**Dancing in Chains:**

**A History of Friedrich Nietzsche's Physiological Relativism**

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## Abstract

This study examines the historical development of Friedrich Nietzsche's physiological relativism through a reading of his private and published works as well as several of the periodicals and scientific popularizations with which he was familiar. Nietzsche's early interest in the relationship between genius and physiology was influenced by Arthur Schopenhauer's insistence that geniuses were able to intuitively understand the objective world because of their unique physiological organization. However, the more physiology Nietzsche encountered the more doubts he had about Schopenhauer's philosophical claims and Richard Wagner's re-articulation of them. Nietzsche's rejection of Schopenhauer and Wagner can be seen in his changing assessment of the limits of knowledge and the meaning of genius, of physiological, moral, and psychological vivisection, and how he came to see a close relationship between cruelty, necessity, and knowledge. Nietzsche's understanding of life as a process of dynamic self-regulation featured many similarities with other physiological thinkers of his age including Claude Bernard and his idea of the *milieu intérieur* and Hermann von Helmholtz's account of the active nature of perception. Nietzsche's interest in educational reform, experimentation, and self-fashioning was a further development of his exploration of how organisms and individuals achieved a state of relative freedom and independence through their interdependence from their physical and cultural environments. His interest in the intersection of physiology, aesthetics, and epistemology led him to define meaningful freedom and creativity in terms of how individuals related to their own limitations and crafted new limitations for themselves. Even basic physiological perceptions were creative, for just as perceptions shaped ideas and experiences, ideas and experiences shaped perceptions. Nietzsche's understanding of creativity within limits was the compliment of his idea of how an individual's independence was achieved through more refined forms of interdependence with their physical, perceptual, cultural, and cosmic environments. The *Übermensch* was the culmination of this process, which Nietzsche described as "dancing in chains." Just as organisms and individuals achieved states of relative independence through interdependence with their environments, the *Übermensch's* independence was achieved through how they "tamed contingency" by assimilating the cosmos in its entirety by willing the eternal return of the same.

## Acknowledgments

One of the major themes of this work is the close relationship between independence and interdependence; that they are not, in fact, opposites, but are essential for each other. We become more of our selves the more we work with others. With this in mind I would like to thank those who helped make this project possible.

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My father, Allister Graham Mitchell, never completed high school. As far as I can tell he joined the military for stable work and to see the world. His curiosity and sense of wonder, and his encouragement that I, at least, should be formally educated, helped get me to where I am today.

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Academia is facing a crisis of its mental health and wellbeing. More of us need to realize that as intellectual and emotional labourers we suffer from intellectual and emotional ailments. The hierarchies we participate in are abusive and lacking in transparency. These are not just personal problems that we have to face alone. They are systemic artefacts of the neoliberal university and they affect all of us. The sooner we turn our hard-earned skills to understanding and dismantling this classist edifice, the sooner we can change what it means to be not just scholars of the humanities, but humane scholars, and set up a welcoming hearth in place of this ivory tower.

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# Introduction

Friedrich Nietzsche (1844-1900) was born into a world that was experiencing a series of crises surrounding the meaning and value of life. These crises were in part existential. They corresponded with the broader nineteenth century crisis of faith that saw the development of philosophical nihilism, pessimism, agnosticism, atheism, materialism, as well as such seemingly disparate ideologies as spiritualism, anarchism, and communism. At the same time, debates about the meaning and value of life also had a very practical and scientific character. How was organic life to be defined, and what distinguished it from inorganic matter? What were the best ways to study organic life, and did these methods differ from the best ways to study inorganic nature? Was it necessary, and was it even acceptable, to sacrifice living beings in order to understand living processes? While these two points of concern, the existential and the practical, could seem quite distant, nineteenth-century commentators were well aware that the question "what is life?" was merely the other side of the question "what is the meaning of life?" Thinking about the relationship between these two questions led Nietzsche to his own physiologically inflected form of relativism.

