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"SCIENCE IS MAGIC THAT WORKS": SCIENCE AND TECHNOLOGY IN THE EARLY WORK OF KURT VONNEGUT, 1952-1963

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“SCIENCE IS MAGIC THAT WORKS”: SCIENCE AND TECHNOLOGY IN THE EARLY WORKS OF KURT VONNEGUT, 1952-1963

A THESIS APPROVED FOR THE
DEPARTMENT OF HISTORY OF SCIENCE

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Abstract

Kurt Vonnegut's writing helped to push the boundaries of our conventional understanding of twentieth-century American literature through his inclusion of science fiction themes in many of his works and his poignant discussions of the perils of war. However, it is his work as a critic of science and technology during the Cold War period which helps to complicate a man who so often seems dismissive of human beings. His connection with the General Electric company and his experiences in World War II complicated the views of a man who, for the first twenty years of his life, fully expected to become a scientist. I will be making the argument that in two of Vonnegut's first novels, *Player Piano* and *Cat's Cradle*, he draws on his ties to GE to critique the structure of corporate science and illustrate the dangers that the creations of these institutions pose, namely that they are addictive and unpredictable. Together, the novels represent the end of work and the end of the world, respectively.

The Reluctant Luddite?

"We are here on Earth to fart around. Don't let anybody tell you any different."[1] The humor and nonchalance that Kurt Vonnegut brought to his writing was infectious, so much so that he was often compared with Mark Twain.[2] Known best for his satire, discussions of war, and science fiction themes, in the decade since his death, Vonnegut has fallen from favor somewhat by literary scholars and the public alike.[3] There is less historical scholarship on Vonnegut than there is literary scholarship. It is the goal of this paper to place him within the historical and cultural context of early Cold War America. I will show how Vonnegut's ideas about science and technology were shaped by the ongoing concerns of the immediate postwar and early Cold War period (that is, from 1945 to 1965). It was at this time that the American public faced changing economic conditions driven by what President Eisenhower famously called "the military industrial complex," by increasing automation (in the factory and at home), and by a new understanding of "American" identity.

It was within this context that Vonnegut wrote *Player Piano* (1952) and *Cat's Cradle* (1963), his first and fourth novels. These two novels deal heavily with questions about science and technology, especially the idea of progress and the dangers of its unintended consequences. They were also shaped in large part by Vonnegut's experience at General Electric in the late 1940s, at a time when his older brother, Bernard, was working there as well, as a scientist under the direction of Nobel laureate

[1] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 62.
[2] Robert Tally. *Kurt Vonnegut and the American Novel: A Postmodern Iconography.* (London: Continuum International, 2011).
[3] For example, there is a conference dedicated to Vonnegut at Indiana University, Granfalloon, in May 2018, celebrating the life and work of Vonnegut.

Irving Langmuir. These two works tell us much about the nature of Vonnegut's thinking during these heady Cold War years. *Cat's Cradle* has often been discussed in terms of its humor and satire, but its criticism of the modern scientist and misunderstood technology has often been unanalyzed. *Player Piano* too is underappreciated for what it tells us about Vonnegut's thinking. In literary circles, it has become a footnote in Vonnegut's long literary career.

In this respect, I argue that we should read Vonnegut as an anthropologist of science and technology, that he applied his graduate training from the University of Chicago anthropology program to his time at GE and his relationships with men of science throughout his career. *Player Piano* tells us the story of runaway automation in the hands of a scientific managerial class. *Cat's Cradle* analyzes the nature and ramifications of corporate science, specifically the unintended consequences of modern technology. Both novels are studies in the new system of corporate science which dominated that aspect of mid-century US industrial work and catapulted America into world leadership economically and scientifically. Vonnegut makes a critical distinction between two types of people working within a corporation, which I will be calling the corporate scientist and the corporate worker. It is this dynamic that Vonnegut finds to be so dangerous to the production of science and technology. The two texts represent the end of work and the end of the world, respectively, both of which are intricately tied to our ever-complicated relationship with technology and the intricate power structures which we fall into. However, what I am examining is more than just the ideas of Kurt Vonnegut, but also the ways which his experiences contributed to his thinking, the link between the man, his ideas, and his experiences.

Vonnegut uses the character Felix Hoenikker in *Cat's Cradle* to argue against the structure of corporate science and the person of the corporate scientist. His egalitarian view of science was the foundation of his thinking and helped him analyze what was wrong with American science. The corporate hierarchy and its celebration was an affront to Vonnegut's belief that there should be less of a distinction between the corporate scientist and corporate man. Corporate science creates a morality vacuum and robs men of their humanity. This idea is fundamental to the way Vonnegut thought about science and is one of Vonnegut's main critiques. Both novels explore this corporate connection, but I will show that they diverge in their exploration of the unintended consequences that Vonnegut believes technology can create. Vonnegut believed that work provides purpose and when machines replace humans, we are robbed of our humanity. He argues in *Player Piano* that we have done little to consider the human impact that replacing people with machines will have and this presents a moral dilemma that the corporate scientist has neglected. Vonnegut's fears about technology becoming destructive, even against our best intentions, are played out in *Cat's Cradle*, where amorality in science is ultimately our biggest threat.

Within the section Corporate Science on Display, I will first be explaining in closer detail Vonnegut's connection with General Electric. It is from his time working in the public relations department, as well as his understand of the work which Bernard did under Irving Langmuir that was fundamental to many of the critiques about science and technology that he would make later. These connections to GE formed the basis for his fears about the addictive properties of technology and about morality removed from science, as he witnessed in the industrial research lab. In the section *Player Piano* and

Automation, I will argue that Vonnegut's views on automation come from his view that work is fundamental to human identity. But it is also here where some of the greatest complexity in Vonnegut lies, because while he is a critic of science and technology, he believes that there is something inherent in humans that draws them to technology, that progress is inevitable, not because of the technology itself, but because of a flaw he sees in humanity. Finally, in the section *Cat's Cradle* and World Ending Technology, I present the argument that Vonnegut's experiences during World War II did much more than create Billy Pilgrim in *Slaughterhouse-Five*, they also cemented Vonnegut's horror at the ways which we use technology to harm ourselves and our planet. Vonnegut's fears about humans losing control of the science and technology that we create are grounded in first-hand experiences with the horror of human progress.

Biography

Kurt Vonnegut Jr. was born in Indianapolis, Indiana, on November 11, 1922, Armistice day.[4] Descended from wealthy and proud German-Americans, by the end of the 1920s, the Vonnegut family was faced with multiple crises of identity. The First World War made German ancestry complicated in the United States, and even though his two older siblings, Bernard and Alice, were taught to have pride in their German forefathers, Kurt was denied that cultural education. The end of the 1920s also brought the end to the Vonneguts' wealth and prosperity, as it did for so many Americans. This meant that Kurt was the only one of the Vonnegut children who did not attend private

[4] Vonnegut was immensely proud of this connection to Armistice Day and the peace associated with it. Charles J. Shields. *And So It Goes: Kurt Vonnegut, A Life* (New York: Henry Holt and Company, 2011).

school, and later in life he came to believe that this gave him a more democratic friend base than his older siblings.[5] Kurt's relationship with his older siblings was typical of sibling relationships of the period. Bernard was eight years Kurt's senior and their father pushed him, and later Kurt, to become a scientist, believing that this was a keenly American vocation leading towards prosperity, and Bernard's fascination with tinkering only helped to elevate Bernard in their father's eyes. Bernard went on to graduate from MIT with a Ph.D. in physical chemistry in 1939. Kurt greatly respected Bernard's work in the physical sciences[6], crediting him with his continuing fascination with science and technology.[7] Only five years his senior, Alice was very close to Kurt until her untimely death in 1958. According to one biographer, "Vonnegut more than loved Alice; he was unusual as an author because he wrote for an audience of one: his sister."[8]

At the end of eighth grade in June of 1936 Kurt explained that he wanted to "cure cancer with chemicals while working for the Eli Lilly Company"[9] indicating a fascination with a practical, morally driven science from a young age, aimed at curing rather than inventing. Even though he declared a biochemistry major at Cornell, Kurt

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[5] Jerome Klinkowitz. *Kurt Vonnegut's America* (Columbia, SC: University of South Carolina Press, 2009); "A key to Vonnegut's tremendous popularity is just how very ordinary he really is. His works present stories of rather ordinary people going about their ordinary lives, facing often ordinary problems." In *Critical Insights: Kurt Vonnegut* edited by Robert Tally (Amenia, NY: Salem Press, 2013): 3.

[6] "While Vonnegut has a deep respect for science and philosophy-he often proudly recites the accomplishments of his brother, Bernard, who graduated with a doctorate from MIT and was a highly respected scientist responsible for such discoveries as the effect of silver iodide in the artificial creation of rain and snow-at no time is he willing to place the study of either science or philosophy above the practical concerns of everyday life. It is human life, its dignity, that Vonnegut wishes most to preserve." In *Kurt Vonnegut's Crusade: Or, How a Postmodern Harlequin Preached a New Kind of Humanism* by Todd Davis (Albany: University of New York, 2006): 9.

[7] Robert K. Musil. "There must be More to Love than Death" in *Kurt Vonnegut: The Last Interview and Other Conversations* edited by Tom McCartan (New York: Melville House, 2011): 69.

[8] Charles J. Shields. *And So It Goes: Kurt Vonnegut, A Life* (New York: Henry Holt and Company, 2011): 146.

[9] Tom McCartan. *Kurt Vonnegut: The Last Interview and Other Conversations*. (New York: Melville House, 2011): 26.

found he enjoyed writing satirical pieces for the school newspaper more than taking chemistry classes. During his sophomore year, he failed out of college however and was forced to enlist in the military. It was his capture in Germany and the subsequent experience of the fire-bombing of Dresden that would inspire the writing of *Slaughterhouse-Five.* Upon returning to the States, in 1945, Kurt enrolled at the University of Chicago, working towards a master's degree in anthropology (he had two separate theses rejected, but one was ultimately accepted, his published book *Cat's Cradle* for his creation and discussion of the religion of Bokononism, and his degree was not granted until 1973.)[10]

Kurt got a job in the public relations office at General Electric in 1947, while Bernard was working there on "Project Cirrus," a weather control project funded by the Department of Defense.[11] Kurt's job entailed interviewing the scientists working in the research lab to write up press releases for the company to promote the innovation of GE. It was from this job that Vonnegut had his most interaction with the practice of science. In 1950, after the publication of his first short story, "Report on the Barnhouse Effect" in *Collier's Weekly*, Kurt left General Electric to pursue writing full time. Vonnegut spent the rest of his life writing as his main occupation, except for a brief period from 1956 to 1959 when he sold Fiats out of a dealership. In 1958, Alice and her husband died within 36 hours of each other (Alice from a long battle with breast cancer and her husband, James, from a tragic train accident) leaving her three oldest children to be raised by Vonnegut and his wife, Jane. In 1952, Vonnegut's first novel, *Player*

[10] Robert Tally Jr. *Kurt Vonnegut and the American Novel: A Postmodern Iconography*. (London: Continuum International, 2011, Kindle Edition): location 244.
[11] Ginger Strand. *The Brothers Vonnegut: Science and Fiction in the House of Magic* (New York: Farrar, Straus, and Giroux, 2015): 81.

Piano, was published, followed by *The Sirens of Titan* in 1959, *Mother Night* in 1961, and *Cat's Cradle* in 1963. After the publication of *Cat's Cradle*, Vonnegut moved, by himself, to Iowa to teach at the University of Iowa's writers' workshop. Vonnegut spent the rest of the 1960s working at Iowa, returning to New England after the publication of *Slaughterhouse-Five* where he lived until he divorced his first wife during the 1970s. He spent the next thirty years continuing to publish and died on April 11, 2007, aged 84.

There are some aspects of Vonnegut's character that are important to keep in mind. Vonnegut often presents a conflicting picture of himself. This is most present in his discussions of science and technology, as well as his identity as a writer. Vonnegut is a vocal critic of twentieth century science and technology, while also constantly championing his brief education in the sciences at Cornell and his relationships with scientists. He claims to be a sort of "everyman" rather than an intellectual, especially with his readers, but he also wants literary scholars to take him seriously as a critic of science and technology rather than just a writer of science fiction. In interviews he is dismissive of the importance of domestic life yet in his writing a dysfunctional home life is central to some of the arguments he makes in both novels. These conflicting pictures he paints of himself reflect the conflicting ideas he has about the United States during this period and the role that science and technology have in twentieth century America. I explore these conflicting images in Appendix A.

