distorted over time and remains unaddressed. She is not inclined to excuse bad behavior because of origin, however, she acknowledges that it may be born of instinct and necessity.

I think it goes back to when natural selection was significant and we women needed strong partners who could protect us while we were breast-feeding the babies. Caves needed protecting from saber tooth tigers and marauding tribes. By natural selection those sorts of men prevailed.

She admits that her own reactions to these men have changed over time. Her question in this potential future book as to why women let men kill is a reflective question as much as a provocative one for men.

When I was younger I was attracted to those men. In spite of everything I couldn't help myself. I have to be honest and say that those sorts of men are probably good for making our babies.

Dr. Caldicott does not stop there with her concerns about the parts of our culture that nurture violence, nor does she let any group off the hook easily.

I have to write about how much nationalism, glorification of war belief in God, music, and art are dedicated to the concept of killing. Men could kill with impunity in the past but not now. Now you have the military-industrial complex and they run the Congress. We can no longer afford to fight a war in countries that have nuclear power plants, nor can we have any war because it could possibly lead to nuclear war because of the huge nuclear arsenals possessed by Russia and America.

If anyone predicted that Dr. Caldicott's passion would curtail with age, they would have been proven wrong. As the name of her autobiography states, passion has been a part of Dr. Caldicott's success, and passion has resulted in an abundance of criticism, over the forty-three years of her activism and more harshly in the last decade.

Dr. Caldicott claims the birth of her first child was the impetus for her activism. She still credits her commitment to her own children and grandchildren as motivation. More than once in our interview she asked, "What are we leaving our grandchildren, Leah?" It is still Dr. Caldicott as a nurturer, a mother, and grandmother that needs to continue. She admits this without embarrassment. There is no part of Dr. Caldicott that apologizes for the amount of care, nor the source of that concern.

In our conversations it became clear that regardless of what was or was not in this fight for Helen, she believed she had no option. “I couldn’t not do it, Leah, I couldn’t, not do it.” Helen has a confidence, although perhaps a fading confidence, in the ability for society to correct itself. She pushed forward believing that education would engage an informed population. More than once I quote her inclusion of Thomas Jefferson’s quote about an informed society making sensible choices. Helen had to speak out because she sees it her duty to share the information available to doctors. She has, as previously reported, “been practicing global preventive medicine for more than forty years” (personal communication, 7 March 2013). As her voice gave evidence of discouraging results for her activism, her determination gives evidence of her enduring optimism.

I inquired about her current thinking on the decision to leave her position at Harvard Medical School. Dr. Caldicott traded a profession she loved for a life of lobbying and confrontation. She does express some regret over this. “I should never have left medicine. I loved it.” When asked about the effect that decision had on her and was that price worth it? She repeated that she had no choice and confirmed that the price was immense, “The cost was great. I lost my marriage, although probably a good thing through the retrospecroscope. I was not around enough for my children but nevertheless I was trying to save the earth.” She is a physician who considers the human race to be her ward as is apparent to anyone who has sat in her audience. Her answer about medicine was clear but contradictory. Dr. Caldicott felt she should never have left medicine. At the time of this interview she felt her work had not been effective, at least not effective enough to ensure a nuclear-free future, which she had anticipated when she began. Dr. Caldicott takes that Thomas Jefferson quote as a fact and used it as fuel for many years and in many books. She expressed doubt that the public wants to be educated. The “Americans are

burying their heads. They are the worst polluters, they don't know what their government is doing." This frustration echoed comments in the speech she gave to the Antioch audience in March of 2013.

The quote of Jefferson's regarding an informed society has been a source of disappointment for Dr. Caldicott as she feels it has not proven to be true. Being informed did have an effect in the eighties when Dr. Caldicott was a provocative young pediatrician. At the time she was able to enlist 23,000 plus doctors through Physicians for Social Responsibility to inform the public of the medical concerns regarding radiation and nuclear fallout. Those efforts resulted in a public outcry regarding the threat of nuclear war. Caldicott is fearful that the information has not remained in the American psyche, "Americans could easily be jazzed up again to hate Russia. They've been friendly since the Gorbachev and Reagan era... McNamara told me you don't know how close we came, we came within minutes, within minutes." Caldicott now believes we are closer to a nuclear confrontation than we have been since Reagan and the end of the Cold War.

Dr. Caldicott has so much more to say and a less engaged press ready to hear what she has to offer. Is this a tragedy of the years? Dr. Caldicott was delivering the same message with less wrinkles but no less drama in 1982 when the National Film Board of Canada won an academy award for a documentary *If You Love This Planet*, profiling Dr. Caldicott's speech on nuclear war. She stated in our interview that she believes it is a "combination of the thorium trolls and the pronuclear propaganda machine" that keeps the press at bay.

The trend to a pro-nuclear culture seems to be developing in spite of the Fukushima, Chernobyl, and Three Mile Island statistics. This angers Dr. Caldicott. Her dramatic depiction of the pro-nuclear community, who she often refers to as "evil," inspires critics and followers. This

is the only place that Arnie Gundersen parts company with Dr. Caldicott. I will elaborate on this difference when I report on my interview with Gundersen. Dr. Caldicott often used the word “evil” to describe those with pro nuclear positions. I told Dr. Caldicott that I had attended an evening presentation at the National Public Radio station in Pasadena to hear three nuclear physicists discuss the difference between fission and fusion nuclear power. I had not yet given any details when she inserted “They are evil, they just don’t stop.” It was this evening discussion that led me to ask Dr. Heidbrink for an interview. Of the three physicists on stage that day he was the only one not being paid by the nuclear power industry. He was the academic on the panel who responded with “I wouldn’t go that far”, when one of the other panelists insisted that there is no danger with fusion nuclear power.

Redekop’s comments regarding the validity of Caldicott’s science made it clear he saw her science as sound and relevant. He is confirming her early science while Arnie Gundersen and Dr. Heidbrink, although without directly affirming her work, confirm her more recent scientific claims. Redekop points to the success even as he uses that success to criticize her for the desperation she expresses. He claims her approach was based on a combination of considered medical concerns and the tenacity of a mother protecting her children. To be exact, he states, “Although her message was firmly rooted in medical science and data about the arms race, Caldicott’s impact as an integrative public leader was due in no small part to the sense of desperation she brought to the cause ” (282). Several members of the audience offered the same criticism when Dr. Caldicott spoke at Antioch in 2013. There were several professionals who asked to remain anonymous who were critical of her style claiming that she gave no hope. Redekop went on to say, “Under Caldicott's leadership politically conservative doctors found common cause with unionized miners, peace activists, religious groups, and mothers everywhere,

to give just one example of her ability to cross boundaries for the common good” (282). That ability is still clearly her strength. At the earlier mentioned symposium in New York City in 2013 on the second anniversary of Fukushima, I witnessed Dr. Caldicott interact with scientists of all ages and cultures, students, academics, and press with a comfort that engaged the entire group.

I asked Dr. Caldicott about her early missteps, had she had any, and if she had, what was the impact and lesson from it. Dr. Caldicott stated to me that she worries and rechecks facts often as a result of some early mistakes. Those who oppose her point to those early mistakes as evidence of her lack of knowledge. It is a concern. She offers that she takes comfort in knowing that she is “speaking the truth” (personal communication, 12 March 2013). Redekop wrote, “Dr. Caldicott's lectures on the medical consequences of nuclear war, while data driven, were also frightening, dramatic, and tinged with passion, but she made no apologies for that fact” (285).

Caldicott was privy to information and conversations about nuclear issues as a result of her activism that motivated her continued push against nuclear power. I asked her if she could see herself retired? She didn't see it soon. She is constantly reading research and reports of anything nuclear or radioactive. She is not focused on the comparisons of nuclear power as a clean energy although she presents a compelling argument against nuclear power as clean. She is not looking at nuclear power as an investment or a science that could power millions of homes for less money. Dr. Caldicott follows the available data to a medical conclusion.

From *War in Heaven* a book Dr. Caldicott coauthored with Craig Eisendrath, Chair of the Project for Nuclear Awareness (also co-founders of the National Constitution Center) quoted the economist Jeffery D. Sachs:

Almost three thousand people died needlessly and tragically at the World Trade Center on September 11; ten thousand Africans die needlessly and tragically every single day—and have died every single day since September 11—of AIDS, TB, and malaria . . . To fight terrorism, we will need to fight poverty and deprivation as well. A purely military approach to terrorism is doomed to fail. Just as a doctor fights disease by prescribing not only medication, but also by bolstering a person’s immune system through adequate nutrition and by encouraging a healthy life style for his patients, so too, we need to address the underlying weaknesses of the societies in which terrorism lurks—extreme poverty; mass unmet needs for jobs, incomes and dignity; and the political and economic instability that results from degrading human conditions. (100)

Dr. Caldicott is not the only alarmist in the group. The critical nature of our global condition is a sentiment shared by many in the medical community and the economic community (Louria).

And then, as the interview was coming to a close, I asked Dr. Caldicott to react to the fact that I have referred to her as a whistle-blower. Her reaction caused me to rethink the premise of my dissertation. In the balance of this chapter I believe that significant reconsideration will become understandable as will my rationale for continuing to consider Dr. Caldicott a whistle-blower of consequence.

I have based my research on an assumption that Dr. Caldicott is a whistle-blower. As of this conversation I knew, with certainty, that Dr. Caldicott did not see herself the way I have described her in my dissertation leading up to this interview. Dr. Caldicott responded to the title whistle-blower this way, “I’m not a whistle-blower I’m a doctor practicing preventive medicine, this is my vocation. I love medicine, I wish I had never left it.” The reader will understand why this became a concern. The question of Dr. Caldicott’s actions qualifying as whistle-blowing remained with me as I began my interviews with industry experts. I left this interview with Dr. Caldicott with my premise for this dissertation in question. I have, as my closing remarks, Dr.

Caldicott saying “I’m not a whistle-blower. I’m a doctor.” Her comment locates her professional sensibilities and ethical conduct.

These events, relationships, and comments have had a significant impact on Dr. Caldicott’s choices about how she lived her life for these last twenty years. Reactions to her more dramatic work by the press have caused Dr. Caldicott to adjust her approach to her activism and the visibility it creates. Also, she is much less patient with the press and pro-nuclear hecklers that attend her lectures.

Dr. Caldicott has had an impact that has changed the course of the nuclear industry. This will be addressed in the interview with Arnie Gundersen. That impact has not gone over lightly within the industry, as I will cover in that interview with Gundersen. It has posed a cost to Dr. Caldicott in her approach to the public and the press.

As we closed our discussion Dr. Caldicott was anticipating time with her daughter and grandchildren while making a breakfast for a host of out of town guests. Our interview was followed-up with several emails that I sent for clarification and confirmation of our next formal interview on July 13, 2014. My own task at the close of this interview was to rethink my reasoning regarding Dr. Caldicott as a whistle-blower. Did the fact that she did not see herself as a whistle-blower change my approach to her as my research participant? This question was not easily answered until I began interviewing experts and acquaintances from the nuclear world.

Maggie Gundersen Interview August 14, 2014

My first interview with associates and industry experts began with Maggie Gundersen, the founder of Fairewinds Associates on August 14, 2014. Ms. Gundersen started the organization in 2003 as a paralegal and expert witness firm responding to nuclear power issues and cases. Prior to that she was pro-nuclear power as part of combustion engineering reload core design group.

Later and more publicly pronuclear, Ms. Gundersen was the public information specialist responsible for informing the public of potential risk around a proposed nuclear power plant site planned for upstate New York.

Gundersen talked about the distrust she had for some of the information she was being asked to propagate. The story of Ms. Gundersen's conversion from publicist for a nuclear power company and a 15-year career in the nuclear field to an anti-nuclear advocate and the story of her marriage to a nuclear scientist with pro-nuclear sentiments made for compelling interviews. These interviews also offered an expanded understanding of the questions surrounding Dr. Caldicott's science. It is in the search for confirmation of her science or information to disprove Dr. Caldicott's science that informed this interview.

Maggie Gundersen first knew of Dr. Caldicott when Dr. Caldicott first started speaking out against nuclear power in early 1980. Ms. Gundersen was still pro-nuclear with questions of her own. "I was enthralled by her. I was trained to do technical writing and then nuclear public relations. There were so many questions I wanted to answer and so many answers that did not add up." Maggie Gundersen does not believe that the scientists she was questioning were deliberately lying to her. She felt that many people didn't know anything beyond their own very narrow area of the research. Maggie Gundersen said of the scientists, "Many are really fine engineers with a high level of integrity and want to do it correctly. They were 18 or 19 years old when they got this training. They have done the physics calculations in isolation." When questioned about who knows about the dangers Ms. Gundersen said, "The medical professionals, some engineers but many of them don't see this data. You go down rabbit holes and you don't see the whole story."

Ms. Gundersen points out that this phenomenon is very clear at Fukushima. “The safety measures didn’t work. All the risk assessments were based on incorrect assumptions.” Gundersen emphasized that many of the nuclear scientists come out of Atoms for Peace from the Eisenhower White House. It was seen as a way to “cleanse the US or absolve the US of guilt.” She went on to say, “People think that nuclear weapons and nuclear power are separate, they are not. All of the construction engineers and the fabricators are all the same, they are all from the same industry.”

Maggie Gundersen was being asked to promote nuclear power using information, that, as a result of her exposure to Dr. Caldicott’s work, she knew was incomplete or false. As she became more interested in, and familiar with, Dr. Caldicott’s writing she knew she needed to leave her job. Her husband, the husband she fell in love with and married while he was a pro-nuclear power engineer building and supervising nuclear facilities, remained a pro-nuclear engineer for several years after Maggie Gundersen left the business over personal convictions. Her relationship with her husband was challenged by her decision. Maggie Gundersen described it as a period of “agreeing to disagree the way one does in a marriage” (Personal communication, 12 August 2014). The two of them have adult children and grandchildren.