In the following study I intend to show how instead of representing a sharp break from the philosophy of Arthur Schopenhauer (1788-1860), Nietzsche's public turn to relativism and his redefinition of genius in 1878 represented a continuation and radicalization of its physiological tendencies. Schopenhauer's grounding of the insights of genius in their physiological organization led Nietzsche to explore the relationship between the physiological limits of perception and knowledge and the creative freedom of the individual. These limitations were part of the broader physiological processes of dynamic self-regulation that were essential for the existence of life itself. Nietzsche's commitment to educational reform revolved around the question of how educators and students alike could learn how to self-consciously participate in their own processes of independent dynamic self-regulation and self-fashioning. From the genius to the free spirit and *Übermensch*, Nietzsche explored how processes of dynamic self-regulation were at once physiological, psychological, and cosmic in scope. In all of these contexts, however, the purpose of education remained the same: meaningful freedom, specifically, the ability of an organism to create its own forms of freedom, identity, and meaning from the contingency and determinism of its natural and social contexts.

Nietzsche's interest in how self-fashioning was a way of "redeeming the past" was also part of his personal quest to come to terms with the meaning of his own life story. His father died when he was only five years old and this absence likely contributed to his later search for role models, geniuses, and other kinds of "great men." At fourteen he was sent to a boarding-school before going on to study philology at Bonn University. When he was only twenty-four he became an associate professor of classical philology at the University of Basel. The year after he enlisted as a medical orderly in the Franco-Prussian war. Nietzsche received his medical training at Erlangen, Bavaria. While he never saw active combat, his duties included attending to and transporting injured soldiers and he witnessed the human toll of the aftermath of the battle of Wörth.[1] After only a week of direct service he contracted dysentery and diphtheria and was forced to retire from active duty. Nietzsche's lifelong struggle with his mental and physical health intensified after this point. His ailments ranged from depression and anxiety to stomach issues, migraines, and bouts of near blindness, and scholars continue to attempt to retroactively diagnose the main causes of his illnesses.[2] He was ultimately forced to resign his position at Basel in 1879. Nietzsche would spend much of the rest of his life living off his generous pension, writing, and seasonally travelling between Italy, Germany, and Switzerland. In 1889 his mental health and cognitive functions began to rapidly deteriorate to the point at which he was no longer able to care for himself. The intensification of his dementia-like symptoms continued for the next eleven years until his death from complications of pneumonia and a stroke he suffered in 1900. Considering how he spent his last eleven years in an increasingly vegetative state, the question of the relationship between the meaning and definition of life remained a salient one until his final days.

Nietzsche was born right at the beginning of the *Materialismusstreit*, or materialism controversy of the 1840s and 1850s that swept through German speaking Europe. One of the earliest salvos in the controversy was written by the Swiss-German physiologist Carl Vogt (1817-1895). Vogt's infamous *Physiological Letters for the Educated [Gebildete] of all Classes*, was published between 1845 and 1847. In these letters, he argued that all the vital activities that

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[1] Christian Emden, *Friedrich Nietzsche and the Politics of History* (Cambridge: Cambridge University Press, 2011), 121-23.

[2] D. Hemelsoet, K. Hemelsoet, and D. Devreese, "The Neurological Illness of Friedrich Nietzsche," *Acta Neurologica Belgica* 108, 1 (March 2008): 9-16.

had previously been attributed to the subtle actions of the human soul were in fact exclusively physical processes. This included the activity of thought, or mind (*Geist*), itself. More controversially, Vogt described the production of thoughts by the brain as a process that was essentially akin to how the liver excreted gall, or the kidneys excreted urine.[3] During this time prominent materialists such as Vogt, Jakob Moleschott (1822-1893), Heinrich Czolbe (1819-1873), and Ludwig Büchner (1824-1899) sparred with the earlier generation of physiological theorists who held to vitalist notions of organic life such as the physiologists Johannes Müller (1801-1858) and Johann Friedrich Blumenbach (1752-1840).[4] Blumenbach's students were instrumental in these debates and included Schopenhauer, as well as the physiologist Rudolf Wagner (1805-1864), who succeeded Blumenbach in Göttingen. What Wagner perceived to be at stake was the existence of an immaterial soul, its immortality, and, especially, its freedom. If there were no vital forces working within organic matter, if it was, in essence, merely a complicated form of inorganic matter, then life would be stripped of its worth and meaning. Whether this worth and meaning was given by God, as Wagner claimed, or by nature, the problem remained.