The Two Novels

While Vonnegut wrote four novels and various short stories from 1945 to 1965, I focus on *Player Piano*, his first novel, and *Cat's Cradle*, argued to be his best novel after *Slaughterhouse-Five*, because of their connection to Vonnegut's time at General Electric.[12] Set in an alternative present after a Third World War and Third Industrial Revolution, *Player Piano* (1952) follows Dr. Paul Proteus, an intelligent, thirty-five-year-old factory manager of Ilium Works in Ilium, New York, who has become discontent with the company, as well as his job. The nation's managers and engineers have developed an abundance of automated systems to replace the workforce which was depleted due to the war. The novel begins ten years after the war, when most factory workers have been replaced by machines. Some of these machines include the EPICAC machine (satirically named after the 1950s computer ENIAC), Charlie Checker (an automaton designed with the sole purpose of defeating Paul in checkers), and the ever-present player piano located in a bar that Paul frequents. The population of Ilium is divided geographically into "The Homestead", where the lower classes live and where Paul's wife, Anita, was raised, and the other side of the river at the center of town, where all the engineers and managers live. As the novel progresses towards its climax, the reader becomes privy to Paul's growing discomfort with the order of life in his society as well as his disillusionment with modern technology, especially as it becomes apparent that technology will continue to progress until it replaces all human work. Paul ultimately falls in with a popular uprising, the Ghost Shirt Society, and eventually they overthrow Ilium Works, along with the government system which allowed for

[12] Robert Tally Jr. *Kurt Vonnegut and the American Novel: A Postmodern Iconography*. (London: Continuum International, 2011, Kindle Edition): location 250.

automation to replace human workers. The last few pages of the novel allude to the resistance returning to and rebuilding the system which they just overthrew, when the men of the Ghost Shirt Society use the same machines to begin rebuilding.

Begun shortly after *Player Piano*, and published in 1963, *Cat's Cradle* follows Jonah, the reluctant narrator of the end of the world. While he sets out with the original purpose of writing a book to understand the human motivations behind the atomic bomb, what he discovers is a man, Felix Hoenikker, whose own lack of morality will ultimately be the undoing of the entire world. Jonah's journey of discovery takes him from General Forge and Foundry in New York, to the island nation of San Lorenzo, where he becomes entangled with Hoenikker's three children, as well as a theocratic dictator named Papa Monzano. Hoenikker becomes a synecdoche for all corporate science for Vonnegut. Hoenikker creates a substance, known as *ice-nine*, which causes water to freeze at a higher temperature, simply because he theorizes that it would be possible to do so. As with the atomic bomb, Hoenikker has no regard for how it would be used but does it solely out of curiosity. Hoenikker's indifference to the uses of his discoveries spills over into an indifference to the moral education of his children, whom he neglects. Eventually, because of their ignorance of both a scientific and human understanding of the ramifications of the uses of *ice-nine*, it falls into the ocean, freezing all the Earth's water and killing off humanity.

While some of the discussions which Vonnegut presents in both novels could be applied to other periods in American history, both before and after their publication, they are especially pertinent considering their context in the Cold War. *Ice-nine* can be seen as a clear analogy for the Bomb and weapons of war more generally, and it is just

as destructive whether it is used accidentally or on purpose. Vonnegut's fears about automation are not new to this period, but are timely, since they appear around the same time as Norbert Wiener's work on cybernetics. Vonnegut was not alone in questioning what the corporate structure would do to the individual as white-collar jobs became more prevalent. It is for those reasons that I have chosen to discuss these works and Vonnegut himself in this particular context.

My goal in this thesis is to extend the discussion of Vonnegut to explore his role as a commentator on science and technology during the 1950s, specifically his discussions of war and his ideas about the relationship between science and corporate life in the twentieth century. In doing so I have followed the work of many scholars discussed in Appendix B who have provided foundational work to my deeper examination of Vonnegut's musing on science and technology and their connection to his time working at General Electric. For more discussion of the current state of Vonnegut scholarship, see my Appendix B.

However, I will discuss briefly Ginger Strand's 2015 text on both of the Vonnegut brothers' time at General Electric, as it relates most closely to my own area of interest in Vonnegut studies. Strand is a biographer of Kurt Vonnegut. Her popular book, *The Brothers Vonnegut,* directly explores the careers of both Bernard and Kurt during their time at General Electric. While Strand offers many important details about the two brothers and their work at GE, she oversimplified Vonnegut. To Strand, Vonnegut's time at GE simply made him cynical towards technology. While it may be true that Vonnegut's time at GE was overwhelmingly negative for him, I argue that it

was not so much technology itself that he was critical of, but rather corporate science and the person of the corporate scientist.

Corporate Science on Display

Corporate science was not new by the time that both Vonnegut brothers went to General Electric to work. It is interesting that Vonnegut worked at GE, since it was the first American company to make a concerted effort to cultivate a lab of scientists and engineers as full-time employees of the company. Historians of the industrial research lab at GE, such as Julia Blackwelder, George Wise, and even to some extent the biographer Strand, all note that there was something unique about the lab that was separate and elevated from the rest of the company, that the scientists within the lab were their own versions of company celebrities. These historians also note the importance of big-name, big-ego scientists in this lab as driving the dynamic of the work being done, such as Charles Steinmetz and Irving Langmuir: Steinmetz was a mathematician and the cultivated face of GE at the beginning of the twentieth century, while Langmuir was the first American corporate scientist to win the Nobel Prize. Roland Marchand and Michael Smith note, in "Corporate Science on Display," that while much of the purpose of these labs was innovation for the companies behind them, there was also a great deal of effort to capitalize on these "great men of science" for the purposes of publicity, with the scientific innovations of companies like GE showing up in places like Disneyland in the 1950s, as John Findlay discusses. Patrick McGrath points out that as long as they were creating results, scientists continued to gain authority in the United States. Vonnegut would agree with many of these assertions

about corporate science and saw these trends as dangerous after his short tenure working in the public relations office at GE mainly because it was a slippery slope towards scientists being allowed to work on any projects without questioning the ethics of those projects.[13]

Out of Vonnegut's time at GE came both *Player Piano* and *Cat's Cradle*, and with those two novels, criticisms of corporations and corporate science. Vonnegut believed that he had a job for life at GE, if he wanted it, "womb to tomb," as the saying went in corporate life at the time, an extended family of professionals all engaged in furthering the company's work.[14] However he was uneasy about his role as an organization man, which put him at odds with the changing economic landscape of the post-war period. He was not the only one who felt uneasy about a growing corporate culture. The term "organization man" was made famous by William Whyte's book of the same name from 1956 and described the men who work for a company solely for the purposes of promoting that company, climbing the corporate ladder. While I have yet to find direct evidence that Vonnegut ever read Whyte, in many instances he voices concerns about corporate science similar to Whyte's criticisms of corporations, especially the loss of autonomy that comes from corporate work. Whyte argued that Americans of this era became convinced that organizations and groups could make

[13] Julia Blackwelder. *Electric City: General Electric in Schenectady*. (College Station, Texas: Texas A&M Univerity Press, 2014); George Wise. *Willis R. Whitney, General Electric, and the Origins of the US Industrial Research*. (New York, New York: Columbia University Press, 1985); Ginger Strand, *The Brothers Vonnegut: Science and Fiction in the House of Magic*. (New York, New York: Farrar, Strause, and Giroux, 2015); Roland Marchand and Michael Smith, "Corporate Science on Display." In *Scientific Authority & Twentieth Century America*, 148–82. (Baltimore, MD: Johns Hopkins University Press, 1997); Mark Findlay. *Magic Lands: Western Cityscapes and American Culture After 1940*. (University of California Press, 1993); Patrick McGrath. *Scientists, Business, and the State, 1890-1960*. (Chapel Hill: University of North Carolina Press, 2002).

[14] Charles Shields. *And So It Goes*. (New York: Henry Holt and Company, 2011): 99.

better decisions than individuals, and thus that serving an organization became logically preferable to advancing one's individual creativity. Whyte rejected this idea, claiming that individual work and creativity can produce better outcomes than collectivist processes. He observed that organizations gave rise to risk-averse executives who could expect jobs for life if they made no egregious missteps.[15]

Vonnegut was uncomfortable at General Electric for two distinct reasons. First was the corporate environment itself. His job in the public relations department, specifically working to promote the work of the company, only made matters worse, since he was promoting the very thing that made him uneasy. Second, the work that General Electric was doing, both in its industrial research lab and on the factory lines, required that a small piece of the individual had to be given up when working to create different technologies. In a speech given to students at MIT in 1985, Vonnegut states, "In order to survive and even prosper, most of you will have to make somebody else's technological dreams come true—along with your own, of course. You will have to form that mixture of dreams we call a partnership—or more romantically, a marriage."[16] Vonnegut sees the give and take necessary for twentieth-century life and science, even if many aspects of corporate production were unsettling to him.

Vonnegut saw there were two distinct classes of workers taking part in corporate science and technological innovation: the corporate scientist and the corporate man. The corporate man lacks a level of agency that a corporate scientist possesses. These corporate men are the organization men that Whyte discusses. One could be a scientist

[15] William Whyte. *The Organization Man*. (New York: Simon and Schuster, 1956): 4.
[16] Kurt Vonnegut, "Speech at MIT" (1985), in *Fates Worse than Death: An Autobiographical Collage of the 1980s* by Kurt Vonnegut (New York: G.P Putnam's Sons, 1991): 118.

working for a corporation and not be a corporate scientist, however, which is undoubtedly how Vonnegut saw Bernard in his tenure at General Electric, and how most scientists are depicted at General Forge in *Cat's Cradle*. The key difference between Hoenikker and all the other scientists at General Forge was that Hoenikker could pursue whichever projects he wished to pursue (this is how he was able to work on *ice-nine* in the lab). The other men in the lab had to work on the projects assigned to them. Men like Hoenikker and Langmuir could drive the narrative to their own end, while men like Bernard, and even Hoenikker's boss, Dr. Breed, are more cogs in the machine, than purveyors of their own fate. Vonnegut is also taking something from other forms of dystopian fiction from this period (*Player Piano* is often characterized as a dystopian novel). Protagonists in dystopian fiction are usually portrayed as resisting organizational structures.[17]

At General Electric, the industrial lab was conceived in 1901 from the mind of mathematician Charles Proteus Steinmetz, who became the public face of the company after the death of Edison.[18] After Steinmetz, GE would come to be known for the Nobel Prize-winning chemist Irving Langmuir.[19] It was within this lab that Langmuir came of age as a scientist and where Bernard would eventually be hired. To understand Vonnegut's thoughts about corporate culture and corporate science, it is first important to understand Irving Langmuir and his relationship with Bernard and the work which they did together in the lab at GE. This is because Langmuir was, by Vonnegut's own

[17] David Seed. ""The Flight from the Good Life: 'Fahrenheit 451' in the Context of Postwar American Dystopias." *Journal of American Studies* 28, no. 2 (1994): 239.
[18] George Wise. *Willis R Whitney, General Electric, and the Origins of Us Industrial Research* (New York: Columbia University Press, 1985).
[19] Albert Rosenfeld. *The Quintessence of Irving Langmuir*. (New York: Pergamon Press, 1966).

account, the perfect example of a corporate scientist, and his influence is seen especially in *Cat's Cradle*.

A product of the lab since nearly its very beginning (he started to work at GE in 1909), Irving Langmuir had won a Nobel Prize in chemistry in 1932, and, by 1940, was the highest paid employee at GE after the CEO.[20] Like Bernard, Langmuir was a trained chemist. His early work at GE revolved around the so-called "General Electric Project," otherwise known as the light bulb. During the 1920s, he worked to create a gas-filled incandescent lamp. In 1932 Langmuir's Nobel Prize was for discovering microscopic surface films. By the late 1930s, Langmuir had turned from chemistry to other fields of interest. During World War II, he worked with the military to improve naval sonar for submarine detection and worked on projects aimed at de-icing the wings of aircraft while in flight, similar in many ways to his Nobel Prize-winning work in microscopic films.[21] After the war, Langmuir was allowed complete discretion to work on whichever projects he so chose and compiled a team of other scientists to work with him. In 1946, he chose Bernard Vonnegut and Vincent Schaefer to work with him on "Project Cirrus" to study controlling the weather, a project sponsored by the Department of Defense which had had contracts with General Electric since the Second World War.[22] The aim of the project was seeding clouds to create rain using silver iodide, a discovery made by Bernard.

Under his advice, General Electric publicized the findings of the "Project Cirrus" group, touting it as the first steps of human control of the clouds and

[20] Ibid., 136.
[21] Ibid., 190.
[22] Albert Rosenfeld. *The Quintessence of Irving Langmuir*. (New York: Pergamon Press, 1966): 299.

announcing the next steps, which were moving the experiments outdoors, despite the hesitations of both Schaefer and Bernard. Bernard had environmental concerns over shooting silver iodide into the atmosphere. From what they had seen in their experiments in the lab, silver iodide seemed to remain present in clouds for a very long time, and it was difficult to control the spread of the molecules once they interreacted with water. Knowing how variable the project was within the controlled environment of the lab, Bernard did not think it would be a good idea to start shooting silver iodide into the atmosphere. Regardless of his hesitations the project moved forward to on-site testing in New Mexico. In the end, the team was unable to replicate the lab experiments outside on a large enough scale, so General Electric and the Department of Defense decided not to continue to invest large sums of money into the project.[23] The project was scrapped in 1949, and a year later, in 1950, Langmuir retired from GE. Bernard left two years later.[24]

Both Kurt and Bernard were critical of Langmuir, but for different reasons. Bernard saw a level of neglect on the part of Langmuir in his thinking, especially regarding the environment. "Project Cirrus" aimed to inject chemicals into the atmosphere to produce rain, and it was unclear what negative effects an experiment like that could have. He did not give any interviews about "Project Cirrus" until after Langmuir died in 1957, at which point he came out quite critical of the entire project. In the interview he gave with B.S. Haven in 1957, Bernard stated in relationship to contemporary uses of cloud seeding by major corporations and the Federal government,

[23] Cloud seeding is still practiced in some areas of the world, such as Australia and the People's Republic of China; however, it has been a controversial topic since its inception and most climate scientists frown upon its practice.
[24] Albert Rosenfeld. *The Quintessence of Irving Langmuir*. (New York: Pergamon Press, 1966): 301

"This is bad, I think, because I think they're playing with fire releasing this stuff all over the place and I think it's a shame they haven't shown any sense of public responsibility particularly when they deny it has any large scale effect to stink up the atmosphere for hundreds or thousands of miles downwind producing God knows what effect."[25] Bernard's criticism of Langmuir is important because it highlights what he feels is important about science and its wider implications, and for Bernard, environmental implications were key. Langmuir was never overly concerned with the environment but this does not make him unique for this period. In a period of unbridled enthusiasm for science and technology, Langmuir's attempt at injecting a level of machine-like order to the physical world without much regard for the effects, was in line with other scientists of this period.[26] While there were some, such as Rachel Carson, who shared in Bernard's ecological concerns about our attempts at controlling nature, it is Bernard, not Langmuir who is more the outlier.

