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Cover Page Footnote

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The Führer of All Maladies: Cancer and the Utility of Metaphors for Its "Independence," Under the Nazi Regime

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Abstract

Work in science studies has demonstrated that metaphors construct a cognitive framework for making sense of both disease and new scientific research. In her 1978 book, *Illness as Metaphor*, Susan Sontag argued that the dominant metaphor for one disease in particular, cancer, has ultimately become one of war; cancer cells do not just “multiply,” they are invasive—cancer patients do not just “heal,” they “fight a battle.” However, this “war metaphor” for cancer was not always and everywhere so ubiquitous. In the Third Reich, for example, Nazi scientists discussed cancer in terms of independent agency. Cancer cells were viewed not on equal footing with their researchers or even the patients they plagued, but as independent degenerates or revolutionaries that threatened the unity of Nazi society as a whole. Notably, the metaphors that any society adopts are informative of aspects of their culture—and the Nazis’ cancer metaphors were no exception. After conducting a twelve-week examination of Nazi advertisements, books, and research publications at Duke University last fall, I came to understand how metaphors for cancer in Nazi Germany intriguingly reflected the lens through which Nazi professionals saw their own “diseased” world. This paper, drawing on literature from several prominent Nazi cancer scientists (originally analyzed in German), will explain the origins and utility of independence metaphors for cancer in the Third Reich—and how the greater importance of such analysis lies in its capacity

to help us understand the paranoia driving (and embedded in) Nazi perceptions of society in general.

Keywords: science studies, cancer, metaphors, Nazi society, independence

GENERAL INTRODUCTION

“Night owl.” “Early bird.” “Apple of my eye.” “Heart of stone.” Such metaphors are both aesthetic and intellectual pleasantries of the English language. On an aesthetic level, these sayings are entertaining and familiar. On an intellectual/cognitive one, however, these metaphors have the power to shape how we visualize, frame, and think about objects and experiences in our worlds. Work in science studies, a field that contextualizes scientific progress within society, history, and philosophy, has elaborated on this point; metaphors seem to be especially useful for making sense of *two* particular aspects of human life. These two aspects are scientific research and disease—more specifically, *cancer* research and disease.

In her 1978 book, *Illness as Metaphor*, writer-activist Susan Sontag (who died of leukemia) argued that the dominant metaphor for cancer has ultimately become one of war. Cancer cells do not just “multiply,” as we know today; they are invasive. Cancer patients do not just “heal”; they “fight a battle.” Nevertheless, this “war metaphor” for cancer was not always and everywhere so ubiquitous. In the Third Reich, for example—which was actually a hub of progressive cancer research—Nazi scientists discussed cancer in terms of independent agency. Cancer cells were viewed not on equal footing with their researchers or even with the patients they plagued, but as independent degenerates or revolutionaries that threatened the well-being of all Germans, even the unity of Nazi society as a whole. Importantly, the field of science studies asserts that the metaphors any society adopts are informative of aspects of that society’s culture. The Nazis and their cancer metaphors were no exception

In Fall 2019, I designed an independent study at Duke University to explore this phenomenon. Advised by Stefani Engelstein, PhD (Professor and Chair, German Studies Department), I pored over German-language propaganda, books, and scientific research publications—all from the early 1930s to late 1940s, and all focused on cancer treatment, awareness, and/or laboratory research. I chose Nazi cancer research as my topic partly because I speak German, partly because I am a cancer biologist, partly because I was a Linguistics major, and partly because I am the granddaughter of a Holocaust survivor—and well-versed in World War II history. All four aspects of my identity intersected in this scrutinization of Nazi cancer language. I am forever indebted to Duke German Studies for allowing me to pursue such a niche area of investigation.