Maggie Gundersen’s conversion was gradual. But it was complete. She had no doubt that there were those in power in the industry that fit Dr. Caldicott’s description as “evil.” Not all of them, as stated earlier, but enough of them that she was concerned when her husband had information about nuclear safety violations and planned to take them to his bosses.

During this time Maggie Gundersen was asking her husband, “Please do not take any action on the infractions you saw, until you have another job lined up.” Arnie Gundersen saw it differently, he said he was telling the truth, he trusted that the higher up people were not corrupt and they would want to know what a few difficult people below them were up to. I will report on this more when I discuss the interview with Arnie Gundersen but as I was doing the interviews with the Gundersens, they were in the process of moving into a smaller more modest home to be able to afford to continue with their work as expert witnesses in the anti-nuclear movement. It is not that simple but for now, I just want to make the point that Maggie Gundersen was anti-nuclear for many years before Arnie Gundersen was in the same camp.

Maggie Gundersen had left her job because she could not tell the truth, she could not see herself continuing to be the “public information specialist.” For many years Maggie Gundersen admired Dr. Caldicott’s work from a distance and when she had an opportunity to meet Dr. Caldicott at an intimate dinner in 1993, she invited Arnie Gundersen but according to Maggie Gundersen, she was going with or without her husband. She was not going to miss a chance to meet, “her heroine.” Maggie Gundersen was unwavering in her determination to attend the dinner and was unmoved by her husband’s lack of enthusiasm. Maggie Gundersen, in an act of generosity beyond expectation gave up the opportunity to sit next to the woman she admired, offering the seat to her husband. It was a pivotal moment in Arnie Gundersen’s life and one that will have a lasting positive impact that inspired a lasting working relationship among voices attempting to inform the public of the dangers involved in nuclear energy.

I asked Maggie Gundersen what she thought of whistle-blowers and she stated that a “ticker-tape parade would be a meager start.” I asked if she considered Dr. Caldicott a whistle-blower. She said, without hesitation “absolutely she is” (personal communication, 12 August 2014).

Arnie Gundersen Interview August 15, 2014

I interviewed Arnie Gundersen the day after my conversation with Maggie Gundersen. They have been married for more than 30 years, the two met while both were pro-nuclear and remained together while on opposite sides of the nuclear question for several years.

Arnie Gundersen was educated at Rensselaer Polytechnic Institute where he graduated with a bachelor's degree cum laude and was the recipient of an Atomic Energy Commission Fellowship for his master's degree in nuclear engineering. Gundersen was an industry leader and continues to hold a nuclear safety patent. At the height of his career he was a licensed reactor operator. Gundersen managed or coordinated projects for more than 70 nuclear power plants in the United States.

Gundersen claims that there is a momentum of pro-nuclear advocates within the nuclear power world who continue to raise issues of credibility concerning Dr. Caldicott. He says this is both "prevalent" and "effective". Many, as Arnie Gundersen confirms, believe stories about Dr. Caldicott that he now claims are unfounded and yet continue to be well circulated. Gundersen also claims that most individuals accept the common wisdom without asking for evidence.

Gundersen has become a reluctant expert. He has gone from the single-minded study of how to make nuclear power work, as a nuclear engineer, to making an effort to understand the ramifications on society's health when something goes wrong. I do not use the word "if" because with humans involved there will be mistakes. What will those mistakes mean to the rest of us? This question was the fuel behind this exploration with each of the experts. Arnie Gundersen is recently on record confirming Dr. Caldicott's predictions that:

We can expect a significant increase in cancers over the next 20 or 30 years, especially in women and young children as a result of this accident. But right now, we are just seeing thyroid nodules. The first indication of the problem is that there is about 30 or 40% of the

people in Fukushima Prefecture have lumps in their thyroid and that is an indication of radiation exposure that could lead to thyroid cancers (personal communication, 14 August 2014).

In 1995 *New York Times* chronicled Gundersen's career and the personal cost of blowing the whistle. The question arises, should there be a cost to an individual doing what they believe to be the right thing regarding human safety issues? Gundersen's role as a whistle-blower in the nuclear industry is described in the article this way:

In 1990 when he (Gundersen) discovered radioactive material in an accounting safe at Nuclear Energy Services in Danbury, the consulting firm where he held a \$120,000-a-year job as senior vice president. Three weeks after he notified the company president of what he believed to be radiation safety violations, Mr. Gundersen said, he was fired (Fairewinds.org).

My first introduction to Arnie Gundersen was at the symposium in New York on the second anniversary of Fukushima. He presented his research along with 30 other scientists and nuclear specialists.

I asked Arnie Gundersen about his early impression of Dr. Caldicott. What he told me was revealing and disturbing. He considered her "a nut." He went on to tell me that Caldicott was a name that was bantered around in his classes as someone with faulty science out there scaring the world away from the beauty of clean nuclear energy. Arnie Gundersen had been a nuclear engineer for many years before becoming a reluctant whistle-blower. He had been a whistle-blower for more than a decade before he rethought his impression of Dr. Caldicott. By this time he had been maligned, sidelined, criticized, and ostracized. He was now in a position to rethink what he had been led to believe about Dr. Caldicott and her science. When I asked Arnie Gundersen how his impression changed he told me his version of the same story Maggie Gundersen told me about their first meeting with Dr. Caldicott.

Gundersen's impression changed only after his wife told him he could sit it out if he liked but she was going to dinner to meet Dr. Caldicott.

Arnie Gundersen decided to attend. This was the reason that he rethought his impression of Dr. Caldicott after more than ten years since he himself had become marginalized as a result of speaking out. He was seated next to Dr. Caldicott at the dinner. Arnie Gundersen spoke of his early impression of Dr. Caldicott, where he believes it came from, and why it was effective, "The industry is very effective at silencing voices of discontent" (personal communication, 15 August 2014). This will be presented again in the sixth chapter as it has implications to the broader question of activism as leadership, which will be covered in that chapter.

I asked Arnie Gundersen when he first knew of Dr. Caldicott and what was his impression. I had heard Arnie Gundersen make a statement about his early impressions when he spoke at the symposium in New York on the second anniversary of Fukushima. I wanted to give him an opportunity to clarify or elaborate. His answer was consistent with what I heard in New York "I thought she was a nut." Along with that he explained that "You don't study the issues, you have a job, you are being paid, you are in love with the technology so I didn't understand what Helen was trying to say" (personal communication, 15 August 2014). In this same conversation Arnie Gundersen acknowledges that his impression of Dr. Caldicott was not studied, it was the reaction that all nuclear scientists had to her name. She was portrayed as a kook, an alarmist, and she was not taken seriously. When I questioned him about his conversion experience regarding Dr. Caldicott he told the same story Maggie Gundersen told about the first dinner with Helen. In Arnie Gundersen's version he and Helen bonded over a shared understanding of mass cover-ups and smear campaigns regarding Three Mile Island. "By this

time I knew that Three Mile Island had been a massive cover-up. We bonded that night as a result of our mutual understanding of the cover-up.” The two had individual knowledge from two different scientific fields leading them to believe they had not been told the truth about the reality of the Three Mile Island accident. Arnie Gundersen estimates that as “many as 10,000 people will die of cancer as a result of Three Mile Island.” Arnie Gundersen went on to explain that he left that dinner saying to himself, “This woman really knows what she is talking about.” That first meeting was in 2003, thirteen years after Arnie Gundersen had become a whistle-blower himself.

I asked Arnie Gundersen if he considered Dr. Caldicott a whistle-blower. It was not an easy answer for Gundersen and he hesitated for a few seconds before responding. When he did respond it was clear that this was a new consideration for him. “Yes, she gave up a promising career in medicine for this abuse ... I didn’t understand what she was trying to say until that evening.”

Dr. Caldicott describes what happened to Arnie Gundersen regarding his impression of her, “The industry has worked hard to make me look bad and to say I’m wrong. I’m not wrong” (personal communication, 11 March 2013). Helen accepts this as part of the picture, when she speaks, there is always a pro-nuclear heckler or naysayer in the audience. Their arguments often have some merit. More people would be served. It is cleaner than coal. These are issues that can gain momentum, however, as stated earlier, it is the medical consequence that Dr. Caldicott is addressing. As a result, this is the issue I am exploring. There is no argument among medical professionals. Cesium and plutonium are deadly to humans and they are deadly for tens of thousands of years, some, millions of years.

Arnie Gundersen talks about not agreeing with Dr. Caldicott when she describes the opposition as “evil.” He crossed over so he understands the blinders on the other side. Arnie Gundersen offers that not everyone in the pro-nuclear field is a villain. He understands the conditioning and the common knowledge that is unchecked and keeps many ignorant of the medical issues Dr. Caldicott brings to the discussion. So, he will not call them evil but he acknowledges, “It works for Dr. Caldicott”. In his opinion the attention this draws to the subject justifies her language.

Arnie Gundersen now agrees with Dr. Caldicott that there is plenty of evidence that is not making it to the public. They are not alone. Arnie Gundersen now agrees with Dr. Caldicott that there is plenty of evidence that is not making it to the public. It is clear in the details shared by David Sheppard in his article titled “INSIGHT-Goldman Puts ‘For Sale’ Sign on Iran’s Old Uranium Supplier” when he offers comments by Professor Gabrielle Hecht of the University of Michigan. In Sheppard’s article he reported on how Iran received yellowcake from NUFCOR. These details were uncovered for the first time by Professor Hecht, while she did archival research at the company’s old headquarters near Johannesburg. This is an issue Dr. Caldicott has been raising for many years. Yellowcake being traded as a commodity brings up several safety concerns:

“Yellowcake can be bought and sold without any significant international controls Hecht told Reuters ... The nuclear industry has been campaigning for decades to banalise uranium and make it appear like just any other commodity, but it should be subject to much stronger oversight ... Filings with UK authorities and nuclear industry sources say the two banks’ combined stockpiles of uranium are valued at more than \$400 million, or around 5,000 metric tonnes (5511 tons) of yellowcake. That would be enough to fuel 20 standard nuclear power plants for a year, or, uranium experts say, to build 200 nuclear bombs. Both Goldman Sachs and Deutsche Bank declined to comment on questions about their uranium trading businesses. (Sheppard paragraph 10)

Arnie Gundersen is not in favor that this kind of privacy for the industry nor does he want to see this bought and sold as a commodity available to anyone with a budget. The ability to convert this material into devastating impact on society is his main concern. Having seen himself that the industry operates without conscience leaves him little comfort that there would be any self-regulation involved in the sale of this dangerous material. It was clear to Gundersen that the industry could not be trusted to tell the truth after an accident.

In a presentation Gundersen made on the 30th anniversary of that Three Mile Island accident he gave his assumptions regarding the release of radioactive materials at the time of the accident. Arnie Gundersen and Dr. Steve Wing (who also presented his findings at the symposium Dr. Caldicott organized on the second anniversary of Fukushima) both had gaps in their findings that were confusing to them until they each heard the others' research. Arnie Gundersen describes this presentation he made about Three Mile Island in Harrisburg on that 30th anniversary as eye opening once again about the lack of integrity in the nuclear power industry. It was his reliance on the numbers supplied by the industry that caused the inconsistency in his findings. In his presentation on the releases of radioactive material at Three Mile Island Arnie Gundersen had presented his findings that the releases during the accident were 150 times higher than the nuclear industry admitted. Dr. Steve Wing was presenting his findings on how many people died and were going to be sick but he could not believe his findings because the radioactive releases reported by the nuclear regulatory industry were so low. Arnie Gundersen heard Dr. Wing's findings on health consequences and understood that the gaps in his predictions were based on the faulty evidence provided by the industry experts. In this case, both thinking their numbers are off because they were using nuclear industry figures. Steve Wings' figures showed that Gundersen's numbers were

correct. When Dr. Wing replaces the figures supplied by the nuclear industry with Gundersen's figures, his research findings were confirmed. In other words, Dr. Wing's predictions were mathematically and statistically valid using Arnie Gundersen's findings, as did Dr. Wing's research explain the discrepancy Arnie Gundersen had seen in his figures.

Gundersen told me that no one would write articles about Dr. Caldicott's science regarding the creation of nuclear power, "They will write about her science explaining what we need to know about the medical dangers and on that she is flawless."

Dr. William Heidbrink Interview July 23, 2014

My reason for requesting the interview was to gain a perspective of the scientific credibility or lack of credibility in Dr. Caldicott's writing. Dr. Heidbrink was to supply confirmation for or evidence to dispute Dr. Caldicott's scientific claims. He provided no proof or disproof in this interview. However, there were interesting observations to report.

Dr. Heidbrink is a Plasma Physicist, which means he concentrates his research on plasma and its impact as "a gas in which an important fraction of the atoms is *ionized*, so that the electrons and ions are separately free." Our conversation began with me asking him to explain, in layman's terms, the difference between fission and fusion nuclear power? He said the biggest difference is that "fission works and fusion doesn't." There is more to the story and trillions of dollars being raised to prove that it can work, but to-date all of that money is still confirming that it does not yet work.

The danger of the silo effect in academic disciplines was obvious in my discussion with Dr. Heidbrink. I interviewed him as part of my search to confirm or disprove Helen's science and yet what I came away with was far more disturbing. As you will read in the next chapter, the rejection of her science is probably the single most influential factor in her

consequential distancing herself from public life in the last twenty years. So it was important for me to investigate this rejection from some scientists.