These debates coincided with chemistry's growing authority in Europe, and especially in Germany. This authority was predicated upon the perceived material benefits chemistry had provided throughout the century. Artificial dyes added a rainbow of readily available colours to fabrics and paints, industrial manufacturing benefited from the advent of lighter and more durable alloys, ceramics, and other novel materials, and agricultural production began to benefit from the advent of chemical fertilizers. Medical and physiological researchers were also increasingly emphasizing that their fields should be established along reductionist, chemical lines. Justus von Liebig (1803-1873) had been using chemical methods to break down and modify organic substances in his teaching laboratory in Giessen since the 1830s. His laboratory became a model for scientific teaching and research throughout Europe. The debates about materialism in the 1840s and 1850s were explicitly about the relationship between chemistry and physiology, and whether or not life could be understood using just chemical explanations. Even those who went to lengths to repudiate base materialism, like Karl Ernst von Baer (1792-1876), still stressed the importance of understanding the chemistry underlying living processes. The

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[3] Carl Vogt, *Physiologische Briefe für Gebildete aller Stände*, Vol. 1, second edition (Gießen: J. Ricker, 1854), 323.
[4] See: Fredrick Gregory, *Scientific Materialism in Nineteenth Century Germany* (Berlin: Springer, 1977).

philosopher Friedrich Lange (1828-1875) gave chemistry a particularly important place alongside physiology in the development of German thought in his *History of Materialism* (1866). While theology and philosophy were stagnating in Germany, Lange claimed, the chemist and physiologist had successfully seized the "trowel of metaphysic" to answer some of the most pressing questions of the nineteenth century.[5]

The changing meaning and authority of chemistry in the nineteenth century coincided with a change in the meaning and authority of physiology. For much of the eighteenth century, physiology was looked upon as the more speculative and theoretical branch of anatomy. Anatomy, by comparison, was considered to be a more exact practice that allowed for reasoned experiment and observation. To be able to hypothesize about physiology, the practitioner first and foremost had to be well versed in the rigours of anatomy. However, as Andrew Cunningham has demonstrated, by the end of the eighteenth century anatomy went from being an experimental, to a non-experimental practice, while physiology increasingly took over the domains that were previously considered anatomy before expanding out into further experimental practices.[6] Thanks to the work of such physiologists as François Magendie (1783-1855) in France, physiology came to be seen as the discipline for the study of life in action, or life processes, as opposed to anatomy, which was increasingly cast by Magendie and his students as a sterile, observational science. Magendie wrote *A Summary of Physiology* (*Précis élémentaire de physiologie*), the first textbook on experimental physiology in 1816. In *A Summary of Physiology* Magendie called for a reforming of physiology along the lines of experimental chemistry and physics in order to develop a new, experimental form of medicine. At the level of physiology, experimentation would lead to a systematic understanding of the healthy body. In pathology, it would lead to a similar understanding of disorders. Experimental therapeutics would be the culmination of this experimental approach, and would lead to a systematic understanding of what drugs and interventions brought about desired changes within living bodies. This program reached its culmination in the work of Magendie's student, Claude Bernard (1845-1870), whose *Introduction to the Study of Experimental Medicine* (1865) laid out the methods of the new medicine. At each stage the "sacrifices" (the technical word), or

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[5] Lange, *History of Materialism*, 263-4.
[6] Andrew Cunningham, *The Anatomist Anatomis'd: An Experimental Discipline in Enlightenment Europe* (Farnham: Ashgate, 2010), 156. See also, 138-9.

vivisection, of live animals in a laboratory setting informed the new medicine's experimental achievements.[7]