Kurt was more generally critical of the person of Langmuir: he seemed to be the absent-minded, unfeeling caricature of twentieth-century science. In his late life, after leaving General Electric, Langmuir is credited with coining the term "pathological science," by which he meant science tainted by unconscious bias. Langmuir had spent much of his career cautioning against the idea of "science for science's sake." He was, at heart, a pragmatist. Moreover, he did not believe that morality and personal beliefs had a place in science, falling into a similar view of science as those who believed objectivity is key to good scientific practice. That would turn out to be one of the major

[25] Bernard Vonnegut. Interview with B.S Havens, February 12, 1957. Transcript in Vonnegut Papers.
[26] David Kinkela. "The Ecological Landscapes of Jane Jacobs and Rachel Carson." *American Quarterly* 61, no. 4 (2009): 909.

differences that Kurt had with Langmuir: his lack of concern for the morality of his projects.[27]

In three separate interviews, in *Playboy*, *The Nation*, and *The Paris Review*, Vonnegut discusses that Langmuir is his inspiration for Hoenikker for various reasons.[28] Many of the anecdotes he tells about Hoenikker are true for Langmuir, the similarities between General Forge and General Electric in terms of their industrial labs lends further credence to this connection. Vonnegut's purpose here was not to simply criticize a man he did not like—he was writing a caricature of a scientific type. The person of Langmuir and the character of Hoenikker are different. What Vonnegut saw as a lack of morality in science in the case of Langmuir was just a different type of morality than that of Vonnegut. Langmuir cared deeply about preventing a nuclear war and he was vocally against the use of the bomb. While Langmuir is certainly the inspiration for Felix Hoenikker, Vonnegut takes the idea of the amoral and indifferent scientist to a new level with Hoenikker specifically to create a caricature of the extreme type of scientist that Vonnegut imagines, in a way that does not represent the actual character of Langmuir.

Vonnegut related corporate culture to the military, both due to its highly hierarchical structure and because of the close connections between American corporations and the United States military during this period. This may be because he was only a few years out of the military when he went to work at GE with little

[27] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No 69 (Spring 1977): 37.
[28] "Kurt Vonnegut Interview." *Playboy*. July 1973; Robert Musil. "There Must be More to Love than Death: Interview with Kurt Vonnegut" in *The Nation* (August 1980); David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No 69 (Spring 1977).

experience outside of his time spent as an infantry man. That view of corporate culture spills over into both of the novels discussed here: that strict hierarchies are dangerous to the practice of science and to the lives of workers.[29]

In *Player Piano*, "Ilium was a training ground, where fresh graduates were sent to get the feel of industry and then moved on to bigger things. The staff was young, then and constantly renewing itself."[30] More than just a training ground to produce new workers, Vonnegut creates a character that represents himself and his discomfort with what he sees as the soul-crushing task of giving up one's sense of personal identity working for a large corporation or company. Vonnegut uses Paul to voice his discomfort.

> When Paul thought about his effortless rise in the hierarchy, he sometimes, as now, felt sheepish, like a charlatan. He could handle his assignments all right, but he didn't have what his father had, what Kroner had, what Shepherd had, what so many had: the sense of spiritual importance in what they were doing; the ability to be moved emotionally, almost like a lover, by the great omnipresent and omniscient spook, the corporate personality. In short, Paul missed what made his father aggressive and great: the capacity to really give a damn.[31]

Paul does not fit in Ilium any more than Vonnegut fits in at GE. Both feel a sense of loss as to their place in the giant corporations, feeling like nothing more than cogs in a machine, having their individuality suppressed for the greater good of the corporation.

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[29] "The civic managers were the career administrators who ran the city. They lived on the same side of the river as the managers and engineers of the Ilium Works, but the contact between the two groups was little more than perfunctory and, traditionally, suspicious. The schism, like so many things, dated back to the war, when the economy had, for efficiency's sake, became monolithic. The question had arisen: who was to run it, the bureaucrats, the heads of business and industry, or the military? Business and bureaucracy had stuck together long enough to overwhelm the military and had since worked side by side, abusively and suspiciously, but, like Kroner and Baer, each unable to do a whole job without the other." Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 81-83.

[30] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 42.

[31] Ibid., 90.

There is a similar dynamic apparent at the beginning of *Cat's Cradle*, where the dangers of corporate culture are much less overt than they are in *Player Piano*. The reader is only briefly allowed to interact with the General Forge and Foundry Company, where Felix Hoenikker worked on the bomb and *ice-nine*. Similar in scope to the actual General Electric company, there are large swaths of employees at the company who hold jobs much in the same vein as Vonnegut did: secretaries, less brilliant researchers, supervisors, company men. These workers are told what to do and when to do it, without knowing the full scope of how they are contributing to the scientific endeavors of the company. Figurative cogs in a machine, doing their specific work without being privy to the entire picture.[32] Meanwhile, Felix Hoenikker was a brilliant man who was left to his own devices, allowed to pursue any research topic that tickled his fancy at the moment. Dr. Asa Breed, Hoenikker's boss even seems proud of allowing Felix to really do whatever he wants, stating, "Pure research men work on what fascinates them, not on what fascinates other people." [33] Knowledge is the ultimate goal of General Forge. To allow a man to just do whatever he wants, regardless of the consequences, fits perfectly with the "Project Cirrus" experiments of Langmuir and Bernard, something which both Bernard and Kurt found to be problematic in the real-world case of cloud seeding.

While the pursuit of knowledge is a perfectly admirable goal for science, one which we saw many times throughout the twentieth century in events like the discovery of Penicillin and the race to the moon, one which can unite people and give them hope, Vonnegut is arguing for the need to consider people and practicality when pursuing

[32] Kurt Vonnegut. *Cat's Cradle*. (New York: Dial Press, 2010): 38.
[33] Kurt Vonnegut. *Cat's Cradle*. (New York: Dial Press, 2010): 49.

knowledge. Vonnegut's character of Dr. von Koenigswald in *Cat's Cradle*, the former SS doctor for Papa Monzano as he is dying in San Lorenzo, tells Jonah, "I am a very bad scientist. I will do anything to make a human being feel better, even if it's unscientific. No scientist worthy of the name could say such a thing."[34] While he is a former officer for the SS (which is a condemnation of the man's past behavior), he is ironically a moral converse to Felix Hoenikker who is Vonnegut's ultimate amoral scientist.[35]

In *Cat's Cradle*, the first description of Felix Hoenikker, given by his son Newt, states, "he was one of the best protected human beings who ever lived. People couldn't get at him because he just wasn't interested in people." Hoenikker is simply oblivious to the fact that other people exist in the world. The humor and satire that arise from the character Hoenikker, however, were not always made up. Some of the passages are true anecdotes of Langmuir and of the work which Bernard helped with in the industrial research lab, such as an incident where, on the morning of his Nobel prize win, he left a tip on the table for his wife after breakfast, showing how little regard he had for her.[36] Bernard's discovery for the uses of silver iodide bears a striking similarity to the Hoenikker children discovering the uses for their recently deceased father's final

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[34] Ibid., 219.

[35] In literature, amoral scientists are often powerful people, eminent in government policy-making or acting as advisers to the military-industrial complex, their impact may be pervasive and insidious. Roslynn Haynes discusses this at length in *From Faust to Strangelove: Representations of the Scientist in Western Literature.* There's a frequently invoked assumption that science is value-free, that science is neither good nor bad, only its applications, symptomatic of the paradigm of amorality in science is the realization in the twentieth century of two of the alchemists' dreams: the creation of mechanical 'human' beings and the discovery of the source of almost limitless power. The unfeeling scientist who has reneged on human relationships and suppressed all human affections in the cause of science. Most enduring stereotype of all and still provide the most common image of the scientist in popular thinking. In the 20th century, his emotional deficiency is condemned as inhuman, even sinister, but in a less extreme form it is also condoned, even admired, as the inevitable price scientists must pay to achieve their disinterestedness.

[36] Tom McCartan. *Kurt Vonnegut: The Last Interview and Other Conversations*. (New York: Melville House, 2011): 37.

project, killing the family dog with what they would soon discover was *ice-nine.*[37] A kernel of the idea for the story in *Cat's Cradle* comes from Irving Langmuir. In the 1920s, much before Kurt and Bernard's time at GE, H.G. Wells visited the industrial research lab, where he met Irving Langmuir. Langmuir proceeded to tell Wells an idea he had for a science fiction story, about a substance called ice-nine which raises the freezing temperature of water.[38] This is a story that Vonnegut was well aware of since it was company lore by the time the Vonnegut brothers came to GE, and played into his understanding of Langmuir.

Embedded within these criticisms of corporate life (the strict hierarchy that robs a person of individuality and purpose, practicing science for the sake of doing science, amoral scientists and the dangers they present) is the cautionary tale of what is produced when people are brought up in this corporate environment. In *Player Piano*, the chief criticism that Vonnegut brings to Anita at the beginning of the text is that she "had the mechanics of marriage down pat," and that she "was thorough enough to turn out a creditable counterfeit of warmth."[39] Here was a woman that had tricked Paul into marrying her in order for her to move up the corporate ladder, and not be left behind in the Homestead, due to her lack of talent.[40] Later, when Paul has made a fool of himself on the company retreat, and clearly is planning on leaving his job, and disrupting her comfortable way of life, Anita lashes out at Paul for also being mechanical, having come up in the corporate setting himself, saying "I wasn't any damn use to you is all!

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[37] Kurt Vonnegut. *Cat's Cradle*. (New York: Dial Press, 2010): 241.
[38] James Fleming. *Fixing the Sky: The Checkered History of Weather and Climate Control*. (New York: Columbia University Press, 2010, Kindle Edition): 46.
[39] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 17.
[40] Though, to be fair, it would seem that Anita has many talents that cannot be replaced by a machine, even if they are not beneficial to society as a whole.

Finnerty was right, all you need is something stainless steel, shaped like a woman, covered with sponge rubber, and heated to body temperature." She makes a fair point. Paul is just as removed from his humanity as it would seem Anita is; neither is able to connect with other people. However, Paul is much more disillusioned with his technological life than his wife, yearning for the simplicity of the farm, and the possibility of a normal domestic life. Anita is correct that technology has changed Paul into something less human than he used to be and that his expectations about people are not realistic but instead based upon fantasies of life without technology that have been tainted by that technology.

For Anita and Paul, the only consequence of their corporate upbringing and cold nature is the overthrow of the doctors and engineers, completely disrupting everyone's way of life. In *Cat's Cradle*, Felix's amorality and lack of humanity have much more dire consequences. Emily Hoenikker dies when all her children are quite young, leaving Angela to raise the two boys without the help of her father. Felix's disinterest in his children left them all scarred in one way or another. However, he instilled in them an interest in science and his work, and upon his death, they were left with a small piece of *ice-nine,* the thing of which he was most proud of, leaving them no instruction as to what it was or how it could be used.[41] "Angela, Franklin, and Newton Hoenikker had in their possession seeds of *ice-nine*, seeds grown from their father's seed—chips, in a manner of speaking, off the old block."[42] Hoenikker's indifference to the uses of his discoveries spills over into an indifference to the moral education of his children, whom he neglects. Eventually it leads to the end of the world.

[41] Kurt Vonnegut. *Cat's Cradle* (New York: Dial Press, 2010): 246.
[42] Ibid., 53.

Vonnegut was not alone in attacking corporate science. His stories lent their voice to one side of a debate between those who found corporate science good and those who were like Vonnegut very critical of it. During this period, corporate science actively crept into entertainment, where we see some opposition to Vonnegut's criticisms of corporate science. Most notably there is the entire early conception of Disneyland in Southern California. "If an organization's ability to affect language is any measure of its influence, then the Walt Disney company has been one of the most influential organizations in the English-speaking world."[43] Outside of Disney's influence on the way that we speak, and even imagine at this point, is the influence that the Disney parks have played on the American psyche since Disneyland first opened in July 1955. One major aspect of that park was the creation of the Tomorrowland exhibit, which featured prominent companies, and the technologies which they were producing in order to bring about a new conception of an American future. Prominent American corporations, eager to be associated with Disney and to pronounce to their public how they would improve the world of the future, sponsored their own displays in the style of capitalist realism. The General Electric Company planned exhibits to dramatize progress through electricity. First in unrealized proposals for an "Edison Square" and then in the Carousel of Progress, G.E. identified itself with a future of spaceships landing on Venus, interplanetary television, electrically powered rapid transit, nuclear power, and enclosed, climate-controlled downtowns. Observers took such predictions seriously. When Vice President Richard Nixon officiated at the opening of the

[43] John Findlay. *Magic Lands*. (Berkley: University of California Press, 1993): 52.