As I waited for our discussion I read posters and thank you letters on the hall bulletin board. Some of the letters were from a fifth-grade class that Professor Heidbrink had visited. A fifth-grade girl wrote, “I think I’ll die if you don’t come back to our class.” That is the sentiment he left a classroom with when he talked about his own journey through science and research. I was compelled to interview him when I heard him on a panel at NPR in Pasadena on fusion nuclear power, however, these notes from the fifth-grade class gave me a new curiosity for our interview. What was it about Dr. Heidbrink’s approach that motivated these children to beg him to return to their classrooms? It was not long into our discussion that I understood their request. Dr. Heidbrink is passionate about what he does. He is a true academic and honest researcher. He admits that he may spend his life researching something that will not be reality until well after his career ends. I knew from the first evening panel discussion that Dr. Heidbrink is honest about his work. One of the other panelists insisted that it was failsafe and Dr. Heidbrink said, “I wouldn’t go so far as to say that.” I wanted to interview the man who was willing and able to question his own science. In our interview he displayed visible emotions, not something scientists tend to do easily or often with a stranger. His tear was a result of answering a question regarding the motivation behind his research:

I have realized since I’ve been here that you can conduct directive research where you have a goal, for example to make fusion energy, you can work on curiosity driven research but either approach, it’s research, and you don’t know whether it’s going to have a positive or negative impact on society. You just don’t know. I’ve become much more accepting of peoples curiosity when they’re doing research just because they love the applications. It may or may not turn out. For me, over the course of my career, it’s been motivating work. It is what I love,

it's always been motivating to know that it could happen, it could be so important.

He considers himself an environmentalist. He is a kind-hearted man who cares deeply about the end result of his work. In our conversation he made a statement about Fukushima that is born of a world without "Common Core." Again, not part of my dissertation study, however, as an important aside, I offer that Common Core, well managed, will help us avoid the silos of the future that would keep the nuclear research scientists separate from the medical research on nuclear and radiation. It would help us avoid the kind of singular focused specialization that was apparent in this conversation with the Dr. Heidbrink.

Dr. Heidbrink said the nuclear industry should celebrate the fact that people did not die from acute radiation when the meltdown happened; they died from a tsunami and an earthquake but not from radiation.

Fukushima is perceived as a very catastrophic event but I think that depiction is very inaccurate. They had a major earthquake and tsunami. I'm sure not everyone would agree with this but from my perspective that actually was very modest damage given the severity of the impact. A very modest environmental impact given the severity of what happened. It should have been something that made policymakers think more favorably about fission.

I asked him if there were any researchers from the medical community involved in these discussions? He said there were not. Dr. Caldicott makes the claim that much of the cancer will take time to gestate. Not as much time with children. An article in the Australian Medical Journal, "The Impact of Nuclear Crisis on Global Health," following the risks of exposure, quotes Dr. Caldicott:

No dose of radiation is safe. Each dose received by the body is cumulative and adds to the risk of developing malignancy or genetic disease. Children are ten to twenty times more vulnerable to the carcinogenic effects of radiation than adults. Females tend to be more sensitive compared to males ... The latent period of carcinogenesis for leukemia is 5-10 years and solid cancers 15-80 years. It has been shown that all modes of cancer can

be induced by radiation, as well as over 6000 genetic diseases now described in the medical literature. (40-41)

Dr. Heidbrink offered that he is not an expert in the medical complications of his field nor is he an expert on thorium. His confirmation of Dr. Caldicott's science was part of my interest in interviewing Dr. Heidbrink and it was clear from this interview that he would not be in a position to assist me in my effort to corroborate Dr. Caldicott's *Huffington Post* article on Thorium. Her article has been heavily criticized online. Although this interview was not helpful in my quest to confirm or find evidence of fault with Dr. Caldicott's science it has been instrumental in offering a real-world window into the argument Arnie Gundersen presents regarding the nature of the pro-nuclear community being far less evil than Dr. Caldicott claims. I was aware of the character of the individual I was interviewing and I was impressed with his ability to acknowledge what he did not know. He offered to read the article Dr. Caldicott wrote on thorium, however, as of the writing of this chapter I have not yet received an answer to my queries regarding his impression of the credibility of Dr. Caldicott's science. This is a good man who has limited his access to information outside of the narrow field of study that is Plasma Physics.

Dr. Helen Caldicott Second Interview August 17, 2014

In this interview Dr. Caldicott offered a clear picture of what keeps her going. She is an avid reader and loves being a scholar. Beyond that Dr. Caldicott feels compelled to share what she knows with the global patient. She offers, "If you want my prognosis, it's grim. Global warming is almost beyond repair, the nuclear war issue could happen tonight. We keep piling up more and more radioactive waste and then we have this artificial intelligence coming up." Dr. Caldicott's attention to the future overpowers her desire to live in any past glory. Her next

symposium will take place in New York during February of 2015 on Artificial Intelligence, Human Fallibility and Nuclear War.

Dr. Caldicott is driven by a need to know. She does not accept easy answers that do not sit right with the science.

You can't program morality or empathy into a computer. So what keeps me going, well, it makes me feel good to think I'm educating people. It could have some impact. You never know, it's like the hundredth monkey. I'll keep doing it until I get in my coffin I suppose.

Dr. Caldicott is on a mission. She does not credit God or a higher power, not even any particular mentors, with directing her future. She says she had no mentors beyond her head mistress when she was in school. She did have a sense from fourteen or fifteen that she was going to do something important with her life. "I didn't know what it was but I knew I was going to do something big with my life. I just knew. Mom was highly intelligent and politically extremely astute ... my great grandmother applied to medical school and was turned down because she was a woman." This comment was what informed my questions about mentors. Dr. Caldicott sees this as an influence but not a mentorship. No one was pointing out exceptional qualities in Dr. Caldicott as a young girl. No one reached out to nurture or mentor her. She was activated by her education as a doctor and her early exposure to Neville Shute's *On the Beach* (1957) which tells the story of a post nuclear world set in Australia.

I questioned Dr. Caldicott again about her choices. Did she wish she had remained in medicine? Was it a sacrifice? If it was a sacrifice, was it worth it? Her answer was consistent with previous responses:

I couldn't have not done it, Leah. And, the cost was great. I lost my marriage and I wasn't around for my children. But I couldn't not to it...I became an actress to do this. I watched actresses engage their audience and I thought well, I have to do this. I find it quite a blow to my ego if someone goes to sleep. I have to perform and find ways to engage them otherwise these are boring facts (personal communication, 13 July 2014).

My questions regarding sexism and gender politics were answered with a more measured response than I had anticipated. I expected some degree of anger over being unheard or having been passed over for male students. It wasn't the case for Dr. Caldicott. Her issues in a failed marriage, the deceptions that pushed her out of Physicians for Social Responsibility, had not left her with any obvious bitterness toward men. "During medical school I experienced no sexism at all." As one of ten women studying with 150 men she claims to have "had a ball in medical school." She loved her studies and found her classmates accepting of her or at least if they were not accepting, she didn't notice.

When asked again about her influences, "I was very influenced by Germaine Greer. Women should be paid as much as men, they are as smart as men. Why do we let the men do what they do?"

Dr. Caldicott responded to accusations of being an alarmist. "Doctors are alarmists. We tell people alarming things. We tell people they are going to die. We tell people things they don't want to hear." I asked her if there was anything she would do differently? Dr. Caldicott wished she had not had the fight she had with her mother at the end of her mother's life. "I sent a terrible letter to my mother to butt out of my family life. I wouldn't have done that. It led to a couple of years of depression as mom died shortly after that letter."

After a short silence Dr. Caldicott offered another area she would have handled differently:

I wouldn't have resigned from PSR. I would have written to all my members and told them it is either Jack Geiger or me. I wouldn't have walked away from the organization I had started. I didn't have the strength, the energy or the vision to do it. I also still had this respect for old male professors at Harvard. I wouldn't do that again. I would trust myself. I wasn't strong enough yet to take them on.

I asked Dr. Caldicott if the choices she made back then to leave Physicians for Social Responsibility were an example of her putting the organization before her own career needs. I will admit it was a bit of an easy grab if Dr. Caldicott were inclined to take credit for something that could excuse past mistakes. She didn't take the credit. Dr. Caldicott replied, "No, I was young and lacked confidence. It wouldn't happen now." I asked for advice for young activists, and Dr. Caldicott offered, "Follow your passion, listen to yourself and don't make decisions without knowing deep down in your gut you are right and if you have that, to just go for it. Be persistent and determined to get there."

Dr. Caldicott referred again in this interview to the far right in America as "evil." As uncomfortable as that makes some, it is dramatic and gets attention to the issue she represents. When I asked her about the heckler I witnessed in 2013 when she spoke for Antioch University Los Angeles she responded, "They are there every time I speak. They are evil. Their goal is to disrupt and discredit. I have to have my facts right or they will use every mistake to prove something that is a lie." Dr. Caldicott pulls no punches. She is upset with America. She thinks we are asleep at the wheel while our government and the military industrial complex use our money to create bombs rather than research ways to care for the population. Dr. Caldicott claims that women in higher numbers are essential to make any change here. Dr. Caldicott emphasized a 30% tipping point. After 30% women make the calls in favor of the greater good and, as Dr. Caldicott put it, "If there are enough women involved in the decisions they say, no, you cannot have money for your bombs we are going to feed the babies instead."

Again, I asked Dr. Caldicott to respond to the term whistle blowing as a description of her work. Again, she responded by saying she was not a whistle-blower but a doctor.

Focus Group Interviews

Finally, I conducted a focus group via email in which I asked about Dr. Caldicott as a whistle-blower. This group includes producers, activists, and those involved in environmental and the nuclear field. My decision to ask these questions of this group was inspired by Dr. Caldicott's reaction to being called a whistle-blower. It was apparent with the Gundersens that they saw her as such. With this group I asked these three questions:

1. How, and what, did you first hear about Dr. Caldicott and what was your impression of her based on what you heard?
2. Please describe in one sentence your impression of whistle-blowers? Do you consider Dr. Caldicott's activism to be whistle-blowing? Why or why not?
3. Is there anything you would like to share about your relationship with Dr. Caldicott and her activism that would be pertinent to the story of the years from 1997 to present?

Their answers were rather consistent, although few of them knew each other and those who did confirmed that they did not discuss the questions prior to answering.

David Suzuki did not answer the questions, however, he did say, "I am a fan of Helen's. I have really admired her from afar. I just don't know her well enough to be able to comment" (personal communication, 25 August 2014).

Steve Nemeth, a producer, told me that he was activated by his early exposure to Dr. Caldicott's message and it has continued to motivate his work as a documentarian. I asked him for the interview following a conversation we had at an unrelated event. Steve inquired about my PhD research and when I explained that I was doing a biographical study of Dr. Caldicott's most recent twenty years, he responded by offering his reaction to the pro-nuclear documentary,

Pandora's Promise. Steve was “disgusted” by the portrayal of someone he regards as a “saint” for what she has done to inform society of the potential danger of radiation. His comment was, “They took a woman who has worked tirelessly on this issue for 40 years and destroyed her image with one bad experience that was videotaped.” He considers her a whistle-blower and a champion of human health “on a scale unmatched” in the fight against nuclear power and nuclear war.

Dr. Paula Caplan first knew of Dr. Caldicott because of the documentary *If You Love This Planet*. Caplan offered, “My impression was that she was a woman working on her own to educate people about dangers that almost no one was thinking or talking about.” The two lived in similar circles, Harvard in particular as an academic home, and Boston as a geographical location, however, they worked in very different fields. Caplan admits that she was not paying attention to the nuclear question until she was exposed to Dr. Caldicott’s work. “I certainly had not paid attention to anything like this, despite having marched against the Viet Nam War and having become an ardent feminist.” Dr. Caplan was moved by what she saw of the young Dr. Caldicott, the two had still not met but Caplan was following Dr. Caldicott’s issue. “I watched the film and was stunned by her courage, her brilliance, and the compelling way in which she was sounding warnings, as well as by the sheer volume of essential information that every human being needed to have.”

Dr. Caplan is not new to the concept of whistle-blowing. “I absolutely do consider Dr. Caldicott's activism to be whistle-blowing.” In response to the question about anything else you would add about your impression of Dr. Caldicott, Dr. Caplan offered the following “I am a great admirer of her courage and of what she must have endured because of her refusal to be silenced or dismissed.”

Dr. Caplan has been working with the producer Rudy Langlais whose credits were mentioned at the beginning of this chapter. Langlais has a history of working with writers to produce stories that have a social justice reason element. Langlais' impression of Dr. Caldicott begins when he was the city editor of the *Village Voice* in 1978. "The incident at Three Mile Island was featured prominently in the *Village Voice* and Dr. Caldicott was considered by us a champion of an important cause, a clear, forceful, sensible, and vital voice in the fight to provide the truth of what happened and an opposition to it happening again."

Langlais was not comfortable with the term whistle-blower. He offered:

I prefer the term "sentries" to whistle-blower. I believe people who alert us to problems in our society are sentries, on the front lines. In this regard, Dr. Caldicott is one of the most important sentries of the past fifty years in America.

Rudy Langlais had only a journalistic relationship with Dr. Caldicott during his years as city editor of the *Village Voice* "and the time of the Three Miles Island event, Dr. Caldicott's leadership in exposing the dangers of nuclear energy was critical in *Voice* coverage—and, I believe, in waking the City of New York and the Country to the these dangers" (personal communication, 7 October 2014).

Xanthe Hall wrote me on October 5 answering the questions I posed, initially supplying me with an introduction that Xanthe gave of Dr. Caldicott for a speech at the Nuclear Free Future award. Xanthe offered in that introduction that she was a young nineteen-year-old girl when seeing photos of Hiroshima and Nagasaki activated her. Then Xanthe saw the film *If You Love This Planet*. Xanthe wrote that Dr. Caldicott is the crucial link between all of the different sciences engaged in the nuclear question. Xanthe Hall says that her view of whistle-blowing is quite positive.

Whistleblowers are incredibly important for societal control of human rights, environmental protection and civil liberty. They have the courage, usually at

enormous personal cost and even danger, to expose abuse and criminal acts by those who would otherwise remain in a position of power. Usually they act alone but sometimes they find others who support what they do.

Xanthe holds the role of whistle-blower in high esteem. Her interpretation of the role Dr.

Caldicott plays in this is filtered through a legal lens:

I am not sure that I see Helen's activism as “whistle-blowing” because she belongs to a movement of people who are collectively trying to call attention to the toxic effects of the nuclear industry. But since she does not work for that industry, she is not exposing their wrongs from the inside. This does not demean what she does in any way, but I would call it “courageous and outspoken activism” rather than whistle-blowing... The main thing that I appreciate about Helen is her opposition to all of the nuclear chain instead of separating them into parts.