The routinization of physiological experimentation and vivisection in the nineteenth century was based on many factors. One factor was the increasing authority of vivisection as the scientific method for understanding life in action, as opposed to anatomy, which was increasingly seen as the study of mere forms. Another factor was the increased emphasis on the repeatability of experimental interventions in order to ensure that what was observed in the laboratory was not due to the idiosyncrasies of a few experimental subjects. Earlier generations had experimented on animals, but nineteenth-century physiologists saw it as a matter of best scientific practice to experiment on dozens of animals at a time to ensure the quality of their results. These commitments to a scientific and experimental medicine furthered the perceived importance of vivisection for the training of doctors and physiologists. These developments also coincided with the work of Louis Pasteur (1822-1895) in France, and Robert Koch (1843-1910) in Germany, whose methods of developing vaccines involved systematic experimentation on scores of animals to insure that a "true" vaccine had been isolated.

Such an increase in the scale and scope of vivisection, however, also brought the practice to the attention of a growing middle class in Europe who owned household pets. Dogs, whose digestive and nervous systems were more physiologically similar to humans than other experimental animals that were often use, such as frogs or rabbits, often became the subjects of vivisection. Many middle and upper class Europeans, Schopenhauer and Richard Wagner (1813-1883) among them, saw this as a senseless form of scientific barbarism, and went to great lengths to protest the practice. Importantly, both those in favour of and those opposed to vivisection often argued their cases on the grounds of the many *similarities* between humans and other animals. This only intensified after the publication of Charles Darwin's (1809-1882) *Origin of Species* in 1859 and its translation into German in 1860.

Darwinism in Germany was different than it was in England. It was introduced into a context in which pre-existing debates about the meaning and purpose of the organization of nature and the role of vital forces in living bodies often overshadowed concerns about whatever possible threat the idea of human evolution might have posed to the dignity of human beings. Earlier German thinkers such as Gottfried Treviranus (1776-1837), Johann Herder (1744-1803), Johann

[7] Cunningham, *The Anatomist Anatomis'd*, 371-5.

Wolfgang von Goethe (1749-1832), von Baer, and even Schopenhauer had not shied away from speculating about evolution and human ancestry. Richard Wagner actively praised Darwin for his dedication to non-invasive observation and for showing the closeness of humans and the rest of the animal kingdom. While the advent of Darwinism in Germany caused a renewed interest in evolutionary explanations of nature, most German commentators were not convinced by arguments based on natural selection. Even Ernst Haeckel (1834-1919), one of Darwin's most famous German supporters, radically modified Darwin's account of organic development with principles he found in the works of Jean-Baptiste Lamarck (1744-1829) and Vogt to make more room for teleological internally structuring forces. This is why some contemporary scholars have chosen to describe Darwinism in Germany by its German name *Darwinismus* to indicate just how different it was from its British counterpart.[8] When Nietzsche critiques Darwinism for being teleological, utilitarian, and too focused on the passivity of organic life relative to its environment, it is important to keep in mind how Darwinism was appropriated and received in Germany.

The German context also meant that one could not discuss organic development and the purpose of nature without making some reference to the Königsberg philosopher Immanuel Kant (1724-1804). Half of Kant's third critique was dedicated to the role of purpose, or teleology, in the self-organization and development of living things. There were certain *a priori* principles, such as purposiveness, that made the human experience of nature possible, that gave it structure and made it comprehensible. Whether or not these laws were in nature, or just in how human beings were organized in their experience of nature, could not be decided. Christian Emden has commented that Kant's third critique was part of the background that made German Darwinism a continuation of trends that already had deep roots in Germany.[9] Nietzsche's interest in Darwinism was likewise inflected with Kantian concerns, and at least one of the journals he read, *Kosmos*, espoused a decidedly Kantian form of Darwinian evolution.[10]

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[8] See: Sander Gliboff, *H.G. Bronn, Ernst Haeckel, and the Origins of German Darwinism: A Study in Translation and Transformation* (Cambridge, MA: The MIT Press, 2008); Alfred Kelly, *The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1914* (Chapel Hill: The University of North Carolina Press, 1981); and William M. Montgomery, "Germany," in *The Comparative Reception of Darwinism*, ed. Thomas F. Glick (Chicago: The University of Chicago Press, 1974).