Over twelve weeks of study, I came to understand how Nazi metaphors for cancer reflected the lens through which Nazi professionals saw their own “diseased” world. In this paper, I draw on my original research to explain both the origins and utility of independence metaphors for cancer in the Third Reich—and how the greater importance of such analysis is that it helps us understand the paranoia driving (and embedded in) Nazi perceptions of society overall. First, I give an extensive background to independence metaphors and the history of German cancer research, beginning in the 1800s and leading up to the Nazi period. Included in this discussion is an overview of the famed cell biologists Matthias Schleiden, Theodor Schwann, Johannes Müller, and Rudolf Virchow. Then, I analyze pertinent publications from four of Nazi Germany’s most prominent cancer scientists: Erwin Liek, Felix Grüneisen, Hans Auler, and Karl Heinrich Bauer. Translating from the German,¹ I identify the common thread between these scientists’ “cancer language”—which, at its core, is the independence metaphor—and unpack its significance through

¹ All German translations referenced in this paper, unless otherwise stated, are my own.

a science studies point of view. I conclude with salient notes from Robert N. Proctor, author of the English-language book *The Nazi War on Cancer*.

INTRODUCTION TO INDEPENDENCE METAPHORS AND GERMAN (NAZI) CANCER RESEARCH CANCER RESEARCH IN PRE-NAZI GERMANY

By the time Hitler rose to power in 1933, Germany had already been leading the way in cancer research for 100 years. This was mostly thanks to four skilled 19th-century German scientists: Matthias Schleiden, Theodor Schwann, Johannes Müller, and Rudolf Virchow. Highly renowned for their work on cell theory, Schleiden, Schwann, Müller, and Virchow brought unparalleled attention and resources to cancer research in Germany after they galvanized a novel perspective for looking at life and disease. Today, it is common knowledge that to understand cancer, one must first understand cancer *cells*, and this is exactly the line of thought that these men pioneered. To explain how they did so, however, I must first contextualize their work within the time it was done.

19TH-CENTURY PROGRESS

The 19th century was a period of great scientific discovery that built off a critical invention a few centuries before: the microscope. This instrument was invented at the beginning of the 1600s, and in 1665 Robert Hooke famously became the first scientist to coin the term “cells” (Mazzarello, 1999). While examining a piece of cork, Hooke noted that its structural units resembled prison cells—and thus, the name for the most basic unit of life (the “cell”) was born.

With time, microscopic technology was improved, and two German scientists in 1838 and 1839 (Matthias Schleiden and Theodor Schwann) used the microscope to reach a new understanding of biological composition. In 1838, Schleiden (a botanist) published a scientific journal article stating that “every structural element of plants is composed of cells or their products” (Mazzarello, 1999). Shortly thereafter, Schwann (a zoologist) recognized and publicly

asserted the application of this principle to animal cells (Mazzarello, 1999). “The elementary parts of all tissues are formed of cells,” he wrote in *Mikroskopische Untersuchungen (Microscopic Examinations)*. “There is one universal principle of development for the elementary parts of organisms...the formation of cells” (Mazzarello, 1999).

In line with such cell-driven research, Schwann later proposed a reductionist approach to thinking about biological disease (including cancer). He strongly supported the idea of “free cell formation,” in which cells indeed develop from individual nuclei. Importantly, Schwann’s work marked the early German trend of seeing cells—especially cancer cells—as independent microcosms of power. I will elaborate on the writings of Schwann and his prolific counterparts Schleiden, Müller, and Virchow to demonstrate this point.

First, Schleiden observed the following: “While the higher plants are aggregates of ‘individualized, self-enclosed, single entities, or cells’...in the world of plants, then, the ‘cell’ is the true, the ultimate individual” (Rather et al., 1986). Schwann, as aforementioned, then built off this assertion; “once formed,” he wrote, “the cell continues to grow by virtue of its own inherent force” (Rather et al., 1986). These statements paved the way for metaphors of (cancerous) cellular independence and were ultimately substantiated by the more clinically oriented Müller (physiologist) and Virchow (“father of modern pathology”)