Paul Gunter is the current director of the Reactor Oversight Project at Beyond Nuclear, which is an anti-nuclear organization with a long history of social engagement. Dr. Caldicott was a founding President of Nuclear Policy Research Institute since 2001 and Beyond Nuclear since 2007 to date.

Gunter helped organize a “New England-wide coalition (later known as the Clamshell Alliance) to nonviolently oppose Public Service Company of New Hampshire’s proposed construction of the Seabrook nuclear power plant in Seabrook, New Hampshire.” At this time Dr. Caldicott was a pediatrician practicing in Boston, Massachusetts. She spoke at the event and in his words, “She spoke eloquently about the threat of nuclear power and the unacceptable risks and consequences it posed to children’s health.” He was impressed. She was an expert who “compassionately explained in plain English the medical effects of radiation and what would be the consequences of a nuclear accident with a particular emphasis on children.”

Gunter credits Dr. Caldicott’s presentation with informing him of U.S. nuclear energy policy and that it was not only an “extension of its nuclear-war-making capabilities but that the nuclear power industry was in fact conducting an unprecedented medical experiment on society

with the unethical and dangerous production of nuclear generated electricity for profit” (personal communication, 21 August 2014).

Gunter describes whistle-blowing in positive terms of checks and balances, “Whistle-blowers are professionals who publicly break with the rank and file of their profession to expose corruption, mismanagement, malpractice and lies at great personal and professional risk.” He considers Dr. Caldicott a whistle-blower in the medical profession. He points to her “tireless work to expose the collusion of government and corporate ‘science’ to trivialize and cover-up the medical consequences of radiation exposure on current and future generations” (personal communication, 21 August 2014).

When asked what he would like to add to what he had shared about Dr. Caldicott, he offered that she “continues to be a pioneer in promoting global public health, peace, environmental justice and a sound, renewable energy policy.” In his opinion her science has always been and continues to be sound.

In this chapter I have attempted to report on the interviews I conducted to better understand the nuclear issues from Dr. Caldicott’s perspective and to prove or disprove her science. I have registered complaints about Dr. Caldicott’s style but not about her science in these last twenty years. In the next chapter I will address what can be learned and or understood from these interviews.

Conclusion

My goal with these interviews was to address the degree to which Dr. Caldicott attributes her whistle-blowing and activism to her gender and to better understand what sustained her throughout her years of activism? And, particular to this research, what in Dr. Caldicott's experience has changed or remained consistent in the last twenty years? As previously stated this is not an easy task as Dr. Caldicott is reluctant to speak of herself and her life in any context other than as it relates to the issue of radiation and the health of the planet.

Gathering my data I was constantly reminded of what Ruth Behar mentioned in *The Vulnerable Observer: Anthropology that Breaks Your Heart*. Behar encourages the researcher that our very presence alters the facts (15). Behar urges the interviewer to claim and explore her own enabling and disabling bias, which I have attempted to be aware of throughout my analysis. This challenge remained at the top of my mind as I began to sort through what I bring to the interpretation of Dr. Caldicott's answers to my questions. Beginning with the fact that she rejects the premise of my research by assigning her the role of whistle-blower. As I reported in the fourth chapter, Dr. Caldicott does not see herself as a whistle-blower. Her role is clear in her mind as a medical doctor. This gave me some concern, and for some time caused me to rethinking the approach of my dissertation. After careful consideration I decided to approach the topic through the eyes of her associates and as reported on in the fourth chapter asked each of my interview participants what they thought of whistle-blowing. Once I had established their impression of the act I then asked if they saw Dr. Caldicott's activism as a form of whistle-blowing. This was a rewarding experience for the data analysis and for Dr. Caldicott. As a result of this questioning Dr. Caldicott had an opportunity to see her work in light of reflections on how others view her activism.

In the Methodology chapter I pointed to Gilligan's work as a provocative and challenging point-of-view for my data analysis and interpretation. I began with my questions for Dr. Caldicott regarding gender differences expecting her to have some degree of bitterness toward her colleagues who knew what she knew about nuclear issues but remained silent. I was wrong. Dr. Caldicott is not bitter. She is concerned. She spoke of the early years of her career in medicine and the lack of discrimination she faced. She was inspired by the difference between the male doctors and herself. In considering these differences between the genders, Gilligan offers the premise that there is a difference, and that difference is not generated by women's inferiority. I reported on Gilligan's suggestion that socialization is what informs our approach to life, "Girls emerge...with a basis for 'empathy' built into their primary definition of self in a way that boys do not" (8). This is certainly true in the case of Dr. Caldicott. She stated that she was inspired by her care for her children and later her grandchildren.

Zinn's description of *biographical identity* or *biographical structuring* research is a focus on an individual's evolution during the course of their life (3). To better understand Dr. Caldicott's story I read *Nuclear Madness*, *Missile Envy*, *A Desperate Passion*, *Nuclear Power Is Not the Answer*, *War In Heaven*, *Loving this Planet*, and *Crisis Without End*. The message in Dr. Caldicott's writing is consistent and, for the most part, based on medical science. There is sophistication apparent in the early writing that is deepened and bolstered in her more recent work by coauthors like Craig Eisendrath from *War in Heaven*.

My reading also included: feminist leadership theory by authors like Fletcher, Kellerman and Rhode, and Sinclair. Debbie Carroll, who writes about voice as the key to interpreting qualitative data, offered helpful council for analyzing data. She writes that listening for one of several voices the researcher can consider a variety of perspectives. Carroll suggested that I

begin with “voice as witness” (148). This applies a broader perspective, hearing the story in detail as the storyteller tells it. Dr. Caldicott is forthright so this pass is dense with information. No interpretation or evaluation, not even grammar, is corrected in this pass. This is simply the first-person sharing of details through her books and our conversations. My first listen left me somewhat anxious as I considered Dr. Caldicott’s rejection of my platform of whistle-blowing as activism in her case.

The second pass with my data was to apply what Carroll calls the “voice as interpretation” (148). This view consisted of more engaged dialogue with the data and informed the questions I would ask in the next pass. There were times when I would rephrase a question and ask again looking for deeper considerations. Most of the time Dr. Caldicott would let me know she was aware I had already asked that question. She is not inclined to revisit things she feels she has addressed unless it is in an effort to clarify science around the nuclear issue as it relates to human health. In this pass I was also looking for linking and emergent themes. These themes were not difficult to uncover, Dr. Caldicott is not confused about the impact of her message on the question of nuclear energy and the long-term dangers of radiation. I was logging questions for further discussion based on what the data prompted in this portion of the analysis. This was when Dr. Caldicott’s tone and demeanor came into focus. I did not to make judgments or decisions about what I was reading and seeing rather I made notes about what I observed at this point. I did note that Dr. Caldicott moves quickly away from questions of a personal nature. To Dr. Caldicott this is not a productive use of time and exposure. She may be reserved as a result of the brutal nature of some of the past coverage and this factor may also be influenced by what she described as her flaw in her autobiography of being too forthright. There is no sense that she was avoiding information, rather a sense that this is not what she believes people need to know.

Kohlberg, Erdynast and Chen, and Gilligan influenced my interpretation of this data in several ways. I was interested in understanding Dr. Caldicott's personal developmental levels, as they would be addressed on Kohlberg and Erdynast and Chen's scales applying a lens available from Erdynast and Chen's article describing, among other issues, the existence of four domains and up to seven levels created from Kohlberg's developmental theory. My interpretation is based on incorporating Erdynast and Chen's domains, Kohlberg's levels and the gender questions posed by Gilligan. Dr. Caldicott's work leaves no question. Her developmental level is what Kohlberg would describe as self-authoring. Her attention to others while considering the best outcome for the majority without cost to her life and career puts her among the few individuals capable of level five and six behaviors identified on Erdynast's Table of Four Domains of Human Development.¹ These behaviors are described as including, original theory, work worthy of Nobel Prize attention, (Physicians for Social Responsibility was awarded the Nobel Prize in 1985 just months after Dr. Caldicott resigned as President), and a principle of responsibility, political liberalism and rational intuitionism. Each describes Dr. Caldicott and her works are in keeping with the higher levels of human development on Erdynast and Chen's scale. Dr. Caldicott's work as an anti-nuclear advocate is affecting policy and human rights issues internationally. As mentioned, the ban on above ground French nuclear weapons tests, according to Arnie Gundersen, is to a great extent a result of Dr. Caldicott's work.

Dr. Caldicott's voice, her enthusiasm, pain, and pride were all a part of our interviews. There isn't time in her world for self-pity. Honesty about regrets was discussed but no self-pity was evident.

Lawrence-Lightfoot's direction to "listen for voice" (99) as opposed to listening to voice played a key role in my analysis. This was particularly important, as Dr. Caldicott was not able

¹ <http://www.baojournal.com/BDB%20WEBSITE/archive/BDB%2019.4-A07.pdf>

to separate herself from the nuclear issues that absorb her considerations. This required a sensitivity interpreting the data, and required some reflection as the researcher. Was Dr. Caldicott avoiding something or keeping me on track to hear her message? Lawrence-Lightfoot's advice to listen for a story required a delicate balance with regard to Dr. Caldicott. Voice in dialogue was the next sensitivity I applied to the data; this refers to both my voice as the researcher and that of Dr. Caldicott. What would I mean if I said that? How does that differ from Dr. Caldicott's meaning? Carroll's guidance gave me the opportunity to attune to my own bias and assumptions. Dr. Caldicott has been answering these same questions for years. Her early writing to her more recent responses show very little change. She is perhaps less patient with some questions. And, finally, I listened for voice as autobiography to better understand the beliefs Dr. Caldicott holds about herself. As for Dr. Caldicott's work, Carroll writes, "The belief that who we are determines the qualities of our interactions and the intensity of our questioning. Our actions are inseparable from the assumptions, motives, values, and understandings that drive them" (156). Dr. Caldicott is driven by her understanding of a field of dangers presented to the medical community in the event of a nuclear war or nuclear disaster.

This final pass was significant in my interpretation—Dr. Caldicott's reaction to being called a whistle-blower. Her reaction challenged me initially and informed my approach to the interviews with each participant. Dr. Caldicott has a long-held belief that she is simply acting as any good doctor would act when faced with difficult information that needs to be delivered to a patient. In this case, the patient is the global community and Dr. Caldicott is delivering a warning about mishandling our resources, and endangering life on the planet as we know it.

I find Jackson and Parry's book *Studying Leadership* to offer solid insight in relationship to the considering the whole person, and not just their activism, in an effort to better understand

activism as leadership. In the case of Dr. Caldicott, that need to understand the whole person became increasingly more apparent. Jackson and Parry point out that “Leadership is a function of the whole situation. It is leader identity, leader behavior, follower identity, sociocultural context” (34) that determine someone’s leadership capabilities. As was clear in the relationship between the Gundersens and Dr. Caldicott, the Gundersens acknowledge Helen as a leader in the anti-nuclear field. Each credits her facts and her presentation of those facts as the element that drew each of them separately, and years apart, to the belief that Dr. Caldicott is a whistle-blower and a game changer in the nuclear field. Jackson and Perry emphasized this whole person study even more simply and in a way that directly addresses what I have come to expect of Dr. Caldicott: “Certain personalities lend themselves more to demonstrating leadership than others. For example, a person who is organized, reliable and ambitious (high in consciousness) is more likely to be seen as a leader than someone who is unreliable and careless” (35). Dr. Caldicott is a deeply committed leader; in her early years of activism she looked to harness the trust people have for their doctor to deliver information regarding nuclear dangers. The budgets available to the pro-nuclear movement dwarf any amount Dr. Caldicott can raise to organize a symposium. The value of the trust people have in their doctors translated into a movement that the Gundersens feel was instrumental in putting pressure on the government to stop the French testing of nuclear weapons above ground. Dr. Caldicott has followed through on her commitments in the face of great odds.

Dr. Caldicott is not a reluctant leader as Debra Meyerson refers to in *Tempered Radicals*, she is an exemplar—a leader who has sacrificed, paid a high price, lost a career, and more as a result of standing up to the nuclear industry. She made the choices she made knowing the price would be high. Meyerson identifies leadership traits by considering a person’s habits, “In the

course of daily interactions, we all face encounters that implicitly ask us to choose between raising a latent issue or ignoring it” (67). These decisions, for Dr. Caldicott were made in favor of her global patient, over considerations for her own comfort and career but not reluctantly. She repeats, “ I couldn’t not do it” when asked about reluctance.

In the Introduction I offered Amanda Sinclair’s comments about teaching leadership in *Leadership for the Disillusioned*, “There exists no universal set of prescriptions or step-by-step formulae that leaders can use in all situations to guide change” (28). When I asked Dr. Caldicott about mentors and mentoring she said she had not been very good at mentoring anyone who was ready to take on her message. She had not received any direct mentoring.

Arnie Gundersen stated that he did not agree with Dr. Caldicott when she refers to the pro-nuclear side as “evil” (personal communication, 15 August 2014). He admits that the dramatic approach has worked for Dr. Caldicott but he cannot agree with her characterization of the pro-nuclear engineers and scientists he once worked and socialized with in his old job. She has felt the need to set her own agenda and educate herself about the issue beyond the medical realities and according to Gundersen she has done a good job of it. She herself stated that she did this with pleasure. “I love the research. I’m reading everything right now for my next book.”

Kellerman and Rhode in *Women and Leadership* ask the two questions that drove my research “Does a gendered perspective advance our understanding of leadership” (97)? To this I would say that Dr. Caldicott’s story confirms much of the research about whistle-blowing and gender. And, the second question these authors propose that had an impact on my research was “Does it hold promise for closing the leadership gender gap?” (97). This second question will be dealt with more fully in the sixth chapter. I would submit, based on my research, that it does make a difference. Organizations interested in maintaining a high level of ethical behavior in

their organization should be paying particular attention to the female applicants to head departments. They should encourage those new hires to build departments that have significant representation of female employees at all levels. When considered from the perspective of Gilligan's writing we have an opportunity to see Dr. Caldicott's work as an extension of her empathy and her considered engagement, as a medical doctor. This would not be the first time Dr. Caldicott saw herself in a position to be responsible for delivering information that will be difficult for the listener to hear. Life-threatening illness, behavior that if not checked will shorten a lifespan; these are all conversations a doctor has as part of the profession. Dr. Caldicott believes she has been delivering difficult information to the global patient about what she sees as our "careless exploration into nuclear weapons and nuclear power."