Disneyland Monorail in 1959, he joined reporters in viewing it as a plausible solution to "grave traffic problems in urban areas."[44]

While corporations such as the Walt Disney Company were quick to promote the wonders of corporate science and the corporate environment which bred such advancements, the early twentieth century and the 1950s, saw many works of art that actively criticized corporatism, much in the same way Vonnegut did. It would be foolish of me to discuss literary criticisms of corporatism without pointing to the work of Aldous Huxley, and his work *Brave New World* (1932). While it is published a full two decades before *Player Piano* (and is often the work which *Player Piano* is most often compared to), Huxley presents a world which literally worships corporate culture, and the father of American automation, Henry Ford. The official propaganda of Huxley's World Government glorifies science as a central value of the society, the technological capability of the giant government-industrial complex that rules the society functioning as a main symbol of its power.

More contemporary to Vonnegut and the two novels discussed here are pieces of fiction, both written and on the big screen, such as *The Man in the Gray Flannel Suit* and *The Man in the White Suit*. *The Man in the Gray Flannel Suit* was first published by Sloan Wilson in 1955, and subsequently made into a film in 1956. It tells the tale of an American's search for purpose in a world dominated by business, a suburban tale of quiet desperation. Tom Rath is haunted by his past in the military and is growing increasingly discontent with his climb up the corporate ladder, and he eventually leaves his job in the search of some sort of new life, which will better fulfill him and his

[44] John Findlay. *Magic Lands*. (Berkley: University of California Press, 1993): 71.

family. It exemplifies a shift in managers being portrayed in fiction, as well as movies, as ambivalent rather than corrupt, which was the trend in the Great Depression. On the other hand, the film *The Man in the White Suit* (1951) presents a chemist who has too much humanity for the corporation in which he works, and when he discovers that his invention is going to be used for nefarious purposes, steals the glowing white suit and, quite literally, runs from corporate life. Both pieces of fiction present arguments similar to *Player Piano* and *Cat's Cradle*, wishing for something more from corporate America, demonizing the removal of humanity from corporate life.

Vonnegut's key criticism of corporate science is that doing science without explicitly considering cost or benefit to people results in dangerous science and technology being created. In *Player Piano*, climbing the corporate ladder by competing to create the most useful automation technology leads to humans being replaced on a massive scale and to people leading what Vonnegut deems to be useless lives. Meanwhile, the freedom that characters like Hoenikker are accorded in this corporate science structure can allow for dangerous technologies, such as *ice-nine*, to escape the control of humanity. Feeling disillusioned by the promises of a steady income and work, while systematically having his individuality stripped from him, was clearly not unique to Vonnegut. However, his commentary on the dangers of allowing science to be done by these large institutions, both major corporations and the United States government, speaks to wider fears about the purpose of science in a post-war world. Vonnegut is not unique in fearing the road that corporate science might take us down. Marchand, Smith, and McGrath all point to general attitudes towards corporate science that shifted during the early twentieth century, as a result of the prosperity of the

country. McGrath makes the argument that through this century, we see a general shift of power from elite individuals to elite institutions.[45] While in many cases this may be true, that the power lies with the corporations, not the corporate scientists, Vonnegut would not be so quick to dismiss the power of the individual scientist to do harm, as he tries to show with Felix Hoenikker. While it could be argued that Hoenikker stands in for more than just a person, as a representative of an entire institution or practice of science, Vonnegut carefully chooses to make the life choices of a few individuals responsible for all the events that follows.

Player Piano and Automation

Vonnegut's central critiques in *Player Piano* are that automation technologies are often dangerous because they replace work that gives value to human lives and that technology is addictive. Academics have explored some of these same ideas in their own discussions of the place of automation in society. Social psychologist Shoshana Zuboff in *In the Age of the Smart Machine* (1988) makes the argument that the more automation we allow into our lives, the less we will know how to do ourselves.[46] She also questions if this is really the type of world we want to live in and thinks that we should consider the consequences that the technology that we create can have on our lives. In addition historian Langdon Winner, in *Autonomous Technology*, believes that technological innovation can be stopped by humanity at any time and that restraint is a part of the human experience with technology.

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[45] Patrick McGrath. *Scientists, Business, and the State, 1890-1960*. (Chapel Hill: University of North Carolina Press, 2002): 1.
[46] Shoshana Zuboff. *In the Age of the Smart Machine: The Future of Work and Power (New York: Basic Books, 1988):*5.

According to Vonnegut one of the most influential events of his tenure at GE was watching the computer-programmed lathe slide back and forth over the steel blades, honing them to within microns of perfection. It was a small event but symbolic of much more. Craftsmanship was a mature talent, learned and passed through generations. And here was a device operating tirelessly, doing what took a person a lifetime to learn. For Vonnegut, it was terrible for human beings who took pride in their jobs. Two forces were vying, technology and humanity, and General Electric was at the center of the contest. The conflict between technology and humanity gave Vonnegut the idea for what would become his first novel.[47]

Vonnegut took his experience watching the computer-programmed lathe at GE and transformed his discomfort with the loss of purpose that one feels when one no longer has meaningful work to do into his first novel, *Player Piano*.[48] Although in 1952, Vonnegut denied that *Player Piano* was a criticism of GE (Bernard was still employed by the company at that time) in later interviews, Kurt conceded that the book was about the House of Magic, as the industrial research lab at GE was affectionately called.[49] The book begins with a stark realization from the narrator, that no jobs are safe from machines, since "during the war, the managers and engineers had found that the bulk of secretarial work could be done…more quickly and efficiently and cheaply by machines."[50] From there, Vonnegut's imagined world of managers and engineers, only gets more complicated, with a third industrial revolution following a third world war, a

[47] As noted before, from a historical standpoint, Vonnegut is writing science fiction, this is not a genre classification.
[48] It's no longer enough to be just smart in the world of *Player Piano*, you have to be the right kind of smart.
[49] "Kurt Vonnegut Interview." *Playboy*. July 1973.
[50] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 2.

revolution where human work has almost entirely been replaced by machines.[51] He does not just imagine a world where the factory is the only setting where workers are being replaced; by the end of the novel the engineers themselves are being replaced by the very machines they create. Checkers Charlie, a robot invented with the sole purpose of beating Paul Proteus at checkers, realizes that machines have become equal to humans in all ways. Paul's imagining of "civilization as a vast and faulty dike" with thousands of men "in a rank stretching to the horizon, each man grimly stopping a leak with his finger," harkens to later writings of Vonnegut and his fears that people will become machines to maintain society.[52]

Vonnegut's main argument is that people of all walks of life draw some measure of purpose from the work they do every day, and machines remove that purpose. It does not matter if a person is clothed, housed, and well-fed, if they have nothing which makes them want to get out of bed in the morning. Every person who lives in the Homestead drinks and loiters about all day, with nothing driving them. The military laborers (men who quite literally dig ditches for a living) have barely more sense of person than the people living in the Homestead. The EPCIAC machine, the computer which runs Ilium and is the ultimate piece of machinery, has the sole purpose of assigning people to their proper place in society.[53] As machines become more human, as in the case of the EPICAC, they present an ever greater danger. The philosopher of technology Langdon Winner explained *Player Piano* as follows, "human life is

[51] Ibid., 52.
[52] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 152; "Kurt Vonnegut Interview." *Playboy*, July 1973.
[53] Adam T. Bogar. "Can a Machine Be a Gentleman? Machine Ethics and Ethical Machine" in *Critical Insights: Kurt Vonnegut* edited by Robert Tally Jr (Amenia, NY: Salem Press, 2013): 248.

transferred into artifice. Men export their own vital powers—the ability to move, to experience, to think—into the devices of their making."[54] The most interesting thing to note, however, about this novel and what it says about Vonnegut's own views on culture and humanity is the ending where the overthrowers of technology return to technology to rebuild society. It suggests that there is no escaping the machines which we have built, that we are trapped in a cyclical system where we will inevitably be controlled by technology.[55]

Vonnegut's critique of industrialization recognizes that modern technology has made production so efficient that humans are increasingly becoming necessary not as workers who produce goods, but as consumers who buy them. Vonnegut was not a socialist; remember, this is the man who owned a car dealership during the 1950s. The book romanticizes labor, depicting even work on a factory assembly line as spiritually fulfilling without paying attention to the fact that much of such work is degrading, mind-numbing, and anything but inspirational. However, it should be noted that Vonnegut is not alone in this period in his views on technology. There was much literature which glorified the worker. By the cusp of the 1960s, the technological discourse had changed both in its mechanical and organizational dimensions. In America, high technology had come home from the factory and had been domesticated. The dishwasher, laundry machine, electric refrigerator, and countertop appliances gave the kitchen or back pantry the hands-free mechanical processes of the factory. The technology-as-organization narrative of the discourse of man, meanwhile, became

[54] Langdon Winner. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. (Cambridge, MA: The MIT Press, 1977): 34.
[55] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 341.

through the 1950s an increasingly domestic fear that Americans were being over-organized and under-automated within industry and the home. As the historian Mark Greif states, "at this point, the discourse of man on its technological side merged or collapsed into one of the best-studied and most familiar aspects of the fifties—the fear of organized conformity and tepid lifelessness amid a new managerial middle class."[56]

To better understand Vonnegut's novel in its historical context, it is useful to see some contemporary examples of similar writers and commentators. He fits into a discussion during the 1950s and 1960s about machines replacing humans. Automation presented a difficult set of problems during the twentieth century, most of which we are still struggling to grapple with. First and foremost, and the issue closest to Vonnegut's heart in *Player Piano* is the issue of how to weigh increased production that comes from automation with the displacement of workers. Vonnegut's chief concern is that work gives purpose, no matter what the work being done.[57] Herbert Marcuse in *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society* (1964) makes the argument that consumerism is a form of social control, suggesting that the claim that we are living in a democratic system is masking the reality of an authoritarian system where a few individuals dictate our perceptions of freedom. Within that discussion is a criticism of the technological structures which need to be put in place in order for this new industrial consumerism to exist.[58] To this end, with mechanization comes the "the suppression of individuality" where the person is lost to the greater enterprise, where

[56] Mark Greif. *The Age of the Crisis of Man: Thought and Fiction in America, 1933-1973*. (Princeton: Princeton University Press, 2015): 228.
[57] Vonnegut likes to point to assembly line work as being meaningful, even though he has no conception of what those jobs actually entail.
[58] Herbert Marcuse. *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. (Boston: Beacon Press, 1964): 9.

freedom becomes less free.[59] "Mechanization is increasingly reducing the quantity and intensity of physical energy expended in labor."[60] Marcuse blames all of this on automation, for it "appears to be the great catalyst of advanced industrial society."[61] Movies likewise supported Vonnegut's concerns. Take, for example, *Desk Set* (1957), where computing technology dismantles social purpose by eliminating work. In the movie we are presented with a world where technology has advanced to the point where it is not just replacing working-class jobs, as we see at the beginning of *Player Piano*, but also eliminating the jobs of researchers and librarians, something which happens toward the climax of *Player Piano.*

On the other end of the spectrum are futurists like Norbert Wiener, the father of cybernetics, and Isaac Asimov, one of the most renowned writers of science fiction in the generation preceding Vonnegut. In Asimov's *I, Robot*, a collection of short stories first compiled in 1950, there is a shared theme of the interaction of humans, robots, and morality, and combined they tell the story of Asimov's fictional history of robots. Asimov presents a very positive view of technology and of the power that robotics provides in replacing in human labor. Wiener, though, says "the premise of cybernetics was a powerful analogy: that the principles of information-feedback machines, which explained how a thermostat controlled a household furnace, for example, could also explain how all living things-from the level of the cell to that of society-behaved as they interacted with their environment."[62] Wiener coined the term "cybernetics" in 1948 in

[59] Ibid., 1.
[60] Ibid., 24.
[61] Ibid., 36.
[62] Ronald R. Kline. *The Cybernetics Moment: Or Why We Call Our Age the Information Age*. (Baltimore: Johns Hopkins University Press, 2015): 1-2.

his book *Cybernetics, or Control and Communication in the Animal and the Machine*.[63] However it is his text *The Human Use of Human Beings: Cybernetics and Society* (1952) which acts as a counterpoint to *Player Piano* because his central thesis is that automation holds real benefits for society. Historian Ronald Kline discusses this connection in the first chapter of his book *The Cybernetics Moment: Or Why We Call Our Age the Information Age* (2015). Kline believes that Vonnegut was reacting to a wider "cybernetics craze" which was occurring during this period in science fiction and disagreed with Wiener's stance that having more free-time could lead to real life fulfillment. Kline is correct. Wiener makes some interesting points about a new emphasis on the arts when more menial tasks are completed by machines. However, *Player Piano* and *The Human Use of Human Beings* were published the same year, and it is hard to imagine that Vonnegut had much knowledge of the text.