JOHANNES MÜLLER

In 1838, Johannes Müller (Schleiden’s and Schwann’s mentor) published a groundbreaking collection on cancer and his own methods of tumor classification, entitled *Über den feinern Bau und die Formen der krankhaften Geschwülste (About the Finer Structure and Forms of Malignant Tumors)*. One of the first conclusions Müller relays in the work is that tumors

can arise in many tissues at the same time; therefore, tumorigenic capacity is not “dependent”² on the exact nature of a tissue (1838). Here, he draws from the independence metaphors of his students, Schleiden and Schwann, regarding cell formation, in order to characterize *groups* of aberrantly behaving cells—cancerous tumors—as having independent agency. Later, Müller expands on this notion of independence to declare a particularly pertinent belief: tumors have their own “personalities” and “characteristics,”³ which in turn allow for uncontrolled and unwanted cell growth—independent from the rest of the organism. Schleiden and Schwann asserted that cells are autonomous beings with “minds” (nuclei) of their own, and Müller extended this declaration to tumorous conglomerations of them as well.

RUDOLF VIRCHOW

When it came to cancer, Müller claimed that cells’ inherent independence, or their ability to grow and expand on their own, adopted another meaning: independence from the normal behavior of non-cancerous organismal cells. Virchow’s great 1871 work, *Die Cellularpathologie in ihrer Begründung auf physiologische und pathologische Gewebelehre (Cellular Pathology Based on Physiological and Pathological Tissue Theory)*, maintained this point of view. “It is cancer cells’ own action, the attraction which they exert on neighboring fluids,” that permits them to “tear and fix usable substances” to propagate their own proliferation (Virchow, 1871).⁴ In other words, Virchow all but directly states in *Die Cellularpathologie* that cancer cells (and tumors) are conniving, individual little beasts—independent “agents” that have the opposite of their host’s interest in mind.

SUMMARY

² Original German: *abhängig*

³ Original German: *Persönlichkeiten and Eigenheiten*

⁴ Original German: *Es ist die eigene Action der [Krebszellen], die Anziehung, welche sie auf die benachbarten Flüssigkeiten ausüben, vermöge deren sie die brauchbaren Stoffe an sich reissen und fixieren.*

The above examples demonstrate how the assertion of cells', particularly cancer cells' (and tumors'), autonomy pervaded prominent 19th-century German scientists' (Schleiden's, Schwann's, Müller's, and Virchow's) perceptions of cellular behavior. As evidenced by the writings of two physicians, Müller and Virchow, independence metaphors both dominated and shaped how German medical professionals thought of cancer very early on. As swastika-ed flags started popping up in German windows in the 20th century, this way of thinking only intensified.

CANCER RESEARCH IN NAZI GERMANY

Throughout World War II, Nazi propaganda called Jews "parasites"—and referred to communists as "invasive crusaders," leaving no stone against non-Aryans unturned (Proctor, 2000). A book from Robert N. Proctor, Professor of Science and, by courtesy, of Medicine (Stanford University), entitled *The Nazi War on Cancer* (2000), provides an in-depth examination of these linguistic affronts. Such rhetoric ran far and wide and, eventually, straight into cancer research labs. As bombings raged and the Final Solution commenced, Nazi researchers began writing about cancer cells not just as peculiar "independents"—as Schleiden, Schwann, Müller, and Virchow had done—but as "degenerates," as "revolutionaries," as a different "cell race" of autonomous rebels (Bauer, 1949). As aforementioned, the publications from four Nazi-era scientists (Erwin Liek, Felix Grüneisen, Hans Auler, and Karl Heinrich Bauer) provide evidence for this trend. After providing a general introduction to Nazi cancer research, I will describe each of these scientists and their contributions(s) to independence metaphors for cancer in Third Reich science in turn.

THE STATE OF THE FIELD

When most people think of medical research under the Nazis, their minds immediately jump to "Nazi medical experimentation." Some may even jump directly to Josef Mengele,

otherwise known as the “Angel of Death”: the infamous physician perhaps “best” remembered for his leading role in murder selections at Auschwitz.