Another study mentioned in the literature review for this document that is relevant to this conversation is the study by Decker and Calo called "Observers' Impressions of Unethical Persons and Whistleblowers." These authors suggest "It may be that females typically have more ethical intentions...females' willingness to engage in unethical behavior declined sharply as moral reasoning level increased while males' behavior varied only slightly with moral reasoning level" (312). For many whistle-blowers, high-level females in particular, the inability to remain quiet drives their decision to take the risk (Miceli and Near "The Relationships among Beliefs, Organizational Position, and Whistle-Blowing Status" 687; Decker and Calo 312) Dr. Caldicott shows a clear example of this playing out in her decision to act and continue despite the challenges to her personal life. She did not consider it a sacrifice in the early years. On more than one occasion Dr. Caldicott told me, "I couldn't not do it." Although Dr. Caldicott did not see herself as a whistle-blower, she fit the description. She did what was necessary and she expected to be successful.

In spite of the fact that she expected to be successful she also expected the retaliation—and in spite of the fact that she believed she had no choice. Dr. Caldicott stood her ground and has continued to stand her ground and to speak out against a powerful industry.

As reported at the time of my first interview with Dr. Caldicott, she was a feisty young pediatrician with a sense of humor that grabbed the audience and kept them engaged while she delivered information about unthinkable realities in a post-nuclear-strike world. The message is consistent.

As I conducted the interviews for this dissertation Dr. Caldicott is 76 and still has an infectious sense of humor however, according to her, her patience with the audience has become an issue. I questioned Dr. Caldicott about this following her presentation to the Antioch University Los Angeles audience. I had heard this presentation several times in Dr. Caldicott's career and knew there was a difference. Some in the audience commented to me about the doom and gloom message Dr. Caldicott delivered without a clear path to a solution. Dr. Caldicott was very clear about her sense of her own role in that question. She was not there to hold hands. She believes we are out of time for that. If they leave disturbed and do something about it, she feels she has done her job. She explained that she tries to give an audience hope and direction but she admits she is less patient than she once was, especially with American audiences. The speech for Antioch was delivered in the auditorium of a private elementary school in west Los Angeles. Dr. Caldicott turned to me on our way to the auditorium to say "Look at all the money being spent to educate the children when they have no future." This is not something Dr. Caldicott says to be provocative, although it is. She says this because it is what she believes. We are, according to Dr. Caldicott, and according to the research offered in the second and fourth chapters, shortening lives and adding numerable cancers to the lifespan of many of the global children. In clarifying

her position, Dr. Caldicott offered, “It also deeply involves the risk of possible nuclear war and what is happening with global warming, their life span is dependent upon a combination of all of these factors and more” (personal communication, 28 November 2014).

In the Literature Review, I mentioned that Dr. Caldicott’s activism has had a positive effect on each of our lives. Dr. Caldicott met Patty Davis, President Reagan’s daughter, at a reception in Los Angeles during President Reagan’s first term and was invited by Davis to meet with her father. Dr. Caldicott had one request of the meeting, “no one else in the room—alone with him or not at all” (personal communication, 28 November 2014). President Reagan agreed and the two met along with Patty Davis at the end of the president’s work day, which, according to Dr. Caldicott’s autobiography was 4:30 p.m. This meeting had a profound influence on Reagan, although Dr. Caldicott was not aware of this at the time. He listened and seemed disturbed by what he heard about a post-strike world from a medical perspective. He offered very little feedback. Dr. Caldicott describes his reaction as emotional in *A Desperate Passion* (261). Although she left the meeting thinking there had been very little impact, it was only a few days later that President Reagan began saying, and is quoted in *The Public Papers of the Presidents* with what became his standard approach to the subject. Nuclear war is not winnable and “there is no higher moral goal than to rid the world of a nuclear nightmare” (291).

Dr. Caldicott has created powerful enemies. The previously mentioned pro-nuclear power film by Robert Stone called *Pandora’s Promise* being the most current. This film portrays Dr. Caldicott as a radical implying and accusing her of being weak on facts. The interviews I conducted for this dissertation did not support that claim. There is an argument to be made on behalf of the nuclear power industry about supplying large numbers of people with electricity. There are points to be made about finding new sources of energy less harmful than fossil fuels

and coal. In Dr. Caldicott's opinion they hold no weight. Also, there have been no fact-based arguments faulting Dr. Caldicott's medical concerns regarding radiation exposure from nuclear weapons, nuclear power, and nuclear accidents.

The ethical consideration for Dr. Caldicott was motivated by what she saw as evidence of widespread danger to human life. My definition of whistle-blowing as mentioned in the first chapter, is broader than the legal use of the term. Dr. Caldicott has been willing to hold up a red flag, and blow the proverbial whistle, alerting the public to what she sees as a pending disaster. Although Dr. Caldicott disagreed with the description of her as a whistle-blower this need to alert the public of danger at great cost to herself is further evidence that her behavior fits the definition.

Littlemore, a journalist covering the story of a whistle-blower said about whistle-blowers, he thinks they "deserve respect for having the courage to make important truths known to the public at large...deserves our gratitude and applause" (para 4). The Gundersens share Littlemore's appreciation for those brave enough to act on knowledge of infractions knowing the price may be their career.

Sinclair wrote about the three "values" she considers imperative for effective leadership (34). When I consider these values in relationship to my interviews with and about Dr. Caldicott I believe that Sinclair's description fits Dr. Caldicott's brand of activism. Sinclair states that leadership requires "being reflective; working experientially; and thinking critically" (35). Dr. Caldicott does not have a lot of patience or time for personal reflection. Her focus is on the message. Dr. Caldicott seems to see her own issues as trivial when there is still so much work to do educating the population. Sinclair states "Leaders should always be asking themselves about their purposes, their assumptions, and the power relations of which they are a part" (36). These

questions require a level of self-reflection that Dr. Caldicott only allows herself as it informs her activism. In my efforts to have Dr. Caldicott speak more personally about her leadership she appears to consider this attention indulgent. Dr. Caldicott is only interested in her own personal issues and concerns as they relate to the effectiveness of her message in the anti nuclear argument. Dr. Caldicott's motivation to pursue this area of activism began as she states in her autobiography, as a result of her experience reading Neville Shute's *Back on the Beach*.

This experience for Dr. Caldicott as a seventeen year old is what Jackson and Parry in *Studying Leadership* call "sense making" (28). This happens, according to the authors, when we internalize a need and make meaning in a way that makes it personal and requires action. That was indeed the response Dr. Caldicott had to the comment in Shute's book stating that the reason this was able to happen to society was that no one stood up to oppose the nuclear industry. This "sense making" sustained Dr. Caldicott starting as an innocent young person becoming aware of the danger of silence. It informed a deeper interest in medicine, a field of study that had already been on the young Helen Caldicott's mind.

Dr. Caldicott does attribute some of the motivation for her activism to her gender. And, particular to this research, Dr. Caldicott's experience has remained consistent in the last twenty years. As was obvious in the fourth chapter, Dr. Caldicott is driven in large measure by two very distinct beliefs, first that if she can harness doctors to carry the nuclear message forward they will make better decisions. And, secondly, that she had no choice but to act is in keeping with the comments of the three women profiled in the 2003 Time Magazine article on whistle-blowing as well as the comments made by Caplan and Saint Marie in the 1984 interviews for *The Hanes Report*. Miceli and Near's "The Incidence of Wrongdoing" also makes the claim that women will make this choice in favor of others even when they know there will be a price.

That belief that she had to act on information in favor of informing a vulnerable population was introduced to her as a teenage girl through Neville Shute's book and remained her focus throughout her years of activism. A question that arises from the data is what is the age of impact when a child is old enough to understand and young enough to have optimism when introduced to information that motivates social engagement. Does that age have an impact on long-term activism in individuals beyond this one-person study? This is an area that would benefit from further research.

What we can learn from Dr. Caldicott's experience of her activism during this most recent twenty years is that without a deep commitment to a cause the challenges of activism stand a strong chance of derailing the efforts. We can also better understand the value of those "sense making" experiences in a young life. Dr. Caldicott's experience as a young woman exposed to the realities of the aftermath of nuclear war has sustained her, as a woman, a mother, and a physician. In our discussion Dr. Caldicott cautioned young activists to be sure they believe with all their heart and then commit to following through with their own instincts regardless of common wisdom. The secret to her is the belief that what you are fighting for is just.

My interviews were designed to examine the costs and the benefits in Dr. Caldicott's life as a result of this activism. I was considering Dr. Caldicott's own interpretation of her impact and her effectiveness. This was then compared with the literature regarding whistle-blowers. Dr. Caldicott was aware that the leadership role she was assuming would require that she put the well-being of others ahead of her own. I asked her again and she pointed out that I had already asked this question. She stated emphatically, "I couldn't not do it."

In the Literature Review I presented a study by Rehg and Van Scotter in collaboration with Miceli and Near, called "Antecedents and Outcomes of Retaliation Against Whistleblowers:

Gender Differences and Power Relationships.” In this study the authors offer evidence that being female is associated with retaliation, especially with more serious wrongdoings. Rehg et al. state that “Women who blow the whistle behave in a way that is inconsistent with their role as women and are likely to be more severely punished for this behavior than are men, for whom whistle-blowing may be viewed negatively, but not as role inconsistent” (224). After gathering the data presented in the fourth chapter and reading the recent literature from and about Dr. Caldicott, the question of age becomes of interest again, this time regarding the impact of age on the media outlets that might carry the stories regarding nuclear power. The question is now one of age and effectiveness. Dr. Caldicott has been making the same statements about nuclear danger for more than 40 years. In the most recent twenty years her message has received criticism leveled mostly at her hair, her temperament, and her demeanor, rather than her medical science. This question of age and effectiveness is another field that would benefit from further investigation. Arnie Gundersen said that Dr. Caldicott will not be remembered for her nuclear science, she will be remembered for her medical science and the impact she has had on all of our health by stopping above ground French testing of nuclear weapons (personal communication, 14 August 2014).

I attempted to understand what she and others perceived to be the influence of her gender on her decisions and choices. According to Dr. Caldicott she experienced no sexism at all in medical school. I am left to wonder, because of the era 1950–60s if there was some there but Dr. Caldicott was so focused on her studies and her active social life as a college student she missed some of what stopped others. Although I expected to find some bitterness toward men there was little evidence of that emotion in her description of the time period since then with the exception of her resignation from Physicians for Social Responsibility. That is one area in which Dr. Caldicott admits her respect for those in positions of authority, and the intimidation factor of

older white males on the Harvard faculty had a significant influence on her decision to resign. A decision she resents to this day.

S. David Freeman, an engineer appointed by Jimmy Carter to head the Tennessee Valley, later the Los Angeles Department of Water and Power and other energy conglomerates over the years worked in the field during the time of Dr. Caldicott's activism, stated, "We need to kill nuclear power before it kills us" (Freeman n.p.). Freeman and Dr. Caldicott commissioned a report by Arjun Makhijani that presents a plan to reduce greenhouse gases by 50–86% by 2050. Freeman recommends that we shut down all the nuclear power plants in the United States hoping that it will inspire the rest of the world to follow suit. When he was head of the Sacramento power company he shut down the nuclear plant that the voters voted to close. "We have a moral dilemma." He admits as an experienced executive in the field that there is "No safe place to put it." In a plea for a moratorium he asks "What right to do we have to contaminate this earth for future generations?" He has a recommended method of moving forward his idea that mirrors Prime Minister Kan's statement following the Fukushima disaster, "Stop making any more, shut down in an orderly fashion" (n.p.). His work also confirms the science of Dr. Caldicott. Freeman insists we need to acknowledge where we are and deal with what is next. Freeman says this was "an effort that was tried in good faith and failed namely, nuclear power." According to Freeman we are all victims of the propaganda machine that he states has even affected the President of the United States.

In the second chapter I also presented research regarding whistle-blowing and ethics as they relate to Dr. Caldicott's activism. I began with the male and female question, which was answered to my satisfaction. Being female, according to the data, positively relates to the intention to do the right thing when faced with an ethical challenge often regardless of the

potential ramifications (Rehg, Miceli, Near, and Van Scooter 25). Other doctors did know what Dr. Caldicott knew. Why, in medicine, a heavily male field; did others not come forward with the fierceness of Dr. Caldicott? When I asked her about this she said they did. She points to the 23,000+ physicians who rallied around the anti-nuclear war and weapons message and states that they are mostly men.

I spoke with Dr. Caldicott about the research of Baker and Hunt who explored the impact of gender on a team's ethical judgment. This is also a study mentioned in the literature review for this document in which teams were formed randomly, except for the gender make-up of the team, which was deliberate but was done without the participants knowing it was part of the experiment. "All-female teams scored significantly higher with regard to moral orientation than did groups made up of all males" (115). Dr. Caldicott was not surprised by the findings and offered her own opinion about a 30% tipping point claiming that if women were 30% of the political system they would stop funding war and would instead begin funding health care and nutritional programs for families.

This next analysis is based on a love of money and conducted by a research team lead by Tang and Chen called "Intelligence vs. Wisdom: The Love of Money, Machiavellianism, and Unethical Behavior across College Major and Gender." Tang and Chen investigated how a love of money impacts ethics. They found that gender was indeed a moderator indicating women had a higher intention to behave ethically than did the men especially when it comes to money. The data also suggests that women respond to ethical scenarios and questions with higher intentions to behave ethically than do men and women adjust their behavior, becoming more ethical, as they learn new information where the men did not (25).