Wiener's ideas about automation paint a much more positive vision for this technology than *Player Piano*, where the people in "The Homestead" have leisure time to pursue a higher order of activity, rather than lowering themselves to the manual labor that the machines can do for them. The thesis of the book is that "society can only be understood through a study of the messages and the communication facilities which

[63] "Cybernetics, the 'new science' with the mysterious name and universal aspirations, was interpreted even more broadly. In 1969, Georges Boulanger, the president of the International Association of Cybernetics, asked, 'But after all what is cybernetics? Or rather what is it not, for paradoxically the more people talk about cybernetics the less they seem to agree on a definition.' He identified several meanings of cybernetics: a mathematical theory of control; automation; computerization; a theory of communication; the study of analogies between humans and machines; and a philosophy explaining the mysteries of life. To the general public, Boulanger noted, cybernetics 'conjures up visions of some fantastic world of the future peopled by robots and electronic brains!' His favorite definition was the 'science of robots.' Cybernetics was a staple of science fiction and a fad among artists, musicians, and intellectuals in the 1950s and 1960s. Writer James Baldwin recalled that the 'cybernetics craze' was emblematic of the period for him." In *The Cybernetics Moment* by Ronald Kline (Baltimore: Johns Hopkins University Press, 2015): 7.

belong to it; and that in the future development of these messages and communication facilities, messages between man and machines, between machines and man, and between machine and machine, are destined to play an ever-increasing part."[64] This idea of message transmission between humans and machines, a sort of co-op of living in harmony with machines, fits with the general theme of the 1950s, that we all come together to create progress. This book is an argument for the "progress" of human society in all facets, not just in automation, and technologies related to corporate America and production. Vonnegut and Wiener do agree on one key technological issue—they are both skeptical of automatons—Wiener because humans tend to treat machines badly and if you have machines which can learn and think and interact in a nearly human way, they can escape our control, or we might even become entirely dependent or controlled by them. There is danger in trusting too much in machines because they have not yet learned to think abstractly. This is very different from Asimov and his positive outlook on artificial intelligence.

The progress narrative of science is one which some real-life scientists themselves hold fast to, such as Arthur H. Compton, who had the honor of writing the introduction to *One World or None,* the critical text released in 1946, after the dropping of atomic bombs on Japan. The authors are concerned about nuclear weapons, but overall, they believe that atomic technology and weaponry is inevitable: "the worldwide growth of science and technology is the main line of the rapid evolution of man into a social being whose community is the world. The release of atomic energy is but a

[64] Norbert Wiener. *The Human Use of Human Beings: Cybernetics and Society* (Cambridge, MA: The Riverside Press, 1950): 16.

dramatic step in this evolution."[65] Vonnegut maintains a view of progress as but an illusion of motion going somewhere (*Cat's Cradle*), a delusion of society advancing (*Player Piano*), or a series of chimerical detours through life (*Slaughterhouse-Five*). For Vonnegut, technological progress is not inevitable, but human use of existing technologies is. We are our own worst enemy. This is part of what makes Vonnegut's perspective on technology so interesting because he overwhelmingly seems to hold the opinion that the biggest danger that technology presents comes not from the something inherent in the technology, but instead from those who use it. It is humans who allow for technology to get out of hand. This very aspect of Vonnegut's views on technology makes him the most similar Irving Langmuir because they share in a belief that scientific and technological progress is inevitable, because there is something inherent in humans that makes it so.

Cat's Cradle and World Ending Technologies

In *Cat's Cradle*, the world ends. Of that there is no doubt. There is no hopeful rebuilding, there is no promise of tomorrow. Jonah survives only with a few of his fellow Hoosiers and Bokonon himself. The world does not end because of nuclear weapons but instead because of a substance called *ice-nine.* It ends in a terrible storm that comes as a result of all the water on earth freezing and the subsequent death of any life touching this new type of ice. It is distinctive that Vonnegut ends the world this way, in part because it is an ode to Langmuir and Bernard. However, Vonnegut is also

[65] Arthur H. Compton. "Introduction" in *One World or None* edited by Dexter Masters and Katharine Way (New York: McGraw-Hill Book CO, 1946): v.

pointing to a larger problem that he sees with technology, that a technology can be created to fix a problem and becomes a weapon later. There is not always a dangerous intent to technologies. Hoenikker creates *ice-nine* after hearing about the problem of mud on the battlefield. It is only later that it becomes a technology with dangerous implications. The Bomb exists in the world of *Cat's Cradle*. Felix Hoenikker is one of the masterminds of the atomic project, and Hiroshima and Nagasaki are events in the *Cat's Cradle* timeline. His reaction to a testing of the bomb is memorialized by his son, Newt. "After the thing went off, after it was a sure thing that America could wipe out a city with just one bomb, a scientist turned to Father and said, 'Science has now known sin.' And do you know what Father said? He said, 'What is sin?'"[66]

The Bomb is what Jonah intends to write about when he begins his account in *Cat's Cradle*. "When I was a much younger man, I began to collect material for a book to be called *The Day the World Ended*. The book was to be factual. The book was to be an account of what important Americans had done on the day when the first atomic bomb was dropped on Hiroshima, Japan. It was to be a Christian book. I was a Christian then."[67] He is trying to track the human element behind the Bomb, both the making of it and everything that lead up to its use on a civilian population. "My book is going to emphasize the human rather than the technical side of the bomb."[68] Felix Hoenikker is the character behind the making of the Bomb whom he chooses to study, and it is that choice that leads him to San Lorenzo and ultimately to the events that end the world.

[66] Kurt Vonnegut. *Cat's Cradle*. (New York: Dial Press, 2010): 17.
[67] Ibid., 1.
[68] Ibid., 7.

Vonnegut chose not to end the world using the Bomb, but instead something that was not inherently dangerous. It shows a level of recklessness within science and the scientists themselve, and shows the hubris of scientists who think they can control things that they have no hope of ever controlling. This reflects the connection between Irving Langmuir and Felix Hoenikker. While Langmuir did not work on the Bomb during World War II, he did work closely with the United States military, on projects aimed at improving radar technology and de-icing airplane wings. The latter project acted as a stepping stone for Langmuir's work which he enlisted Bernard's help on "Project Cirrus." Langmuir's project of choice, at the end of his long career at General Electric, was work on weather control and cloud seeding, so it is no coincidence that the character Vonnegut creates to model after Langmuir in *Cat's Cradle* creates a substance which can fundamentally change the weather of the entire planet.[69]

In *Cat's Cradle* and *Player Piano*, Vonnegut portrayed corporations as influential as the military. He was not alone in his unease at the scientific militarism of the 1950s; President Dwight Eisenhower expressed the same discomfort. Eisenhower, however, accommodated himself to its ideas and embraced the paralyzing notion that corporate prosperity and the proliferation of weapons technology were two sides of the same ideological coin.[70] While there were many scientists who were opposed to the use of nuclear weapons and to their very existence, it would be incorrect to make the assertion that all scientists shared the belief of those who worked on the text *One World or None*. Americans had to evolve their technology because they were caught in a

[69] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes, "Kurt Vonnegut, the Art of Fiction." In *The Paris Review* No. 69 (Spring 1977): 37.
[70] Patrick McGrath. *Scientists, Business and the State, 1890-1960* (Chapel Hill: The University of North Carolina Press, 2002): 158.

merciless evolutionary process. Thus, throughout the 1950s, as growing concerns about fallout and the arms race were expressed by the public, Cold Warriors argued that the continuation of testing and proliferation were necessary to continue the search for "cleaner" weapons.[71]

The first people to hear the news of the atomic bomb were the people likely to be at home in the middle of the day on a Monday, and thus near a radio (the elderly, children, housewives). Thus, the Bomb became part of American life from the moment it was used in Japan. After the initial shock, Americans seemingly rallied and took the atomic bomb in stride. Comedians (not all of them professionals) strained to find humor in the new weapon. A radio newscaster commented that Hiroshima "looked like Ebbetts Field after a game between the Giants and the Dodgers."[72] Others joked that Japan was suffering from "atomic ache."[73] Only the radio entertainer, Milton Berle, explicitly refused to make jokes about the atomic bomb. While many Americans had, and still have, no real understanding of the science behind the bomb, or exactly what makes the bomb so terrifying, there seemed to be at least a general fascination of the object shared by most Americans, as well as a sort of primal fear. This primal fear of extinction cut across all political and ideological lines, from the staunchly conservative *Chicago Tribune*, which wrote bleakly of an atomic war that would leave Earth "a barren waste, in which the survivors of the race will hide in caves or live among ruins," to such liberal voices as the *New Republic*, which offered an almost identical vision of a conflict that

[71] Mark Greif. *The Age of the Crisis of Man: Thought and Fiction in America, 1933-1973*. (Princeton: Princeton University Press, 2015): 61.
[72] Paul Boyer. *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*. (New York: Pantheon Books, 1985): 10.
[73] Ibid., 10.

would "obliterate all the great cities of the belligerents, [and] bring industry and technology to a grinding halt,...[leaving only] scattered remnants of humanity living on the periphery of civilization."[74]

Isaac Asimov later said that science-fiction writers were "salvaged into respectability" by Hiroshima.[75] Asimov would seem to be correct in this assertion, since the period when Vonnegut published his first four novels and countless short stories saw a revival of American science-fiction. Asimov's most famous collection of stories, *I, Robot*, was published only a few years before the publication of *Player Piano*, in 1950. Many pieces of fiction dealt with the pure destructive aspect of nuclear bombs. Often films end with the Bomb going off and no screen time about the after-effects of the Bomb. *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* (1964) is the most notable of this type of film. However, some books, such as *1984* (1949) by George Orwell, *Limbo* (1952) by Bernard Wolfe, and *Fahrenheit 451* (1953) by Ray Bradbury, intimately deal with the after-effects of the Bomb. These works are similar because they imagine a world where atomic weapons are routinely dropped on civilian populations, and the society that arises from the destruction is usually authoritarian in some manner.[76] These books also bear some similarity to Vonnegut's writing for the pessimism which they display regarding the connection of humans to technology. Literary scholars M. Keith Booker in *Monsters, Mushroom Clouds, and the Cold War: American Science Fiction and the Roots of Postmodernism, 1946-1964*

[74] Paul Boyer. *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*. (New York: Pantheon Books, 1985): 15.
[75]Paul Boyer. *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*. (New York: Pantheon Books, 1985): 257.
[76] Though, this is much like the question of the chicken and the egg as to which came first. Were the societies already authoritarian and then they used nuclear weapons, or was it the use of the Bomb that caused authoritarian regimes to be built out of the ashes? It is not particularly clear in any of the texts.

(2001) and David Seed in "The Flight from the Good Life: *Fahrenheit 451* in the Context of Postwar American Dystopias" have pointed to this connection. Booker points to the ways which fiction like Vonnegut's captures a crucial mood held by many Americans about our relationship to technology and the ease with which we could end the world. It is as simple as pressing a button, and humanity virtually has the power to destroy itself.[77] Vonnegut was not alone in his pessimism.

Philip K. Dick, probably most well-known for his work in the 1960s, namely *The Man in the High Castle* (1962) and *Do Androids Dream of Electric Sheep?* (1968), as well as the prestigious science-fiction award bearing his name which has been awarded since his death, spent the 1950s pondering the effects of the Bomb in *The World Jones Made* (1954), *Eye in the Sky* (1955), and *Time Out of Joint* (1958). These three novels deal intimately with the Bomb but in vastly different ways. *The World Jones Made* is set in a dystopian future, the year 2002, decades after a nuclear war has occurred, and deals with the aftermath of human society after nuclear fallout. This is quite a bit different from both *Eye in the Sky* and *Time Out of Joint*, which deal with nuclear weapons in a more roundabout manner. Both take a premise that there is some sort of looming technology or threat that is alien to humans, and that this threat could cause the end of civilization as we know it. It is only at the end that the reader is brought to the truth that this alien technology is nuclear weapons and that rather than being otherworldly, it is a threat made entirely by humans themselves. Alien invasion as

[77] M. Keith Booker. *Monsters, Mushroom Clouds, and the Cold War: American Science Fiction and the Roots of Postmodernism, 1946-1964* (Westport: Greenwood Press, 2001): 2.

a metaphor for the Bomb is a common trope during the 1950s, including in Vonnegut's own work, *The Sirens of Titan* (1959), and many of the films of the era.[78]

Vonnegut wrote *The Sirens of Titan* between *Player Piano* and *Cat's Cradle*, and he is playing with science fiction tropes in the text. It is his second novel and is overwhelming considered to be in the science fiction genre. Much of the story revolves around a Martian invasion of the Earth, however, it also deals in some themes which Vonnegut explores in his later works. One character, Winston Rumfoord, is unstuck in time, a theme which Vonnegut returns to most famously in *Slaughterhouse-Five*. The reader is also introduced to the alien race of the Tralfamadorians, who make being unstuck in time possible. The novel also contains the dark comedy and pessimism about humanity that Vonnegut expresses in his early novels. But, most important for this discussion, Vonnegut describes a war between humans and Martians (who closely resemble humans) where there is technology on both sides that could utterly destroy all life, similar to other alien invasion stories of this period. Unlike in *Cat's Cradle*, aliens create the end of the world in *The Sirens of Titan*, not humans. In this 1950s novel, Vonnegut is admitting to Americans that science and technology cannot fix everything.

Vonnegut could not help but to express horror at the technologies associated with war.