This connection, though jarring, is unfortunately a reasonable one. As verified by the United States Holocaust Memorial Museum, Nazi officers “enlisted the help of physicians and medically trained geneticists, psychiatrists, and anthropologists to develop racial health policies” that would fully eliminate non-Aryan individuals (2006). First, medical professionals volunteered, or were conscripted for, mass sterilizations of physically and mentally disabled individuals. Then came the medical experiments, using imprisoned human beings as guinea pigs. At Dachau, Nazi scientists subjected prisoners to high-altitude and hypothermia experiments to test the limits of the human body. At Sachsenhausen, Natzweiler, Dachau, Neuengamme, and Buchenwald, prisoners were injected with disease-causing pathogens with hopes of developing effective antidotes for German military personnel who fell ill in the field. Many prisoners were also subjected to genital mutilation, artificial insemination, and gut-wrenching, unnecessary limb amputations and transplants—all under the guise of “the greater good of scientific research” (Tyson, 2000;2006).

As Proctor notes in his book, *The Nazi War on Cancer*, however, “[although] the participation of doctors in Nazi [medical] crimes is disturbing...it is equally disturbing that Nazi doctors and public health activists were also involved in work that we, today, might regard as ‘progressive’ or even socially responsible” (2000). Some examples include Nazi health campaigns against overmedication, excessive X-ray exposure, and tobacco use. And, of course, impressive cancer research.

After the 19th-century scientific boom of Schleiden’s, Schwann’s, Müller’s, and Virchow’s work, German scientists continued to strive toward a better holistic understanding of cells, cancer cells, and cancer as a disease. As Proctor notes, Germans were the first to use tissue stains as

chemotherapy, to connect chromosomal abnormalities to malignant growth, and to establish a permanent, exclusively cancer-research-related scientific journal. Germany was also the first host of the first international cancer research congress (1906)—and German itself “was arguably, at least for a time, the *language* of international cancer research” (Proctor, 2000). Leading up to and surrounding Hitler’s ascent to power, both the Reich Anticancer Committee and several national cancer registries (to assess cancer incidence and outcomes) were established. Cancer—a disease with no cure and ambiguous cause—was even declared “the number one enemy of the state”⁵ in 1928 (Proctor, 2000).

Of interest to this paper, Proctor chose “cancer as an organizing theme” for his own book “because cancer gives us a window onto broader aspects of culture. Cancer has always been a frustrating disease, given both the insidious nature of its growth and its notorious resistance to therapeutic onslaughts.” In part because cancer is not fully understood, it is subject to a series of euphemisms and other linguistic quips that attempt to frame its threat into more tangible/familiar language. One most outstanding metaphor, as previously discussed, is that of *independence*. Liek’s, Grüneisen’s, Auler’s, and Bauer’s writings demonstrate that independence metaphors for cancer flourished under the Nazi regime.

EXAMINATION OF LIEK, GRÜNEISEN, AULER, AND BAUER LIEK AND GRÜNEISEN: 1932-1934

Erwin Liek was a German physician and writer, perhaps most well-known for his books *The Spread, Prevention, and Control of Cancer* (1932) and *The Struggle Against Cancer* (1934). Liek never joined the Nazi Party, but it is worth noting that he was offered the position of Reich Physicians’ Führer by Adolf Hitler himself.

⁵ Original German, according to Proctor: *Staatsfeind Nummer Eins*

Above all else, Liek argued that cancer was a “cultural disease” (Young, 2009). On a superficial level, what he meant by this was that cancer more commonly occurs in developed countries (what he referred to as “high culture”) than in developing countries. This statistical trend still stands. However, there is a much greater subtext to read into with Liek’s argument here.