In Marta, Singhapakdi, and Kraft's study "Personal Characteristics Underlying Ethical Decisions in Marketing Situations: A Survey of Small Business Managers," women managers reported that they were more likely than men to classify behavior as unethical (604). Dr. Caldicott sees this as further evidence that we need more women in positions of authority. She refers to the American way of life as a "coveting culture" and points a finger at this way of life as a major influence in expanding the issues of over consumption that lead to higher energy consumption and the need for renewable resources. In her opinion the American way of life is not sustainable as more and more populations around the world enter the middle class.

It was clear in my literature review that there is a significant difference between the genders regarding ethical thinking. Dr. Caldicott thinks this is clear in the number of high-profile ethical violations in the military, government, banks, and other financial institutions. If women are indeed more ethical in their approach to issues, where does the difference come from? Dr. Caldicott answers this question from her medical understanding and pointed to the midbrain and the leftover issues from the hunter/gatherer days.

I hoped with this research to gain an understanding of the culture in the nuclear field that Dr. Caldicott found herself involved in from the beginning and how it may have changed over the years. In an effort to do this I examined the role Caldicott played in the international culture regarding nuclear armament. My interview with Arnie Gundersen helped to address these questions. Dr. Caldicott's activism was significant enough to warrant the attention of the nuclear power industry in such a way, according to Gundersen, that those working in the field accept, with little question or evidence, that Dr. Caldicott is not to be taken seriously by those with a scientific understanding of the nuclear industry. Gundersen explained that those in the heart of the pro-nuclear power movement are susceptible to this way of thinking as they have a narrow

focus often inspired by a desire to supply power to underserved communities and to encourage economic growth in third world countries as a result of what they believe to be a path to affordable, clean energy. Dr. Caldicott argues that regardless of the claims of clean, which she disputes, the dangers of nuclear power to the health of the population would outweigh any advantage.

Christina Larson in her paper titled “Depleted Uranium: A Tragedy of the Commons,” would tend to agree with Dr. Caldicott, and explains the danger this way “ingested or inhaled, particles accumulate especially in the kidneys, lungs, liver, bone tissue, and reproductive organs. Health hazards of exposure include cancer, kidney damage, and genetic defects” (218). Numerous other scholars confirm her work (Gofman 162; Solnit 3). As reported in the second chapter Larson points out that “Workers and neighbors near military bases and more than 50 domestic U.S. sites where DU has been manufactured, assembled, disposed of, or tested are also at risk” (218). This was confirmed by the research presented in a study by the VA in Mississippi indicating that “67% of the children conceived by Gulf War veterans since the war have been born with severe illnesses or deformities” (221). This study implies that the problems with nuclear weapons are not limited to the first round of exposed victims. This is a point that Dr. Caldicott has been making for many years. With the insect and bird population being studied we witness the deformities in their offspring six to ten generations following acute exposure. Since those generations take longer to study in humans we have less data to consider. Dr. Caldicott’s medical school exposure to the research of Mueller who did the drosophila fruit fly irradiation experiments, for which he was awarded the Nobel Prize, was a link back to her experience reading *On the Beach* as a teen. It appears that this spurred in Dr. Caldicott an “if not me then who” attitude.

On the subject of influence, Larson claims that the anti-Caldicott and anti-anyone who opposes nuclear power is not an accident (225). As presented in the Literature Review, Larson also states that according to an article by Bleifuss, by the end of Reagan's second term \$100 million was being spent annually to make sure our impressions were what industry and government concerns wanted our interest to be (225). This contributes to the general public's lack of awareness of the dangers of nuclear production and begins to explain the powerhouse that Dr. Caldicott has faced in opposition to her message. Larson also corroborates the statements made by Arnie Gundersen regarding the general disregard for Dr. Caldicott among the nuclear engineering population.

It was a shared awareness of the cover-up at Three Mile Island that created the initial bond between Dr. Caldicott and Arnie Gundersen. They came from different segments of the science about nuclear plants, their knowledge of the problems, when combined, answered the unanswered questions they both faced. In *To Fukushima with Love: Lessons on Long-Term Antinuclear Citizen Participation from Three Mile Island* (TMI), Angelique and Culley compare the experience of the activists that came out of the Three Mile Island accident with the realities facing possible activists from the Fukushima disaster. Dr. Caldicott and Gundersen had daily phone calls during the weeks after Fukushima to compare notes from their different disciplines regarding the information being distributed by the Tokyo Electric Power Company. The routine was a 5:00 a.m. call to look at the differences and discuss the most recent information being shared. The authors of *To Fukushima with Love* state that both human error and technical problems play a role in the Fukushima experience (209), which is confirmed by both Gundersen and Dr. Caldicott. Social scientists have begun to refer to some of these disasters, as "na-tech" meaning there is both nature and technology to blame. A tour of the Fukushima plant the day before the tsunami and earthquake would have

included a view of the state-of-the-art system of tidal wave walls and generators for back-up; however, the wall was built to withstand a tidal wave one-third the size of the ten-meter high waves that hit the plant. Also, the generators failed because they were below the plant and destroyed by the flooding. Was nature to blame, yes, were their technological failure, yes, as a result of human error in judgment. The first time activists that were interviewed after Three Mile Island and from Fukushima almost all made statements about “their emerging sense of obligation to fight on behalf of others, especially children” (215). These first time activists found “the idea that they had been misled by government and industry was unbearable and demanded action . . . women, in particular, noted the condescension infuriated them” (217). This is very similar to the way Dr. Caldicott describes her reasons for her early activism. She read Neville Shute’s’ book that identified the problem as a lack of action on the part of those who knew about the dangers. Add to that her experience in medical school studying Mueller’s drosophila fruit fly irradiation (personal communication, 8 November 2014). The effect of radiation over generations was what alarmed the young Dr. Caldicott as a medical student and still pushes her. In our interview she insisted that she is no different, the facts are no different, and the danger is no less than it was when she began her activism. The exposure to information that could inform the public in a way that they would engage in a fight against the arms race or the building of nuclear arsenals and nuclear power plants was what moved Dr. Caldicott, and what has sustained her activism. When I asked her about what is different in the most recent twenty years she answered “nothing.” She is motivated by the same information and the same dangers with a commitment to informing. The difference for her is the lack of media attention. Dr. Caldicott and her closest allies believe that the criticism of Dr. Caldicott in the recent documentaries have cost a great deal of media attention to the issues.

Many of the participants in *To Fukushima with Love* mentioned the “stress associated with the complexity of nuclear technology coupled with an influx of contradictory messages” (224) as what pushed them to gain an understanding of the technology and share that understanding to educate the base. The authors’ lay bare their reasons for, and bias in, the research in the following quote:

As a matter of academic discourse, we aimed to illuminate theory and research to promote action, but as people who have lived in the shadow of Three Mile Island for years, we are more than community researchers. We are also embroiled in our nuclear communities. (224)

It was to avoid these new communities of activists that Dr. Caldicott engaged in the work initially. She believed that if the population knew what the possible down side of nuclear energy was, they would vote against it en masse. The fact that we have a new generation of activists as a result of these accidents does not comfort Dr. Caldicott; it is part of what makes her angry and, at times discouraged. She reflected on the impact of the information she spread through the documentary *If You Love This Planet* and her writing as well as her speeches in the 1980s when more than 23,000 doctors were motivated to join Physicians for the Prevention of Nuclear War, (later Physicians for Social Responsibility). The general public also was engaged and motivated to action in the 1980s. Dr. Caldicott’s regrets are few however the fact that she resigned from Physicians for Social Responsibility as mentioned earlier is compounded by the fact that the Nobel Peace Prize was awarded to the organization for her work shortly after she resigned, she herself had been nominated for the prize by Linus Pauling, and she was marginalized by a group of her colleagues who received the prize for her work, Had she been awarded the Nobel Prize. It would have made it much harder for the press and the pronuclear community to malign her.

On March 11 and 12 of 2013 at the symposium organized by The Helen Caldicott Foundation and Physicians for Social Responsibility at The New York Academy of Medicine, I witnessed a significant number of activists from Three Mile Island in the audience. Those who spoke were grateful to Dr. Caldicott for her efforts and equally frustrated with a population that is not focused on these problems. As mentioned, the former Prime Minister of Japan, Naoto Kan, addressed the audience via video with a sobering narrative regarding the decisions and reaction of the Tokyo Electric Power Company and the Japanese Agency in charge of nuclear power plant. Kan, who I mentioned earlier in this chapter as his words echoed S. David Freeman's, was prime minister at the time of the Fukushima disaster claims, "I am convinced that not having nuclear power plants is the safest nuclear power policy and energy policy" (n.p. 264.55).

Amanda Sinclair in *Leadership for the Disillusioned* makes the statement that "individual experience can only be explained fully when it is seen as part of the social and cultural context" (66). Again I would suggest that more research is needed to better understand the impact of her age both in the early years when she was first exposed to this information and now, when at 76 she is received so differently with the same message. Dr. Caldicott's activism can only be understood through the years in the context of her life as a mother, a doctor and a global citizen. As I have stated there is little that separates Dr. Caldicott's life from her activism. As she mentioned in our first interview she is at a contemplative time in her life. She continues with her activism as a result of a drive that she says she has no strength to oppose, she also sees a time in the not too distant future where she would like to just read and write in a less public forum. This is not without precedent according to an article in *Women's Personality in Middle Age* in which Stewart and Ostrove state:

Midlife may often be a period of change or transition but one that is neither universal nor necessarily as dramatic as "crisis" suggests. Instead, perhaps many individuals make

modest (and some not so modest) “corrections” in their life trajectories—literally, “midcourse corrections.” (1188)

Dr. Caldicott has made significant changes in her life as she has approached the third chapter of her activism. She is still passionate about her cause and knows there is as much or more need for the efforts; however, she is less convinced that she will be able to inform enough of the population to ensure better choices.

Her early experience with Physicians for Social Responsibility as described in *A Desperate Passion*, ended in heartbreak. Her marriage was also reported in the autobiography, a casualty of Dr. Caldicott’s success and public profile. In the autumn of Dr. Caldicott’s life and her life’s work, these elements are separate parts of the whole. The parts are easy to study as an interdependent relationship less so as separate parts. The focus of Dr. Caldicott’s life has been external. The focus has been on the global patient. My efforts to have Dr. Caldicott focus inward were not met with resistance; they were met with quiet reflection and a return to the cause. There was a sense of indulgence when the topic was personal. The urgency with which Dr. Caldicott approaches her mission is guided by the belief that every step toward nuclear power is a step toward doom. If not ours, those four to five generations from now through “random genetic mutations.” Dr. Caldicott calls it “random genetic mutation” as it is a result of leaks from aging nuclear power plant waste materials, facilities that have been abandoned and not properly disposed of, and nuclear weapon stockpiles, among other exposures. In reviewing this document Dr. Caldicott asked one thing of my approach, “also include the ever-present threat of nuclear war please” (personal communication, 28 November 2014). This quote stands as a prime example of the earlier mentioned blurred line between Dr. Caldicott and her concerns about nuclear threats.

In Methodology I mentioned the research presented in *Closing the Leadership Gap/Add Women, Change Everything*. In this book Wilson cites a study conducted by the

Inter-Parliamentary Union regarding women's involvement in, and effect on, governments. The report states that women address "human rights issues that directly affect their lives ...but they don't stop there—they also raise quality-of-life issues affecting everyone" (12). Dr. Caldicott believes strongly that this is our best hope. In the same way she worked to engage physicians she is reaching out to others. Dr. Caldicott believes that women entering the decision-making ranks in government bodies around the world will not vote in favor of ammunition and wars. She predicts that once women are a minimum of 30% of the governing body we will see distinct differences in the way governments spend their money.

In "Thinking She Could Be the Next President," Rios, Stewart, and Winter look at the influence of female role models in nontraditional positions, concluding "there are positive effects of introducing female exemplars into a domain where they are not anticipated . . . women living in states with female representation scored higher in political efficacy than women who lived in states where there were no female representatives" (329). Dr. Caldicott has been actively involved in building coalitions of women in many countries to address the lack of engagement and to establish role models in countries where the population would benefit from seeing women in leadership roles in government.

Dr. Caldicott agrees with the idea that women need to see strong women doing the right thing in tough situations. It is indeed part of what keeps her going. Her advice to young activists, especially young women, is to follow what you believe, "Be sure you really believe it, and if you do believe it, don't let anyone tell you differently" (Helen Caldicott, personal communication, 17 August 2014).

In "Knowing What is Wrong Is Not Enough," Cynthia Peters makes the point "the study of movements should, if we were doing it correctly, help us have better movements" (45). This

punctuates Dr. Caldicott's desire to be visible for young activists and to be strong in the face of criticism designed to undermine and discredit. "I know I'm right so they can say what they will. The facts remain the facts" (personal communication, 17 August 2014).

Mezirow's first writing about leadership occurred as a result of his interest in the dynamics present in adult women learners. As mentioned in the third chapter, Mezirow identifies "disorienting dilemma" as the key to effective transformational experiences (13). Dr. Caldicott's story of her "disorienting dilemma" begins as discussed with her reading of Neville Shute's book. Mezirow offers that a "disorienting dilemma" is the first of "ten phases of learning" that are present in the transformational process (13). For Dr. Caldicott they looked like this:

- A disorienting dilemma: in this case the questions prompted by a book that left a young woman with questions about who is responsible? And, what happens if everyone charged with the responsibility fails? Dr. Caldicott decided when she was 11 to become a doctor. Her reactions to Shute's book had a degree of influence later in Dr. Caldicott's considerations to step away from a daily practice and pursue the nuclear power and nuclear war question as a full time activist. She states that this time determined her "eventual decision to practice global preventive medicine" (personal communication, 28 November 2014).
- Self-examination: Dr. Caldicott's self-examination when she had to decide between her medical practice and her acceptance of a role as "global preventative" medical expert. This is still a result of the same concern, what she knew as a medical doctor that was not being discussed in the public forum, the medical risks associated with nuclear everything.
- A critical assessment of assumption: Dr. Caldicott became someone who was not afraid to question the status quo. She became vocal about issues she saw that were part of the problem and directions for people interested in how to address the problems. This was the beginning of Dr. Caldicott's activism.
- Recognition of a connection between one's discontent and the process of transformation: Dr. Caldicott had been trying to live with a foot in two worlds. She was a pediatrician, raising her own children and becoming a medical expert on the subject of cystic fibrosis at Harvard Medical School. She began to realize the need for her to make a choice. Her belief is that if we don't deal with the nuclear question the children won't have a future so why deal with the rest.