> But for me it was terrible, after having believed so much in technology and having drawn so many pictures of dream automobiles and dream airplanes and dream human dwellings, to see the actual use of this technology in destroying a city and killing 135,000 people and then to see even more sophisticated technology in the use of nuclear weapons in Japan. I was sickened by this use of technology that I had had such great

[78] Most notably: *The Day the Earth Stood Still* (1951), *Beginning or the End* (1947), *The Day the Sky Exploded* (1961), *The Day the Earth Caught Fire* (1962), *The Day the Earth Ended* (1956), and various adaptations of *The War of the Worlds* that were recreated throughout the 1950s. The presence of aliens took on a new meaning in conjunction with nuclear weapons.

> hopes for. And so I came to fear it. You know, it's like being a devout Christian and then seeing some horrible massacres conducted by Christians after a victory. It was a spiritual horror of that sort which I still carry today."[79]

In Vonnegut lies some of the darkest reflections of these technologies and musings about this specific age in human scientific endeavor. Vonnegut's pessimism and dark humor are defining characteristics of his writing, often noted by those who study him as the hallmark of what makes Vonnegut worth studying.[80] However, that pessimism combined with his skepticism of general twentieth century technology, and his fear more specifically of military technologies, Vonnegut offers something different in his views of world ending technologies. Vonnegut sees that once the technology, in this case *ice-nine*, is created, it is inevitable that it will be used to destroy the world. There is no escaping it. The world will end by our own hand once we create technologies that can complete that very task.

For Vonnegut, though, the end of the world is more than just the inevitability of the path that these new forms of twentieth century science and technology will take us down, it is a means for him to truly understand human beings and ultimately himself. In *A Man Without a Country* Vonnegut states, "total catastrophes are terribly amusing, as Voltaire demonstrated. You know, the Lisbon earthquake is funny."[81] To Vonnegut, there is humor in the darkest hours. That is what makes us undeniably human: our ability to cope with tragedy and chaos. After Mona has committed suicide, and Jonah has watched the world literally end, he muses about the beauty of nature that still

[79] Robert Musil. "There Must be More to Love than Death: Interview with Kurt Vonnegut" in *The Nation* (August 1980): 69.
[80] He has been compared to Mark Twain for this use of humor, though is a much darker way.
[81] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 3.

surrounds him. He has experienced utter loss, and yet curiosity and wonder engulf him, and importantly Jonah's fascination with science stays with him, even as he has watched science fail him. Life fails in a heartbreakingly yet adorably lovable manner. There is no hope, of course, but we sympathize with the effort, and are amused.

Vonnegut on Science and Technology

Though a vocal critic of science and technology throughout his career, Vonnegut was not simply anti-science or anti-technology. He had two main criticisms of technology. The first is that an overuse and overreliance on technology is dangerous, and addictive. The second is that technology can have unintended consequences. In fact, Vonnegut is criticizing not technology itself but rather the human use of technology. Understanding Vonnegut means understanding his own proficiency with science and technology. His scientific training allowed him to understand scientific concepts in broad terms, but he lacked the skill to actively practice science; remember, he failed out of Cornell in chemistry. This gave Vonnegut a more egalitarian view of scientists and engineers, lumping them together with skilled blue-collar workers like mechanics and carpenters. In Vonnegut's view, there was something similar about all of these people; they were tinkerers. As an anthropologist of the corporate scientific culture, Vonnegut came to General Electric working in the public relations department.[82] In a 1977 interview in *The Paris Review*, Vonnegut states,

[82] "I'm technologically educated-I'm educated as a chemist, not as a writer. I was studying chemistry at the time and was from a technocratic family. During the Depression we really believed that scientists and engineers should be put in charge and that a technological utopia was possible. My brother, who is nine year older than I am, became a distinguished scientist. He's Dr. Bernard Vonnegut, who got a PhD from the Massachusetts Institute of Technology. The flashiest thing he discovered was that silver iodide will

> I'm no scientist at all. I'm glad, though, now that I was pressured into becoming a scientist by my father and my brother. I understand how scientific reasoning and playfulness work, even though I have no talent for joining in. I enjoy the company of scientists, am easily excited and entertained when they tell me what they're doing. I've spent a lot more time with scientists than with literary people, my brother's friends, mostly. I enjoy plumbers and carpenters and automobile mechanics, too.[83]

In a letter written as part of his application to General Electric in 1947, Vonnegut touts his scientific education, with two years of work in biochemistry at Cornell and mechanical engineering training received in the military.[84]

Truly understanding what Vonnegut thought about science and technology is difficult because he offers conflicting perspectives and opinions on almost every subject he touches.[85] Vonnegut spent most of his career critiquing the military industrial complex, nuclear weapons, evolutionary biology, automation, and quantum physics, but he claimed to very much like science.[86] He came from a family that lauded scientific and technical thinking, and he had a fairly strong background in science, which he never seemed to feel ashamed of or tried to hide. Neither of those aspects of his life directly conflict, but they do present a conundrum. He was raised with the expectation that he

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make it snow and rain. That's his patent. He is actually a leading atmospheric chemist now." Kurt Vonnegut in August 1980 interview with Robert Musil in *The Nation.*

[83] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No. 69 (1977): 39.

[84] Kurt Vonnegut to General Electric. April 26, 1947.

[85] He will even conflict himself within single paragraphs of writing. See "Letter to Charles McCarthy" from 1973. Vonnegut contradicts both his own ideas about what it means to be an American, and how he personally views himself within the space of the two-page letter.

[86] *A Man Without A Country*, *Cat's Cradle*, *Galapagos*, *Player Piano*, and *Slaughterhouse-Five* offer just a few examples of these critiques.

would become a scientist like his older brother. Indeed, he greatly admired Bernard, both as a man, and as a scientist.[87]

While he himself was not a scientist, and did not seem to hold the necessary talent for practicing science, Vonnegut resembled scientists of this era. He loved understanding the way the world around him worked.[88] He loved cars, and airplanes, and used to build models in his parents' basement as a youth, and he owned a Fiat dealership later in life and enjoyed working with the mechanics on the cars. [89] Some of his best friends were scientists and engineers, as well as carpenters and plumbers.[90] Vonnegut did not seem to make a distinction between tinkering and practicing science in the ways he talked about the two groups of people. It should be noted that there is much epistemological work in philosophy of science today, which is trying to bridge the gap between the idea of scientific theory and tinkering.[91]

Vonnegut clearly made a distinction between the hard sciences and the human sciences. After serving in the military, Vonnegut went to the University of Chicago to work on a master's degree in cultural anthropology, but he apparently did not view it as a science in the same way that he saw biology, chemistry, and physics as science. Science, to Vonnegut, was about understanding nature and all its complexities. There are several passages in his novels that seem to speak with a genuine appreciation of science, highlighting the wonder in nature as expressed by Jonah at the end of *Cat's*

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[87] Kurt Vonnegut. *Fates Worst than Death: An Autobiographical Collage of the 1980s*. (New York: G.P Putnam Sons, 1991): 117.
[88] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No. 69 (1977): 39.
[89]Charles Shields. *And So It Goes: Kurt Vonnegut, a Life*. (New York: Henry Holt and Company, 2011)
[90] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No. 69 (1977): 39.
[91] Journals such as Journal of Research in Science Teaching, Mathematics & Technology Education, and the Journal of Chemical Education have dedicated numerous articles to the discussion in recent years.

Cradle and in Paul Proteus's curiosity about machines in *Player Piano*. While Proteus expresses cynicism and fear behind what machines can do, he nevertheless finds new technology interesting, much in the same way Vonnegut did.

Understanding humans, on the other hand, was something else entirely. It was, ultimately, what Vonnegut set out to do with the rest of his life after leaving General Electric, and understanding science and technology were a large part of that. But for Vonnegut, science and technology reflected on humanity, rather than acting as the mechanism within which to study them. Vonnegut's chief criticisms of science and technology have always been the ways in which people use them, rather than about the inventions themselves. In *Player Piano*, the EPICAC is not necessarily the enemy of people, but once it is used as a means of pigeon-holing people and defining their worth, it does become dangerous. In *Cat's Cradle*, *ice-nine* is not itself dangerous, it is just a substance that raises the freezing temperature of water. It is only when people get involved, that its deadly uses are uncovered. Humans are messy and unpredictable. Vonnegut finds nature curious but easier to define, which is why he separates his study of humans from his understanding of the study of science.

Vonnegut maintained a belief that our world had become addicted to technology, a codependency that threatened to render humanity itself dysfunctional. The perceptive literary critic Hartley Spatt commented: "That is the dilemma faced by the reluctant Luddite: which machines to destroy, and which to save."[92] However, nothing is ever unequivocal with Vonnegut. For example, this Luddite is willing to use a typewriter—but it must be manual. Nineteenth-century machines are, apparently,

[92] Hartley Spatt. "Ludic Luddite" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* edited by Kevin Boon (Albany: State University of New York Press, 2001): 120.

traditional enough for Vonnegut—it is only his own century that appalls him.[93] In his autobiography, *A Man Without a Country*, he brags, "I have been called a Luddite. I welcome it. Do you know what a Luddite is? A person who hates newfangled contraptions."[94] This aversion to technology, "newfangled contraptions," comes both from a fear of what a reliance on technology will bring to the world (a macro-level fear) and the worry that relying too heavily on technology would remove the individual identity from people (a micro-level fear).[95]

However fearful Vonnegut was of the weapons which we could create, he would never go so far as to believe all technology should be feared, despite his self-characterization as a Luddite. Vonnegut was a critic of science and technology because he both believed he understood science and technology and maintained a certain fascination with those who partook in the enterprises he never had the talent to pursue. He was deeply upset by literary critics who took it upon themselves to both dismiss him as a less than serious artist because of his technical education and criticize technology with no technical knowledge themselves. "I know that customarily English departments in universities, without knowing what they're doing, teach dread of the engineering, physics, and chemistry departments. And this fear, I think, is carried over into criticism. Most of our critics are products of English departments and are very suspicious of anyone who takes an interest in technology."[96] The same decade that Vonnegut began his literary career, C.P. Snow gave a lecture titled *The Two Cultures*, with its central

[93] Ibid., 120
[94] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 55
[95] "Critics feel that a person cannot be a serious artist and also have had a technical education, which I had." Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 56
[96] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 56

thesis being that intellectual life in the western world is divided between the sciences and the humanities, and this division is ultimately a major issue.[97] Knowing how Vonnegut felt about disciplinary boundaries, I believe he would agree with this sentiment.

Conclusion

Historically, Vonnegut occupies an interesting place. As a man both fascinated and repulsed by the science and technology of his time, he spent all his career grappling with those conflicting feelings. Even by the last years of his life, in his final autobiography, Vonnegut still was conflicted.[98] While he was never truly comfortable with changing technology, his very first novel is his attempt to reconcile what he sees as a sort of technological inevitability: once we have created certain technologies which help to make tasks easier, stopping their use is all but impossible. He may not have liked that fact, but he was well aware of our dependence on science and technology as he moved through the twentieth century.

The realities of the new world which Kurt Vonnegut inhabited after the Second World War have not left us. While trust in science and technology has waned for some Americans, the idea of science as an absolute fact has only grown since the 1950s for others. Vonnegut's fears about automation replacing human workers continue to loom, though at least Vonnegut imagined a future where those displaced workers would be well taken care of, even if they no longer had jobs to give them purpose. The Cold War

[97] Charles Percy Snow. *The Two Cultures*. (London: Cambridge University Press, 1959)
[98]Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 61

may have ended, and with it many people's fears about world ending technologies. Yet nuclear weapons continue to haunt the global consciousness to this day. So too do our scientific and technological innovations which continually alter the planet's climate, of which Vonnegut was aware, dedicating the fourth chapter of *A Man Without a Country* to his understanding of climate change.

To call Kurt Vonnegut unique in his views on science and technology would be to undercut the other critics who were discussing the same issues as Vonnegut, many of whom Vonnegut was probably aware of.[99] However, Vonnegut not only had a fifty-year career, but remained relevant to the American public during most of that time. Not only that, but he remained a critic of science and technology throughout his entire career and was clearly seen as someone who has something interesting to say on the subject since he was the commencement speaker at MIT three times during his career.[100] While understanding Vonnegut from a literary perspective has many merits, and the fact that the study of him has declined over the last decade is itself a tragedy, it is also important to understand Vonnegut as part of larger conversation that was happening during the 1950s about science and technology in a post-war world and to place Vonnegut historically not just as a commentator on World War II, but also as a critic who spent the majority of his career writing during the Cold War period in the United States. Moreover, Vonnegut brings a background in science and technology that is interesting in that he is both proud of his brief education in the sciences and yet adamantly against the idea that he is a scientist. He stands at a sort of middle ground between the scientist

[99]Philip K. Dick, Norbert Wiener, Herbert Marcuse, Isaac Asimov, and many others.
[100] Kurt Vonnegut. *Fates Worse than Death: An Autobiographical Collage of the 1980s*. (New York: GP Putnam's Sons, 1991).

and the writer. His background in science makes him more knowledgeable than some literary critics of technology, and yet he is not nearly as attached as a scientist, so he maintains some level of objectivity. His humor and satire made his critiques seem familiar, even if the worlds he was imagining were anything but. "If I should ever die, God forbid, I hope you will say, 'Kurt is up in heaven now.' That's my favorite joke."[101] A complicated man, full of contradictions, even within his own writing, he is worth studying, if only to understand that it is possible to love something, and fear it, all at the same time. As Vonnegut states in *Cat's Cradle*, "science is magic that works," and with all of the mystery and wonder that magic brings, the way that it titillates our curiosity, there is an underlying danger to the uncertainty of what our experiments might create.[102]

[101] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 80
[102] Kurt Vonnegut. *Cat's Cradle*. (New York: Dial Press, 2010): 218

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Appendix A: Vonnegut on American Identity and Ideology

Much like many of the other opinions and views which Vonnegut held, his understanding of an American identity was complicated. It is important to unravel parts of this because it will help us understand some of his conflicting views on the place of science and technology within the United States, as well as where he fit as a critic of both. While there are many aspects of the idea that Vonnegut has of the United States that he admires (such as the concept of freedom of ideas and expression of those ideas) he often holds conflicting views of the country during this period, as is apparent in both novels. These conflicting thoughts about ideology and identity seep into Vonnegut's own understanding of self, presenting conflicting pictures of himself. I am not the first to note that Vonnegut presents a conflicting picture of himself. Robert Tally and Jerome Klinkowitz both spend significant portions of their published work on Vonnegut, delving into the conflicting identity he presents. Klinkowitz, in particular, is interested in Vonnegut's conflicting views of himself within his conception of the United States. However, both men also come to their scholarship on Vonnegut from personal relationships which they held with him during their lifetimes, as they both admit in the introductions of their respective works. Not only am I offering an outsider perspective on Vonnegut's view of the United States during this period, I am working to highlight an important gap in scholarship on Vonnegut, his perspective on himself. A man who wrote extensively about himself and his thoughts during this period, has not been studied in this manner, and his conflicting views on freedom and democracy in the United States help us to understand the conflicting views which he holds about science and technology. The main point to take away, though, is that dissent is thoroughly

American, in Vonnegut's view, and that the ability to criticize is fundamentally American.