[9] Christian J. Emden, *Nietzsche's Naturalism Philosophy and the Life Sciences in the Nineteenth Century* (Cambridge: Cambridge University Press, 2014), 91. See also, 136.

[10] Emden, *Nietzsche Naturalized*, 149.

These Kantian commitments also help to explain why the *Darwinismusstreit* of the 1860s led into the *Ignorabimusstreit* of the 1870s and 1880s. This controversy got its name from the Latin phrase "*ignoramus et ignorabimus*," meaning "we do not know and will not know," that the Berlin physiologist Emil du Bois-Reymond (1818-1896) referenced in his 1872 lecture "On the Limits of Our Understanding of Nature." Du Bois-Reymond, like his friend and colleague Hermann von Helmholtz (1821-1894), and the Marburg based philosopher Friedrich Lange, were all neo-Kantian thinkers who sought a middle path between the materialists and the anti-materialists of the *Materialismusstreit*. They eschewed vital forces in nature, but also recognized that there could be no unmediated access to empirical reality. The physiological organization of the human brain and body inevitably structured the human experience of nature. This meant that there were limits to knowledge and the kinds of questions that could be meaningfully asked. For instance, the thing-in-itself remained inaccessible because it did not make sense to ask what nature was in itself, without anyone observing it.

This emphasis on limits and perspectives also served a political purpose. Figures like Lange argued that a consistent application of scientific methods helped to show how all systems of authority and certainty (including science itself, but especially political authority) had their limitations. As Andreas Daum has shown, many German liberals and reformers, including Lange, Helmholtz, and du Bois-Reymond felt that growing scientific literacy and trust in practicing scientists could serve to liberalize the newly unified German state.[11] Scientists and other commentators also saw the organizational principles of living bodies reflected in the organizational principles of the nation state. For figures like Rudolph Virchow (1821-1902), the cells of the body functioned like a democracy. Oscar Hertwig (1849-1922) stressed the importance of understanding the body as a welfare state. Haeckel presented the body as more of a centralized and hierarchically structured nation state much like Germany itself.[12] Such figures were interested in a range of questions that blurred the lines between the biological and political: What constituted the sickness and health of living bodies, and did the health and sicknesses of nations mirror these processes? Did the parts of living bodies cooperate with each other, or rule

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[11] Andreas W. Daum, *Wissenschaftspopularisierung im 19. Jahrhundert: Bürgerliche Kultur, naturwissenschaftliche Bildung und die deutsche Öffentlichkeit, 1848–1914* (Munich: R. Oldenbourg Verlag, 1998).

[12] Paul Weindling, *Darwinism and Social Darwinism in Imperial Germany: The Contribution of the Cell Biologist Oscar Hertwig* (Gustav Fisher: New York 1991); and Paul Weindling, "Theories of the Cell State in Imperial Germany," in *Biology, Medicine, and Society, 1840-1940*, ed. Charles Webster (Cambridge: Cambridge University Press, 1981), 99-155.

over each other? Did certain cells or organs sacrifice themselves for the greater good of the body? How one answered these questions would either reinforce or challenge the *Realpolitik* and jingoism that characterized much of German politics in the years after the unification of Germany. The common thread that unified these diverse thinkers is that they all presented life as an organic process that was intimately interconnected with other forms of social and political organization.

This is the world in which Nietzsche came of age. It was one that was profoundly unsettled by the idea that life could be reducible to mere chemistry, and often outraged at the methods employed by physiologists who tried to prove this point. It was a context in which the definition of life and the meaning of life were just as likely to be caught up in nationalist debates about the relationship between the individual and the nation, as they were about the physiological study of living beings or the existential contemplation of what lent value to a person's existence. Principles of self-organization, or self-regulation, often stood at the heart of these debates. However, these principles were not univocal. They could serve the ends of the politically conservative, showing how there were powerful unifying forces beyond investigation acting in and giving nature its structure and purpose. In this view, the inner workings of the most valuable people, like geniuses and leaders, were just as mysterious as vital forces. However, explorations of self-organization could also serve more radical ends, showing how in the absence of any unifying principles or purpose, mere chemistry, or fragmentary personal experiences, could coalesce into complex and diverse forms of life.