- Exploration of options for new roles, relationships, and action: Dr. Caldicott announced to her supervisor that she would have to choose between two worlds and she felt she needed to do the work of Physicians for Social Responsibility so she left her job at Harvard and took on the job of running the anti nuclear weapon and nuclear power organization known as Physician for Social Responsibility.
- Planning a course of action: Dr. Caldicott rallied 23,000 doctors to promote information about nuclear dangers and radiation exposure.
- Acquiring knowledge and skills for implementing one's plan: Dr. Caldicott spoke of the need to engage an audience and the need for her to become a performer of sorts to get the audience past what she referred to as the "boring facts" so they could hear the danger and move on that information.
- Provisional trying of new roles: In those early years Dr. Caldicott was attempting to keep her marriage healthy while raising children and traveling to promote the anti nuclear message internationally. Her life took a huge hit in 1988 when her marriage ended partly as a result of what she saw at the time as a lack of energy and effort on her behalf while she was pursuing this grand cause.
- Building competence and self confidence in new roles and relationships: Dr. Caldicott talked about the lessons of the experience of resigning from Physicians For Social Responsibility and that if she were to have that experience now she would not have resigned. She would have forced a vote and let the membership decide. It was a naïve trust and fear of the some of the older male doctors on the faculty and who were on her board of Physicians for Social Responsibility at Harvard that made her back down. "I wouldn't back down today" (see Caldicott Second Interview below).
- A reintegration into one's life on the basis of conditions dictated by one's new perspective: Dr. Caldicott made some decisions about her activism and her life that were informed by her early experiences as an author writing her autobiography, as a young mother and the daughter of an estranged mother. Dr. Caldicott is fiercely protective of the privacy of those in her circle. The loss of privacy by her children from *A Desperate Passion* influenced what I am able to share with you in this public document. (Mezirow 13)

To understand Dr. Caldicott's activism we need to understand her intentions her motivations and her anger. Judith Jordan wrote in *Women's Growth in Diversity* that anger "notifies the people in the relationship that something is wrong and needs attention, and [can] move people to find a way to make something different" (202). Anger as motivation for change is the challenge of Jordan's article.

Dr. Caldicott makes no apology for her anger. It is real She did not make the decision she made to become a “star,” this was a decision to arm a public with facts. Her efforts on behalf of many people she does not know are in response to claims like those of Jordan’s. Jordan states that there is “So much disinformation pumped through our collective consciousness, surely the mission of providing accurate information is an utmost priority for any social movement” (42).

Physicians for Social Responsibility had been established in 1961 but remained dormant until 1978 when Dr. Caldicott and her team recruited 23,000 doctors from whom she solicited their commitment to educate the public about the dangers inherent in all things nuclear and then armed them with research. This was the group that Dr. Caldicott worked with in 2013 to plan and execute the earlier mentioned symposium in New York on the second anniversary of Fukushima. Dr. Caldicott’s passion and charisma caused some tension within the organization and in the mid-1980s that tension caused her to relinquish her position in the organization. She made this difficult decision in order to forward the message (*A Desperate Passion* 284). She also admits that she would debate that decision today. “I was naïve. I trusted the older men. I wouldn’t make the same mistake today” (personal communication, 17 August 2014).

As mentioned above, in *Defining Social Justice in a Socially Unjust World*, Reich quotes Richard Caputo’s claim that there is a “growing dilemma of how social justice can be achieved in a political economic environment in which market forces are ascendant” (351). The question of the impact of social justice work in the face of a capital system would benefit from more research.

At a relatively young stage in her career and her life, she made the decision in favor of the message over ego and personal gain. In *The Third Chapter*, a book written by Sara Lawrence-Lightfoot about the twenty-five years of life that comes after our fiftieth birthday.

Lawrence-Lightfoot makes the statement that we are more likely to be “other” centered in our decisions during this “third chapter” (36). Dr. Caldicott got there far earlier than most. It may help to explain the consistent message of her activism. Dr. Caldicott has been other focused since she read *On the Beach*.

I have conducted this study of the medical issues presented regarding nuclear science to the best of my ability. I hope I have offered evidence of my education regarding the issues being discussed in our society on the medical risks associated with nuclear weapons and nuclear power. In the next chapter I will discuss the possible further research opportunities and impact on the study of leadership and change from a broader perspective. In that chapter we will look closely at the issue of leadership that have been provoked by my study of Dr. Caldicott.

Implications for Leadership and Change

In this chapter I will include questions raised and answered and those raised without answers. I will outline my interest in future research, and offer my own learning regarding Dr. Caldicott's leadership style. In my layperson's language I will outline what I have learned from Dr. Caldicott's activism and the implications of that understanding to the study of leadership and change.

I began this study determined to understand the changes in Dr. Caldicott's most recent twenty years and to explore how she became the lead voice in a movement that has lasted more than forty years. In the process of gathering my data a couple of important questions began to surface. First, has there been a change in Dr. Caldicott's activism in the most recent twenty years? Dr. Caldicott claims there is no change. She states, as I quoted in the fourth chapter, that the issue remains the same and her motivation is unchanged. The difference that became apparent was not in Dr. Caldicott's presentation as much as it was in the reaction of the press and audiences. This brought me to the second question of age. Initially, I was curious about her age when she was first exposed to her issue and early activism. This continues to hold interest but this time the result of her current age on the media is what requires further exploration. There is room for further research regarding the age of action when a young person is exposed to information that can inspire activism. The second question about age, that is relevant to leadership and the study of Dr. Caldicott's leadership, is the question that arises from the data regarding the age of the activist and the reaction to the activism by the media as that activist ages.

This study of Dr. Caldicott's leadership inspires two additional areas for future research. First, the earlier mentioned issue regarding the age at which an individual is first exposed to an issue. Is there a broader reality among high performing activists who work toward a better world at significant cost to themselves? Secondly, can we teach empathic activism? If indeed women

are more apt to respond to unethical behavior with ethical responses then how do we inspire the other gender to move in that direction? Is it possible that if there were enough women in positions of power that the balance would tip in that direction? Dr. Caldicott said yes, as reported in the fifth chapter, Dr. Caldicott believes there is a 30% tipping point. If 30% of a parliament or senate were female the decisions would be made in favor of humanity with an eye to longevity. Later in this chapter I will offer evidence of that tipping point in India on the topic of nuclear energy.

The question this inspires is: what kind of leadership is needed to address these issues? These are questions that I will present here as relevant to the study of leadership and change, in reflection on Dr. Caldicott's leadership.

Dr. Caldicott fits the description of a charismatic leader. Charismatic leadership expert Riggio identifies the characteristics of the charismatic leader as “constellation of personal characteristics that enable (her) an individual to have an impact on others by inspiring them, influencing them, and affecting their feelings, emotions, and behaviors” (158). Caldicott's impact on the nuclear arms race was in some measure due to her charisma. Many contributors to this research agree with this description of Dr. Caldicott (Nemeth; Gundersen; Freeman). Leadership was not Dr. Caldicott's goal. An informed public was her goal. Self-preservation and care for future generations were and are her focus. Leadership it appears was a result not a direction.

Arnie Gundersen decided to attend a dinner to meet Dr. Caldicott out of curiosity. He was seated next to Dr. Caldicott at that dinner and as a result of that first-hand experience of Dr. Caldicott he changed his impression and his response to her work. Arnie Gundersen spoke of his early impression of Dr. Caldicott, where he believes it came from, and why it

was effective. In his words, “the industry is very effective at silencing voices of discontent” (personal communication, 15 August 2014). I also witnessed what appears to be a pronuclear contingent that frequents Dr. Caldicott’s speeches. I have read online criticisms that take shots at style but not substance of her medical science. She may not have the very complex language and science of the nuclear science managed as well as many in the nuclear business and can be faulted there on occasion. The same is not true of her medical science. Again I site the collaboration with New York School of Medicine and Physicians for Social Responsibility as part of the confirmation of her medical science.

In *The End of Leadership*, Barbara Kellerman poses the question: Can leadership be taught (67)? This is provocative on many levels. Dr. Caldicott believes it can. In fact, it is much of what has propelled her over the years, as is apparent in the number of times the quote regarding an informed society appears in her work and mine about Dr. Caldicott. The theme of Dr. Caldicott’s work is that of an informed electorate making rational choices as community leaders, and constituents. Kellerman offers the following as imperative for effective leadership:

Four fundamental answers: first, leaders should develop certain skills, negotiating skills, and decision making skills; second, leaders should acquire awareness in particular self awareness; third, leaders should have experience, for example, in mobilizing and managing; and, finally, leaders should learn the difference between right and wrong—though how exactly ethics, or character, should be taught remains unclear. (179)

Dr. Caldicott, has applied these four areas of study beginning with reflection and realized early on that she needed to be more than the person with the boring facts. She studied her impact, she honed her skills and “became an actress to hold peoples’ attention” (personal communication, 7 March 2013).

Research in this area is key to answering the earlier question posed regarding the ability to teach leadership and as part of that leadership empathy and ethics as a basis for leadership. In

the earlier mentioned *Leadership for the Disillusioned* by Sinclair puts it this way, “Leaders and followers collude in the imagining of leadership as heroic feats that will fix problems and usher in a new era. These practices are seductive because they release individuals from the work of leading themselves” (8). This is particularly relevant to my interviews with Dr. Caldicott. Her goal was to inform a public so that they would in turn pick up the torch and carry it on to a larger audience. Her leadership was never meant to replace individual action but to inspire individual action. Dr. Caldicott has demonstrated transformational leadership qualities throughout her activism but even more so in the last twenty years when the criticism of her work has been more personal and degrading. Sinclair offers that transformational leaders “Work by tapping into and inspiring the higher motivations of followers ... such leadership raises followers to higher levels of moral consciousness—independently of its context, task or purpose” (23). This has been a stated goal of Dr. Caldicott’s. Her audience has been exposed to dramatic depictions of post-nuclear war realities and post-nuclear accident statistics that are not covered by the main stream press often enough to satisfy Dr. Caldicott. She informs with material that is not popular with the Nuclear Regulatory Commission but is information that is based in sound medical science (Gundersen; Freeman; Enis and Plym).

I began with several broad questions such as what effect did Dr. Caldicott’s role as a wife, a doctor, and mother have on her leadership style? Marie Wilson addressed this, in *Closing the Leadership Gap*. Wilson presents the idea that perhaps being an effective leader in the home is where we learn to lead outside the home. “One of the best training grounds for leadership is motherhood” (9). Dr. Caldicott has worked hard to engage mothers as activists believing that is we could harness the passion involved in nurturing the best of our children in turn a desire to leave them a healthy planet. Despite the clear link between motherhood and leadership Sara

Ruddick's claim in *Maternal Thinking* that "Women's and mothers' voices have been silenced, their thinking distorted and sentimentalized" (127). Joyce Fletcher continues this thought in *Disappearing Acts*. Fletcher makes it clear that as women, there is a danger that our work can be easily ignored if we are not diligent (12). Dr. Caldicott was on a mission to inform and was not easily disappeared or ignored when she arrived armed with facts and informed fellow medical professionals and the public of pending danger. It was very difficult for the nuclear power and weaponry industries to ignore the work of Dr. Caldicott so they made other efforts to rid themselves of her impact. They took on the affront by accusing Dr. Caldicott of hysteria and inappropriate anger directed outward (Stone, Gundersen, Nemeth). At 76 they ignore her. I have gone back through many of Dr. Caldicott's speeches and videos. She tells the truth when she says the message is the same. Why then is the reaction to the message so different? In 1984 Dr. Caldicott's message inspired 20,000 plus doctors to become active with Physicians for Social Responsibility, a documentary, *If You Love This Planet* that won an Academy Award and a Nobel Peace Prize was awarded to Physicians for Social Responsibility for the work Dr. Caldicott completed, and it was given the year she retired as president. What has made the difference is a subject rich for future research.

Sowards and Renegar in their article "Reconceptualizing Rhetorical Activism in Contemporary Feminist Context," offer that many "have chosen a kind of activism that operates in the private sphere or in less public arenas in comparison to the activist measures described in extant literature on social activism" (60). Dr. Caldicott has not had this luxury, her work as an anti-nuclear activist has put her in the front row squarely in the sites of the opposition. Sowards and Renegar make the point that telling personal stories of activists has a significant impact on the listener or viewer, "Personal experience as a bridge to larger political and theoretical

exploration,” and in the case of Dr. Caldicott, the personal became public (66). “Another central idea behind this version of activism is that individuals can be activists in the process of simply going about their lives” (67). The authors also state that this brand of activism “embodies a wide range of rhetorical practices that are powerful, personal, and self-created. Because these activities are defined by the individual activist, they are also not prescriptive” (70). This goes a good distance toward explaining the link in Dr. Caldicott’s life between her personal life and her activism. It was very difficult to engage Dr. Caldicott in a conversation about herself personally in any way other than as a reflection on her activism. Her personal life as it relates to her children, her family experience and the nuclear power issue were filled with blurred lines. There is no easy way to separate who Dr. Caldicott is from her activism.