Kurt Vonnegut was born and raised in the Heartland of the United States, he served in the United States military and took pride in that service, he was an American. However, the extent to which that identity was important to Vonnegut is less striking than his understanding of what the American ideology and identity was. The beginning lines of his first autobiography, *Palm Sunday* (1981) read, "this is a very great book by an American genius."[103] While that line is filled with all the irony which Vonnegut inserts into his fictional musings, there is something to be said of the bravado which Vonnegut attributes to "American." It is not enough to simply be a genius, he takes on the status of an "American genius." This is probably due, in part, to his bombastic view of the United States, but also probably due to how he views the American literary tradition, one which he reveres and yearns to be a part of. He spends the first chapter of *Palm Sunday* making arguments not only for a great American literary tradition (which he firmly believes is coming to an end) but also for his place within the last generation of "full-time, life-time American novelists."[104]

Vonnegut's appreciation for the productions of American art and literary culture speaks to what Vonnegut values the most about his conception of American ideology: the freedom to voice and produce ideas. "Whatever ideas are squashed in this country, literate lovers of the American experience write careful and intricate explanations of why all ideas must be allowed to live. It is time for them to realize that they are

[103] Kurt Vonnegut. *Palm Sunday: An Autobiographical Collage*. (New York: Dial Press, 1981): xi
[104] Ibid., 3; 1

attempting to explain America at its bravest and most optimistic to orangutans."[105] This statement is not as negative is it would seem on its surface, because it realizes that the ability to make those intricate explanations in defense of an American ideal are thoroughly American, in the eyes of Vonnegut. Within a letter criticizing a school board member who had burned his books in a school furnace, Vonnegut writes, "well you have discovered that Drake is a part of American civilization, and your fellow Americans can't stand it that you have behaved in such an uncivilized way…if you are an American, you must allow all ideas to circulate freely in your community, not merely your own."[106]

Within the two novels which I am focusing on, Vonnegut also seems to be playing with ideas about the United States and what it means to be an American. Both novels take place in the United States. In *Player Piano*, the Third World War that precedes the events in the book was only ended because "it was recognized that American know-how was the only answer to the prospective enemy's vast numbers."[107] The technological determination of the United States, and the country's tenacity in war strongly sit in Vonnegut throughout the rest of the novel, though not necessarily in a good way. Technological prowess in war, and boasting of great military might, are negative attributes to American ideology in the eyes of Vonnegut, and thus his critical stance towards both military technologies, and the military hierarchy in *Player Piano*. In *Cat's Cradle*, Papa Monzano indicates an obsession with the United States, so much so that he tries to model the island of San Lorenzo after his conception of the US.

[105] Kurt Vonnegut. *Palm Sunday: An Autobiographical Collage*. (New York: Dial Press, 1981): 7-8
[106] Kurt Vonnegut to Charles McCarthy. November 16, 1973
[107] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 6

United States military might and a conception of the United States as a Christian nation are the two attributes which Monzano chooses to highlight the most, but both are facades on San Lorenzo. The military is nearly non-existent, and the only true Christians on the island are the Hoosiers and an ex-SS officer turned doctor to Monzano. While Vonnegut is not claiming that the US military is a façade, or that people who claim to be Christians are not, he is commentating out the outward facing appearance of the United States during this period. It is a society that appears both devoutly religious and fiercely militaristic on its surface. Of this, Vonnegut would be of the mind that the labels, and even the outward facing persona of the nation, were less important than the actual deeds of the United States. He would go on to say, "'socialism' is no more an evil word than 'Christianity.' Socialism no more prescribed Joseph Stalin and his secret police and shuttered churches than Christianity prescribed the Spanish Inquisition. Christianity and socialism alike, in fact, prescribe a society dedicated to the proposition that all men, women, and children are created equal and shall not starve."[108]

Vonnegut's own domestic life was also something of a façade. He was raised in a less than traditional household, where the wealth of his parents in his most formative years made it possible for the Vonneguts to hire a nanny, Ida Young, who raised the children until the Great Depression, around Vonnegut's tenth birthday.[109] It should also be noted that Kurt only got into the University of Chicago after the War because his wife, Jane, had been admitted for her own separate graduate program, and initially had

[108] Kurt Vonnegut. *A Man Without a Country*. (New York: Seven Stories Press, 2005): 11
[109] Charles Shields. *And So It Goes: Kurt Vonnegut, A Life*. (New York: Henry Holt and Company, 2011): 18

no intention of not working outside of the home. Kurt did not even have an undergraduate degree, and Jane was a highly sought-after English graduate student, so there was a slight role reversal from the "traditional" expectations in the early years of their marriage. However, the circumstances of Vonnegut getting the job at GE, and the subsequent birth of their first child, Mark, caused Jane to quit school and become a full-time caregiver.[110] The Vonneguts had three children of their own, and eventually adopted three of Alice's four children after her and her husband's death. They owned a home in Cape Cod, and Vonnegut maintained a fascination with cars, leading him to work to sell Fiats to maintain some semblance of a middleclass status.[111]

On the surface, it would seem that the dream of domesticity was something which Kurt Vonnegut had achieved, but according to his son, Mark, in his autobiography and chronicling of his battle with schizophrenia, *The Eden Express*, the Vonnegut home was less than tranquil, with money being tight through much of the 1950s, and his parent's marriage on the rocks. Moving into the 1960s, Kurt would be offered a job at the University of Iowa, and would leave his family behind for nearly half a decade, living on his own and forcing Jane and their six children to practically fend for themselves.[112] They would eventually divorce after the publication of *Slaughterhouse-Five*. Vonnegut's depiction of women, and domestic life, in his novels, seems to lend itself to the idea that Vonnegut very much wanted the steady reliability of a happy marriage and home life, even it did not work out that way for him (Paul's

[110] Ginger Strand. *The Brothers Vonnegut*. (New York: Farrar, Straus and Giroux, 2015)
[111] Jerome Klinkowitz. *Kurt Vonnegut's America* (Columbia, SC: University of South Carolina Press, 2009): 45
[112] Jerome Klinkowitz. *Kurt Vonnegut's America* (Columbia, SC: University of South Carolina Press, 2009): 60

dream of "The Farm" in *Player Piano* and the entire conception of the characters of Emily and Angela Hoenikker in *Cat's Cradle* add weight to this assertion). Though, by Vonnegut's own words, he does not spend much time thinking about women in his writing, claiming, "there aren't any. No real women, no love."[113] However, he sells himself short, because there is something very important to Vonnegut about stability at home in his narratives. His entire early critique of Anita in *Player Piano* rides on her mechanical approach to marriage, and her counterfeiting warmth with Paul.[114] In *Cat's Cradle*, the death of Emily Hoenikker begins the subsequent moral decay of the entire family. Some scholars, such as Daniels and Bowen, have pointed out that Vonnegut's use of women, while acting as mere decorations to the plot, point to larger feelings he may hold about the state of domesticity in 1950s America. While they are always secondary characters, in some ways, they inadvertently drive the plot of the text, though some feminine trait which Vonnegut deems them to be lacking. In *Player Piano*, it is modesty and a masculine assertiveness that drives Paul from Anita into the arms of the revolution. In *Cat's Cradle* it is the lack of Emily's presence as the moral center of the home that leads her children astray.

Beyond the American identity, and American cultural values, Vonnegut had a very clear idea of how he saw himself, wanting the world to view him as a sort of "everyman" rather than an intellectual.[115] The best example of this comes in the letter which Vonnegut wrote to Charles McCarthy, the head of the Drake Board of Education

[113] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No. 69 (1977): 42
[114] Kurt Vonnegut. *Player Piano*. (New York: Dial Press, 2006): 17
[115] This seems odd, since Vonnegut was greatly concerned with not being categorized as a genre writer of science fiction, since this would mean that his work would be taken less seriously by intellectuals. This is one of many contradictions to the way which Vonnegut presented himself.

in Drake, North Dakota in 1973, in response to McCarthy burning *Slaughterhouse-Five* because he disagreed with the text. In the letter, while addressing what he thinks of people who censor what children read, Vonnegut also touts some facts about himself.

> I am, in fact, a large, strong person, fifty-one years old, who did a lot of farm work as a boy, who is good with tools. I have raised six children, three my own and three adopted. They have all turned out well. Two of them are farmers. I am a combat infantry veteran from World War Two, and hold a Purple Heart. I have earned whatever I own by hard work. I have never been arrested or sued for anything. I am so much trusted with young people and by young people that I have served on the faculties of the University of Iowa, Harvard, and the City College of New York. Every year I receive at least a dozen invitations to be commencement speaker at colleges and high schools. My books are probably more widely used in schools than those of any other living American fiction writer.[116]

While this statement is not necessarily entirely factual (by all accounts of biographers and people who knew Vonnegut, he was terrible at working with his hands and using tools)[117] and contradicts itself (he wants McCarthy to think he is both a laborer while touting the universities he has taught at) it does show that Vonnegut was very concerned with the image of his identity to the rest of the world, and that this was the particular identity that he wanted to present. He was a man who showed great concern for the welfare of his children, admired those who work with their hands, took pride in his military service (especially serving in the Second World War), and enjoyed teaching and writing and sharing his ideas with the people around him. This goes beyond just the contents of this letter. Nearly every interview which he gave after the publication of *Slaughterhouse-Five* is a discussion of how much being a veteran means to Vonnegut,

[116] Kurt Vonnegut to Charles McCarthy. November 16, 1973
[117] Ginger Strand. *The Brothers Vonnegut*. (New York: Farrar, Straus and Giroux, 2015)

because he feels like he can relate to the rest of the country better.[118] This relates back to his touting his public education growing up, making him different from his siblings, somehow more civic minded, more American. Vonnegut is incredibly concerned about how he appears to the rest of the country, that even though he is criticizing many aspects of the United States, he wants to show that he is thoroughly American. This view that dissent can be patriotic, that criticism is fundamental to being an American, bleeds into Vonnegut's views on science and technology, in that his place as a critic is fundamental to ensuring that our uses of our creations are moral and ethical, and that we are considering the big picture in what we create.