The membrane between science and society is permeable and dynamic. Given the close relationship between science and society in the late nineteenth century it has provided a rich area of exploration for the history of science and science and technology studies (STS). In 1989 Adrian Desmond, in *The Politics of Evolution*, demonstrated how early nineteenth-century concerns about the self-organization of matter were always both socially and scientifically charged.[13] The self-organization of solar systems suggested by the nebular hypothesis, or the self-organization of living beings in early evolutionary theories had potentially radical political and social consequences. If brute matter could organize itself into complex forms that exhibited regularity, structure, and purposeful behaviour without being guided by the hand and wisdom of

[13] Adrian J. Desmond. *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London* (Chicago: University of Chicago Press, 1989).

God, then what about the lower social classes? Perhaps they could organize without the imposition of kings and queens.

There is now also a wealth of resources that explore the relationship between practicing scientists, scientific culture, the popularization of science, and the periodical press. The periodical press and other "ephemeral" publications have been vital spaces for the discussion, spread, acceptance, diversification, and elaboration of scientific knowledge claims. This can be seen in the writings of Bernard Lightman, Geoffrey Cantor, Sally Shuttleworth, and James Secord.[14] Despite his many criticisms of the periodical press, Nietzsche was a voracious consumer of popular media in all of its forms. The reviews, commentaries, and articles that he read coloured his interest in and understanding of the sciences and directed his attention to the works of professional resources, such as the writings of Helmholtz, du Bois-Reymond, and Bernard. Even these "professional" sources of scientific knowledge influenced and were influenced by popular discourses about the natural world. In 2008 Victoria Carroll explored the relationship between science and eccentricity in the early nineteenth century and how eccentric naturalists and scientists often "performed" science for their audiences, even as they carefully shaped their own public personas as people not quite of their own time.[15] This language of performance is not merely figurative. Even Wagner's creative ideal of the *Gesamtkunstwerk*, or total work of art that incorporated all other forms of art under the aegis of musical theatre, reflected, and was a reflection of, the composer's views about the absolute unity of nature.[16] Likewise, throughout the nineteenth century there arose a growing awareness that media and art had physiological and psychological effects on those who experienced them, and so were of equal political and scientific importance as the manufacturing of new dyes, engines, or medical interventions.

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[14] Bernard Lightman, *Victorian Popularizers of Science* (Chicago: University of Chicago, 2007); Geoffrey Cantor, Gowan Dawson, Graeme Gooday, Richard Noakes, Sally Shuttleworth, and Jonathan R. Topham, eds., *Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature* (New York: Cambridge University Press, 2004); Geoffrey Cantor and Sally Shuttleworth, eds., *Science Serialized: Representations of the Sciences in Nineteenth-Century Periodicals* (Cambridge, MA: The MIT Press, 2004); and James Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation* (Chicago: University of Chicago Press, 2001).

[15] Victoria Carroll, *Science and Eccentricity: Collecting, Writing and Performing Science for Early Nineteenth-Century Audiences* (Brookfield: Pickering & Chatto, 2008).

[16] For more on the relationship between science and music in the nineteenth century, see: Myles W. Jackson, *Harmonious Triads: Physicists, Musicians, and Instrument Makers in Nineteenth-Century Germany* (Cambridge, MA: MIT Press, 2006).

Recently Robert Brain has shown the close relationship between the arts, science, and society at the turn of the century. He argues that physiological research, especially on the psychological effects of art and sensation, helped to blur the line between art and science as artists and physiologists sought to take advantage of the insights afforded by the physiologists' laboratories. In doing so, they hoped to be able to better shape society and culture, the same society and culture from which these laboratories themselves emerged.[17] In many ways Nietzsche was ahead of this trend. Recognizing the self-reflective relationship between science and society, he attempted to diagnose and remedy what he saw as the physiological, psychological, and cultural ills of his age. Nietzsche felt that education, or *Bildung*, played an important role in this process.