In my opinion and the opinion of many, some of whom were participants in my study, Dr. Caldicott is an exemplar of what appears to be an effective leader for social change. She has become this at great cost to her own life. There have been benefits of relationship and personal experience but it is clear to many that this is not an endeavor for Dr. Caldicott that is informed by personal goals. She is an individual who has had options throughout her life and consistently chose what is best for the greater-good over personal gain and career advancement. Dr. Caldicott has made significant sacrifices in her life to educate a population about pending danger. This biographical report of Dr. Caldicott, allows for a first-person account of blowing the whistle and the impact of that action reflected through the lens of the twenty years since the publishing of her autobiography. Dr. Caldicott did not see herself as a whistle-blower as reported earlier in this document. Reading the reports of others about her work has allowed Dr. Caldicott to see her activism as whistle blowing through the lens of her associates. Telling this story, at this time, is an effort to find the truth of the medical claims in a complicated story. I have completed a

layperson's study of the medical issues in the nuclear field and report that truth using an academic approach to biographical research.

I briefly mentioned Afra Kavanagh's work in *Women in/and Storytelling*:

Women's relationship to story telling is historic...women continue to promote story telling's many benefits in the professions, and as a result of social changes brought about by modernity and feminist activism, they are also among the scholars that study storytelling and its practice. (91)

Afra Kavanagh claims historical success in that storytelling has "been put to use with a positive emphasis on women's leadership and achievement" (92). This has been particularly true of Dr. Caldicott as the recent criticism of her activism lack medical reason and medical credibility.

In the work of Heifetz, Grashow and Linsky, *The Practice of Adaptive Leadership*, the authors make the statement that a leader must decide on their loyalties. This guides their decisions. They state it in this way,

Recognizing how you have prioritized your loyalties is an essential step in exercising adaptive leadership...one of the best ways to diagnose how you have prioritized your loyalties is to rely less on what you say to yourself and others about your loyalties and to begin watching what you do. (189)

Dr. Caldicott's decision to step down from Physicians for Social Responsibility offered evidence of her assigning primacy to the message over her role in distributing that message. The resignation was filled with emotion and disappointment as Dr. Caldicott shared in our interviews however; the decision she made was clearly in favor of the greater good. When I asked about regrets this was the most significant regret Dr. Caldicott discussed. Leaving her position at Physicians for Social Responsibility had the strongest emotional attachment to any disappointment she described. She repeated more than once that she would handle this very differently today. She would have faced the issue head on and forced a vote. Heifetz, Grashow and Linsky wrote, "there is no reason to shoulder the difficult work of leadership if you do not

have compelling, higher purposes to serve” (233). Dr. Caldicott has endured great pain as a result of her activism. It has been her dedication and commitment to the cause that has fueled her work.

Uhi-Bien, Marion and McKelvey also mentioned in the second chapter as the creators of the framework of complexity leadership theory, which “includes three entangled leadership roles (i.e., adaptive leadership, administrative leadership, and enabling leadership) reflect a dynamic relationship” (298). Dr. Caldicott has created a life that gives her the essentials and leaves her time and energy to continue her mission to inform the population of issues in which, with their choices, they can have some measurable degree of impact. There is an active debate online and in traditional media about the nature of that impact. The arguments have varying degrees of fact and fiction. I used only peer-reviewed articles in my research. Dr. Caldicott lives on the Australian pension system in a community designed for adult living. The money she raises is spent on her cause. She puts together symposiums, writes books, speaks internationally and commissions reports like Carbon Free Nuclear Free in which she is partnered with S. David Freeman. These facts all make Dr. Caldicott’s story ripe for consideration as a possible case study in Complexity Leadership Theory.

Dr. Caldicott requires strong, well-defined administrative skills to accomplish the simple tasks of getting her message out in a multi-platform communications environment where there is an abundance of information distracting and derailing the best of plans by activists. The need for adaptive abilities is also constant. All leaders will experience change.

Previously, I raised my concerns about Robert Greenleaf’s servant leadership theory. My reaction to servant leadership as a feminist remains strong and negative. I can see servant leadership as relevant in certain circles. Those circles, as earlier confessed, in my opinion, are male. I remain convinced that it is far too easy for women to be disappeared in the midst of

servant leadership. Again I point to Joyce Fletcher who makes the case for women's voices and efforts being disappeared in *Disappearing Acts*. She states women are "expected to act relationally, to meet emotional needs intuitively, to support others' achievements, and to create conditions in which others can grow" (16). Fletcher claims that women are often "expected to behave this way and not be rewarded for it, or how this work might be invisible to others" (18). I believe it is worth repeating that there is a real danger for women as servant leaders that the effectiveness of our endeavors may result in our remaining invisible.

Dr. Caldicott was a working mother and as such related to a guilt that was common when she felt she was working too much and there was also the guilt that accompanied the sense that she was not working long enough. Dr. Caldicott was an engaged mother working to build children who fit the description of "self-authoring" as described by Kegan. This brand of leadership, servant leadership, is a dangerous field for women. Greenleaf Center's mission statement includes: "Across our global community, servant leadership is embraced as a guiding principle, thus building a more just, caring, and sustainable world with hope and prosperity for future generations" (Greenleaf para 10). A way of being that is often ascribed to women is not always marketable although, according to Greenleaf, it is effective. In citing Daniel Goleman's oversights on this (as discussed above) Wilson concluded, "Intelligent men know it is a risky venture to feminize a topic" (8). According to Wilson, the dismissal of Dr. Caldicott's work is expected and the reality of ideas considered a woman's way of being (8).

In "Broadening the Security Paradigm: Indian Women, Anti-Nuclear Activism, and Visions of a Sustainable Future," Runa Das claims that when women engaged in the anti-nuclear movement in India the issue became more "people centric" (1). This was what Dr. Caldicott was hoping for when she talked about engaging women in the cause in higher numbers. It would be

the only way in her opinion to give women enough power to make the needed changes in governmental decision making.

Finally, I return to the work of Deborah Eicher-Catt in “The Myth of Servant-Leadership: A Feminist Perspective.” Eicher-Catt concludes, “The best leader is a person who is a visionary; a person who genuinely authorizes new, effective and appropriate systems of organizing that ignite members’ creativity and passion” (24). I agree with Eicher-Catt that what we need are more leaders—fluent in “authentic speech” (24).

Dr. Caldicott’s speech, her writing, and her brand of activism in general are impassioned and authentic. The argument in favor of her science is apparent in the partnerships she continues to experience with Physicians for Social Responsibility and the New York School of Medicine.

My research suggests the fact that as a woman, Dr. Caldicott may have had a significant impact on her willingness to carry the message at the cost of her career. I am not sure she would have made the same choice had she known it would cost her the family. Dr. Caldicott insists that she did not have a choice; she had to act, so there is not room to rethink the decisions that led to her early activism. This is not to say she would have made different choices if she was aware of that price. Nor does it imply that she made some agreement to take on the cost. This is only recorded here to suggest that Dr. Caldicott’s gender may have informed her decision to come forward. It could also be said that her ethical make-up gave her the courage to speak out when she was confronted with what she saw as essential to the population. She had no choice but to take action on that knowledge.

Dr. Caldicott’s style of leadership is identifiable in most of the modern descriptions of leadership styles from charismatic leadership, to Complexity Leadership Theory, Transformational Leadership Theory, and Feminist Leadership Theory. Dr. Caldicott’s brand of

leadership reflects her audience and she adjusts her style accordingly. The question that this study answered through the words and writing of many other scientists and researchers is the question of validity of the medical information distributed by Dr. Caldicott regarding nuclear power and weapons (New York School of Medicine). In this area of questioning there is little debate in the peer-reviewed research.

The study of Dr. Caldicott's activism has offered even more questions to be addressed in future research. For example, the question previously mentioned about age, both the age that an individual is first exposed to information that could spark activism and the age at which the media stops reporting the comments of an activist. There are other less obvious questions that have been provoked from this study, such as, the difference between the ways the activist sees themselves and the way they are viewed by their contemporaries. With Dr. Caldicott the difference was considerable. Dr. Caldicott did not see herself as a whistle-blower however the people who work closely with her do see her as a whistle-blower, and they do so in admiration.

Her charismatic form of leadership was something others point to as an ingredient in her success. Dr. Caldicott spoke of developing a performance, becoming an actress to engage an audience so they could digest what she called "a bunch of boring facts" (personal communication, 17 August 2014). Her contemporaries saw it as part of her nature.

I was determined to understand what influence Dr. Caldicott's gender had on her success. Dr. Caldicott does not think her gender has been an issue in her career. She thinks perhaps it has been a motivating factor for her as her role as a mother made her acutely aware of our fragile future where nuclear issues are concerned.

These major concepts that came forward in this research of age, gender, whistle-blowing, and activism can also be applied to other studies of individual activists in different fields.

Completing his dissertation leaves me with a desire to continue the study activism through the lens of whistle-blowing. As a result of my time with Dr. Caldicott I will be adding age to the gender considerations. The implications to leadership and change cover a wide range of possibilities and include addressing the question of whether leadership can be taught as posed by Kellerman. I am inclined to say that the process of leadership style can be taught and along with the thinking that can inform productive leadership; however, the question of teaching someone to be that leader and use those processes remains for me unanswered. Further research is needed to better understand, when someone does have the ability to lead, what propels and sustains them through the more difficult parts of their journey.

APPENDIX

Appendix A

First Interview

1st Interview:

What is your earliest memory of an ethical dilemma?

Did you make that choice in favor of the greater good while knowing there would be a great cost to you?

How has your life changed in the last twenty years as compared to the beginning of your activism?

How would you describe your current brand of activism?

Have you withdrawn from the public during the last two decades? Why or why not?

Has your gender had an impact on your retirement plans and experiences?

What are the lessons learned from your more mature position as an activist?

2nd Interview:

What is your earliest memory of someone in your family facing an ethical dilemma?

What was the outcome? Did they make the choice you would support?

Do you have mentors and or role models?

What has been to cost of your activism to your personal life?

As you reflect on your activism are there choices you would make differently?

What does whistle blowing mean to you now?

3rd Interview:

How would you describe yourself today and how would that differ or confirm your description of yourself when you completed *A Desperate Passion*?

What would you like to see as a result of your work twenty years from now?

Is there any work or social cause that has been more personal to you than any other?

How do you feel your activism has influenced your personal life?

Is there anything that you are particularly proud of that we have not yet discussed?

Is there anything you are particularly embarrassed by that we have not yet discussed?

How do you feel about the trajectory of your career over the past twenty years?

Is there a message you would like to get to the next generation of women entering the early stages of their professional life?

These questions were designed to allow Dr. Caldicott to approach her own story from a new perspective, and to create a setting in which she can forget there is a camera.

301 What is worthwhile work for you (good work for you)?

Education, teaching and treating my patients

302. Why is that kind of work worthwhile?

Because it helps people

II. Duty of mutual aid

The duty of mutual aid is the duty of helping another when s/he is in need or jeopardy, provided that one can do so without great burden to the self in helping those in need. (Mountain climbers, for example, have a duty of mutual aid to help one another, and hence they have a duty to offer their considered opinion in urgent circumstances.)

1. When you gave your talents generously what were the important consequences to others? Why?

I've saved and prolonged many lives and inspired many people along the way

2. Why did you act generously in the giving of your talents to others when the duty of mutual aid required doing so?

Because I am obliged to as a physician

III. Supererogatory magnanimity

Magnanimity goes beyond the normal duty of mutual aid. Magnanimity is the duty of helping another under circumstances that involve significant cost or sacrifice to the self.

1. In the magnanimous giving of your talents, what were the important consequences to others? Why?

Well I wasn't home enough with my children as they were growing up nor my husband

2. Why were you magnanimous in giving of your talents to others?

I felt that I had to as a physician, one doesn't think of oneself when practicing medicine or preventive medicine, the patient comes first

DILEMMA IV – B

THE ASSISTED SUICIDE DILEMMA

<http://www.latimes.com/news/local/la-me-lodi-assisted-suicide28-2009feb28,0,5508597.story>

From the Los Angeles Times

Woman pleads not guilty to charges she assisted in brother's suicide

June Hartley, 42, of Lodi pleads not guilty in the death of her brother Jimmy Hartley, 45, a well-known blues guitarist who'd been in constant pain after a series of strokes.

By Steve Chawkins

February 28, 2009

A Lodi woman pleaded not guilty Friday to charges that she assisted in the suicide of her brother, a blues guitarist who was well-known in the Central Valley.

Jimmy Hartley, 45, had been crippled by a series of strokes and other health problems. In constant pain, he had pleaded with his sister for help in killing himself for nearly a year, according to Randy Thomas, June Hartley's attorney.

June Hartley, 42, holds a master's degree in education from Harvard, her attorney said, and quit a job to care for her brother. Prosecutors said they hoped to negotiate a settlement short of a trial.

After his strokes in 2006, a portion of his cerebellum was removed to relieve pressure on his brain.

Even so, he was rational and capable of independent decisions as he "begged law enforcement, friends, family and, ultimately, June Hartley to help him commit suicide," according to the attorney.

steve.chawkins@latimes.com

1. Did June Hartley have a duty or obligation to assist in her brother's suicide? Why or why not?

Yes that is the only humane and loving approach.

2. Is it actually right or wrong for her to help him commit suicide?
Right, yes

2a) Why is right or wrong?

Because he asked for it and it ended interminable suffering

3. What should June Hartley have done if she is motivated by compassion and would have to act at a significant cost or sacrifice?

She should have done what she did

3a) And why?

As above

10.1 Is the painting Les Demoiselles d'Avignon beautiful?

http://www.moma.org/collection/object.php?object_id=79766

10.1 a. Yes or No.

Yes

10.2 b

Why or why not?

Because I love Picasso

11.1 What are the painting's excellences if any?

Well it is cubism, which fascinates me

Research Questionnaire Designed by Dr. A. Erdynast and Wendy Chen, Antioch University, reprinted with permission:

On Apr 21, 2015 2:56 PM, "Leah Hanes" wrote:

Hi Al and Wendy, I need your permission in the form of a response to this email allowing me to use your questionnaire in my dissertation.

If I have your permission it will appear as Appendix B and will be published in Proquest as well as two open access archives.

Thank you for your consideration.

Best, Leah

Wendy Chen <wchen1@antioch.edu>

Hi Leah,

Absolutely, permission granted.

All the best,
Wendy

Albert Erdynast <aerdynast@antioch.edu>

Permission granted

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