Appendix B: The State of Vonnegut Scholarship

Much of the scholarly discussion of Kurt Vonnegut lies in literary circles, with few historical accounts by historians discussing Vonnegut at any length (when he is mentioned in historical pieces, it is within the context of lists of authors or works that never delve into specific discussions of Vonnegut himself).[119] However, it should be noted that there are some works by literary scholars, which look at Vonnegut in terms of the historical context he inhabits, as well as the ways which he is historically informed in his publications. In fact, Jerome Klinkowitz in his 2011 work *Kurt Vonnegut's America* is probably the best example of this type of contextualization of Vonnegut, along with those who discuss Vonnegut's views on war.[120] The relationship between

[118] David Hayman, David Michaelis, George Plimpton, and Richard Rhodes. "Kurt Vonnegut, the Art of Fiction" in *The Paris Review* No. 69 (1977): 42
[119] Some writers who approach Vonnegut in this manner in some of their works: M. Keith Booker, Roslynn D. Haynes, Timothy Melley, Robert Genter, Julia Kirk Blackwelder, and James O. Castagnera
[120] Though Klinkowitz is specifically trying to contextualize Vonnegut, the book is much more biography than anything else.

war and Vonnegut will be explored more at the end of this section, along with Ginger Strand and her research on the Vonnegut brothers and their time at General Electric. More of the analysis of Vonnegut has centered on attempts to classify him as a writer, specifically turning into debates on whether he was a modernist or a postmodernist, as well as other genre considerations. Literary scholars define modernism as self-consciousness and irony, with an explicit rejection of the ideology of realism, as opposed to postmodernism which encompasses a skepticism or rejection of grand narratives, ideologies and various tenets of universalism, though the lines between them are much fuzzier than these distinctions would suggest. There are critics on both sides, such as Jerome Klinkowitz who is firmly of the belief that Vonnegut was a postmodernist and M. Keith Booker who discusses him at length in relation to other authors that he sees as modern. Specifically, for the purposes of this paper, classifying Vonnegut as either a modernist or postmodernist is less important than the historical considerations of the works of Vonnegut and his views on science and technology during the 1950s. I lean towards the conclusion which Robert Tally reaches in his 2011 work *Kurt Vonnegut and the American Novel*, that Vonnegut writes like a modernist, but discusses topics that are postmodern, thus making the debate about which category, modern or postmodern, he inhabits fuzzy and incomplete.[121]

Another major literary discussion of Vonnegut concerns an attempt to classify the type of fiction which Vonnegut was producing, mainly to try to understand if Vonnegut was a science fiction writer, science fiction being an important area of study for understanding the period of the 1950s. The 1950s was a high period for the

[121] Robert Tally. *Kurt Vonnegut and the American Novel: A Postmodern Iconography*. (London. Continuum Internation, 2011, Kindle Edition): location 139

production of both written and visual science fiction, so attempts to classify Vonnegut as one of those writers remains important to many literary scholars. From a literary standpoint, the genre of science fiction typically deals with imaginative concepts such as futuristic science and technology, space and time travel, parallel universes and extraterrestrial life. It often explores the potential consequences of scientific and technological innovations, usually avoiding tropes of the fantasy genre. Historically, science-fiction has had a grounding in actual science, but now this is only expected of what is now called "hard" science fiction. The attempt to classify Vonnegut as a genre writer is due, in part, to the publication of the novel *The Sirens of Titan*, a novel depicting alien invasion, occupying distant planets and moons, and teleportation. Writers such as Peter Freese in *The Clown of Armageddon* and Hartley Spatt in "Kurt Vonnegut: Ludic Luddite" are quick to point out the many scientific themes which Vonnegut explores in his texts, from the evolutionary process in *Galapagos* to the tricky physics of being unstuck in time in *Slaughterhouse-Five*.[122] Furthering the argument asserting Vonnegut as a writer of science fiction are those who make close comparisons between *Player Piano* and dystopian novels contemporary with it, mainly *Brave New World* and *1984*, such as Daniels, Bowen, and Tally.[123] These writers do well to point out that, while they firmly believe Vonnegut occupies a space in the science fiction writers pantheon, that he often fits well with dystopian fiction (and the business of whether he is a modernist or a postmodernist is never really resolved.) Vonnegut is

[122] Hartley Spatt. "Ludic Luddite" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* edited by Kevin Boon (Albany: State University of New York Press, 2001): 123
[123] Margaret Daniels and Heather Bowen, "Feminist Implications of Anti-Leisure," *Journal of Leisure Research* 35, no. 4 (2003) and Robert Tally, *Critical Insights: Kurt Vonnegut* edited by Robert Tally Jr (Amenia, NY: Salem Press, 2013

difficult to categorize even for those whose sole purpose is to place him within a specific literary category.

One can even point to the words of the man himself. When discussing the publication of his first novel, *Player Piano* which grapples with the relationship of man and machine and has clear overtones of science fiction, Vonnegut said, "there was no avoiding it since the General Electric Company *was* science fiction."[124] However, Vonnegut also said, in his autobiography, *A Man Without a Country*,

> I became a so-called science fiction writer when someone declared that I was a science fiction writer. I did not want to be classified as one, so I wondered in what way I'd offended that I would not get credit for being a serious writer. I decided that it was because I wrote about technology, and most fine American writers know nothing about technology. I got classified as a science fiction writer simply because I wrote about Schenectady, New York.[125]

He brings up a fair point. There is a fundamental disconnect between literary critics and the subject matter which Vonnegut discusses. His understanding of technology comes from his experiences at Cornell, in the military, and working at General Electric.[126] From his perspective, Vonnegut is simply telling the truth as he sees it, in an increasingly technical world. It is difficult to classify Vonnegut from a literary standpoint as a science fiction writer, since his commentary on science and technology utilizes contemporary science and technology rather than contemplating futuristic visions (in *Player Piano* the way that Vonnegut envisions computers is close to what actual computers for example, looked and functioned like in 1952). However, future

[124] Charles Shields. *And So It Goes: Kurt Vonnegut A Life* (New York: Henry Holt and Company, 2011): 103
[125] Kurt Vonnegut. *A Man Without a Country* (New York: Seven Stories Press, 2005): 15
[126] Charles Shields. *And So It Goes: Kurt Vonnegut A Life* (New York: Henry Holt and Company, 2011)

technology and science are not necessary for a classification as science fiction, and in fact, like H.G. Wells and Mary Shelley before him, the fact that Vonnegut occupies the present in his text helps to make his arguments more profound.

Vonnegut's objection might have to do with the precarious nature of being classified as a genre writer, because it can often be a way of dismissing an author. From the historian's point of view, on the other hand, the precise classification is not a critical matter, but, I would argue that Kurt Vonnegut did write science fiction in so much as his fiction deals heavily with science and technology in realistic settings and grapples with ethics and morality. This is not an effort to dismiss him as a genre writer, as would be done in literary circles, but instead to place him among his contemporaries, such as Isaac Asimov, who strove to understand changing scientific and technological environments.

When Vonnegut is discussed in relation to technology, an overwhelming theme of this critics have generally concluded Vonnegut rejected the notion of technological "progress." Most scholars seem to agree that Vonnegut is skeptical of the way which technology works in the twentieth century.[127] Everyone who points to Vonnegut's discussion of science and technology is not necessarily making the argument that he is a science fiction writer. Critics such as Loree Rackstraw, Jeff Karon, Adam Bogar, and Lorna Jowett are working to understand the fundamental nature of how Vonnegut grapples with science and technology in his texts.[128] There are overwhelming themes

[127] Donald Morse. "You Cannot Win, You Cannot Break Even, You cannot Get Out of the Game: Kurt Vonnegut and the Notion of Progress" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* edited by Kevin Alexander Boon (Albany: State University of New York Press, 2001): 92
[128] Loree Rackstraw. "Quantum Leaps in the Vonnegut Minefield" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* ed. Kevin Boon (Albany: State University of New York Press, 2001); Jeff Karon, "Science and Sensibility in the Short Fiction of Kurt Vonnegut," in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* edited by Kevin Alexander Boon (Albany: State University of New

within his works, even if the worlds he creates are less works of science fiction and more discussions of the overlapping nature of science and fiction. Spratt's main argument is that Vonnegut exhibits a grow in his discussion of technology throughout his career, becoming at once more fearful and yet less pessimistic as the decades of his career progress.[129] While Spatt does try to discuss Vonnegut as a science fiction writer, he does well to point out that there is more to Vonnegut's discussion of science and technology than the genre of science fiction can capture, there is something real and raw to the power of Vonnegut's fears of technology. "His fear of machinery has a nightmare corollary, running through all of Vonnegut's novels: the image of mechanized humanity, people who have become no more than machines."[130] Spatt also points to the realness of the way Vonnegut ends the world in *Cat's Cradle* and *Galapagos* (1985). Both works portray the world as we know it ending through acts of science gone awry, which while fictional and fanciful, never overly complicate the science involved, and never seem far-fetched.[131] The most overwhelming discussion of science and technology surrounding the work of Vonnegut, though, is the way which he plays with time, particularly in *Slaughterhouse-Five* though also in some of his earlier works, especially *The Sirens of Titan*, where the protagonist is also "unstuck" in time.

York Press, 2001); Adam Bogar, "Can a Machine be a Gentleman?: Machine Ethics and Ethical Machine" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* ed. Kevin Boon (Albany: State University of New York Press, 2001); Lorna Jowett, "Folding Time: History, Subjectivity, and Intimacy in Vonnegut" in *New Critical Essays on Kurt Vonnegut*, ed. David Simmons (New York: Palgrave Macmillan, 2009)

[129] Hartley Spatt. "Kurt Vonnegut: Ludic Luddite" in *At Millennium's End: New Essays on the Work of Kurt Vonnegut* edited by Kevin Alexander Boon (Albany: State University of New York Press, 2001): 120

[130] Ibid., 121

[131] Ibid., 123

Two other areas of interest in Vonnegut are about: 1) the way which religion and morality work in his writing and 2) the function of war. The critical consensus is that while Vonnegut is overwhelmingly critical of organized, modern religions, underlying each of his novels is a plea for a more moral and ethical society, in whatever form that may take. Both literary scholars, and I, find this underlying morality to be the more interesting vein of study than the mechanics of the religions which Vonnegut presents. Paul Thomas, Claire Allen, David Andrews, and Donald Morse all wrestle with and come to the conclusion that while the functions of an organized religion are often repulsive to Vonnegut morality in general is of the utmost importance to maintaining both order in society and humanity in general.[132] Thomas states,

> Vonnegut offers contemporary readers universal considerations of the complexities inherent in the human condition (his persistent wrestling with free will, for example), and his works create numerous alternate universes that are essentially mirrors of our real world, focusing often on humans creating our own suffering because of our habitual weaknesses as humans.[133]

This sentiment is shared across the board among Vonnegut critics and scholars. There is something fundamentally human about the way which Vonnegut presents realities where people struggle with the morality and ethics of the situations which they create.

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[132] Paul Thomas. "'No Damn Cat, and No Damn Cradle': The Fundamental Flaws in Fundamentalism according to Vonnegut" in *New Critical Essays on Kurt Vonnegut* edited by David Simmons (New York: Palgrave Macmillan, 2009); Claire Allen. "Wampeters and Foma? Misreading Religion in Cat's Cradle and the Book of Dave," in *New Critical Essays on Kurt Vonnegut* edited by David Simmons (New York: Palgrave Macmillan, 2009); David Andrews. "Vonnegut and Aesthetic Humanism." In *At Millennium's End: New Essays on the Work of Kurt Vonnegut*, edited by Kevin Boon, (Albany, NY: State University of New York Press, 2001); Donald Morse, "You Cannot Win, You Cannot Break Even, You Cannot Get Out of the Game: Kurt Vonnegut and the Notion of Progress." In *At Millennium's End: New Essays on the Work of Kurt Vonnegut*, edited by Kevin Boon (Albany, NY: State University of New York Press, 2001)

[133] Paul Thomas. "'No Damn Cat, and No Damn Cradle': The Fundamental Flaws in Fundamentalism according to Vonnegut" in *New Critical Essays on Kurt Vonnegut* edited by David Simmons (New York: Palgrave Macmillan, 2009): 28

The discussion of Kurt Vonnegut as a commentator on war is substantial, particularly because Vonnegut frequently brought up his aversion to war during his many of his interviews.[134] Moreover, scholars are interested in the timing of Vonnegut's publications about war, in particular the connection between *Slaughterhouse-Five* and the Vietnam War. Even though that text is about World War II, Vonnegut chose to wait to publish the text until 1969, at the height of the United States conflict in Vietnam. Rachel McCoppin discusses this connection at length in an excellent dissection of Vonnegut's feelings about the purposes of war.[135] Phillip Tew, Elizabeth Abele, Lawrence Broer and many others all focus on the way which Vonnegut makes the dangers of war real for his audience, especially the trauma it brings to those who have to take part in the conflict.[136] Since he is commentating on the Second World War, that is where many critics keep their discussion, especially regarding *Mother Night* (1961) and *Slaughterhouse-Five* (1969). There is also discussion of Vonnegut and his aversion to war in very late life which surrounds the open criticism he makes of the War on

[134] Kurt Vonnegut. *Palm Sunday: An Autobiographical Collage* (New York: Dial Press, 1981): 10
[135] Rachel McCoppin. "'God Damn It, You've Got to Be Kind': War and Altruism in the Works of Kurt Vonnegut." In *New Critical Essays on Kurt Vonnegut*, edited by David Simmons (New York, New York: Palgrave Macmillan, 2009);
[136] Philip Tew, "Kurt Vonnegut's Mother Night (1961): Howard W. Campbell, Jr. and the Banalities of Evil." In *New Critical Essays on Kurt Vonnegut*, edited by David Simmons. (New York, New York: Palgrave Macmillan, 2009); Elizabeth Abele, The Journey Home in Kurt Vonnegut's World War II Novels." In *New Critical Essays on Kurt Vonnegut*, edited by David Simmons. (New York, New York: Palgrave Macmillan, 2009); Lawrence Broer, "Duty Dance with Death: A Farewell to Arms and Slaughterhouse-Five." In *New Critical Essays on Kurt Vonnegut*, edited by David Simmons. (New York, New York: Palgrave Macmillan, 2009)

Terror.[137] Chris Glover explores Vonnegut's vocal criticism of the War on Terror at length.[138]

[137] Vonnegut spends an entire chapter of his final autobiography, *A Man Without a Country* criticizing the Bush administration for their invasion of Iraq following 9/11. While he works to make clear that he is a patriot, since returning to the States after his captivity in Dresden, Vonnegut is a very vocal pacifist.
[138] Chris Glover, "Somewhere in There was Springtime: Kurt Vonnegut, His Apocalypses, and Hist Post-9/11 Heirs" in *New Critical Essays on Kurt Vonnegut* edited by David Simmons (New York: Palgrave Macmillan, 2009)