In Liek’s first book on cancer—*The Spread, Prevention, and Control*—he homes in on cancer cells’ *recalcitrance*, and two of his most salient quotes are as follows: (1) “cancer cells...act [fully] independently,”⁶ and (2) it is “no wonder that [such] cell anarchy...often ends with [a patient’s] death”⁷ (1932). A striking parallel can be drawn in these references to Nazi society. One very real concern for the Nazis’ governmental “body” (analogous, in this case, to a cancer patient’s) was that if its individual citizens (analogous to cancer cells) rebelled, it would likely perish as well. Thus, even in 1932—the year that Nazis infiltrated the German Reichstag—we see independence metaphors for cancer already acting as windows, however slightly, into the Nazi state.

Felix Grüneisen, general secretary of the Reich Anticancer Committee, opened these windows further with his 1933 article “Combatting Cancer in the Nazi Regime.” Therein, Grüneisen started referring to cancer patients not as “cancer patients,” but as “the cancer-sick”⁸ or “the cancer-threatened”⁹ (1933). Clearly, the independence of cancer cells was no longer just a novel metaphor for German scientists by this time, as it had been in the 1800s; it had evolved, instead, into an evil and truly threatening one. Autonomy, whether within the Nazi state or with

⁶ Original German: *Die Krebszellen...handeln selbständig*

⁷ Original German: *kein Wunder, daß diese Zellarchie sehr oft mit dem Tode des Trägers [des menschlichen Patienten] endet*

⁸ Original German: *Krebskranken*

⁹ Original German: *Krebsgefährdeten*

respect to cancer cells, was starting to be seen as perilous in the Third Reich... and this notion was fully reflected in the Nazi science writing of the time.

AULER AND BAUER: 1937-1949

Finally, Hans Auler (Grüneisen's successor) and Karl Heinrich Bauer (German surgeon) added to this sentiment in their oncological publications during and shortly after World War II. In 1937, Auler proclaimed that cancer cells are "revolutionaries"¹⁰ (1937). "The malignant cell lives only on itself," he wrote; "it knows only the goal to grow, to multiply,"¹¹ to destroy (1937). In 1949, Bauer built off such declarations of unruly independence in *The Cancer Problem*: a culmination of his years of research under the Nazi regime. Importantly, Bauer reiterated that cancer is "empowered to grow autonomously and destructively,"¹² without regard for anything else (1949).

Through such writing of undesirable revolution, autonomy, and destruction, we see that independence metaphors for cancer not only *carried over* from 19th-century German research but were *augmented* under Nazi rule. Cancer cells were seen as recklessly independent under the Nazis—and thus became tagged with new notions of malice. Ultimately, this "revamped" independence metaphor for cancer facilitated a striking reflection of the emotionally (and racially) charged politics of the Nazi regime.

CONCLUSIONS

I hope that from this relatively brief exposure to Nazi "cancer language" (through Liek, Grüneisen, Auler, and Bauer), at least two key points may be taken away: (1) how independence

¹⁰ Original German (full quote): *Revolutionäre in unserem Organismus* (revolutionaries in our organism)

¹¹ Original German: *Sie kennt nur das Ziel, zu wachsen, sich zu vermehren*

¹² Original German: *befähigt, unter gewissen Bedingungen im Körper zu wandern und sich an anderen Stellen des Körpers anzusiedeln*

metaphors for cancer shaped the way that Third Reich researchers thought about it, and (2) how such metaphors, both subtly and ingeniously, provide insight into the distrust and disdain for autonomy—in any capacity—that plagued Nazi society at the time.

A quote from *The Nazi War on Cancer* (aforementioned) sums this sentiment up nicely: “Relations between ‘science’ and ‘society’ are more complex than is commonly imagined. Even in the microcosm of Nazi cancer research we find very different ways that science can express politics, and vice versa”—especially when we look at the independence metaphors that framed how cancer, a true “führer” of deadly/enigmatic maladies,¹³ was discussed, written, and thought about back then (Proctor, 2000).

¹³ This is an allusion to Siddhartha Mukherjee’s Pulitzer Prize-winning book, [The Emperor of All Maladies: A Biography of Cancer](#). It is a wonderful summary of the history of cancer research. I wholeheartedly recommend it to all readers, scientists and non-scientists alike.

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