Andreas Daum's extensive *Wissenschaftspopularisierung im 19. Jahrhundert* traces out the dynamic relationship between scientific culture, politics, religion, art, and especially the German concept of *Bildung*, or educated self-cultivation and development, after the German revolutions of 1848.[18] Such *Bildung* could either be a conservative tool of normalization, or an egalitarian tool of radicalization. Daum argues that the popularization of science itself was not a neutral process of making some unskilled "public" aware of, and obedient to, the proclamations of expert authorities. It was a space in which a range of amateur and expert interests sought to make their claims heard and accepted, and in doing so, influenced one another. During these discussions the nature and meaning of scientific education, and education in general, was also contested. Was *Bildung* incomplete without some understanding of natural science, or was the study of natural science antithetical to it? Part of the reason why anti-vivisectionists argued that physiology was not actually a form of *Wissenschaft*, or system of knowledge, for example, was so that they could devalue its role in the development of an individual's *Bildung*. Instead of making people well rounded, and developing their moral and intellectual character, anti-vivisectionists argued that physiological research actually made them crueler, less moral, and less able to see the unities at the heart of society and nature. In contrast, Lange, du Bois-

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[17] Robert Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin de Siècle Europe* (Seattle and London: University of Washington Press, 2015).

[18] Daum, *Wissenschaftspopularisierung im 19. Jahrhundert*. For more on the concept of *Bildung* in nineteenth century German thought see: Rebekka Horlacher, *The Educated Subject and the German Concept of Bildung* (New York: Routledge, 2016); Marjanne E. Goozé, ed. *Challenging Separate Spheres: Female Bildung in Eighteenth- and Nineteenth-Century Germany* (Oxford: Peter Lang International Academic Publishers, 2007); Myles W. Jackson, "Physics, Machines and Musical Pedagogy in Nineteenth-Century Germany," *History of Science* 42, 4 (2004): 371-418; and Eckhardt Fuchs, "Nature and *Bildung*: Pedagogical Naturalism in Nineteenth-Century Germany," in *The Moral Authority of Nature*, eds. Lorraine Daston and Fernando Vidal (Chicago: University of Chicago Press, 2003).

Reymond and other scientific liberals argued that natural science was in fact necessary to the development of *Bildung*, because it helped people see their larger cosmic context over and above their own narrow nationalistic and personal origins. Nietzsche thus came to these debates about science and *Bildung* through a broad array of artistic, scientific, pedagogical, and popular channels.

This work expands upon the existing scholarship on Nietzsche and science by bringing the history of science's emphasis on the interrelationship between diverse forms of knowing and knowledge production to bear on Nietzsche's reception of his scientific, political, and popular context. This approach includes bringing Nietzsche's biography and personal correspondence into conversation with his engagement with the periodical press and debates about educational reform as well as his thoughts about the relationship between physiology, aesthetics, and epistemology. This is important, for these connections are often lost by a narrow focus on Nietzsche's philosophical ideas as part of a traditional western canon of "great men." Many contemporary commentators on Nietzsche and science have come from a background of continental and analytical philosophy, post-structuralist thought, or critical theory. Some, like Brian Leiter, present Nietzsche as an early positivist, while others, like Gilles Deleuze, present him as more of a pre-post-structuralist.[19] Personal letters, newspaper articles and the periodical press, and nineteenth-century works of popular science seldom feature in contemporary philosophical debates. Overlooking these resources is part of a tendency that endured throughout the twentieth century. Many twentieth-century commentaries on Nietzsche were largely influenced in Germany by Martin Heidegger's insistence that Nietzsche's arguments about the life sciences were merely abstract rhetorical posturing that distracted from the "deeper" meaning of his philosophy. In the English speaking world, Walter Kaufman successfully moved the discussion away from Nietzsche and the life science as part of his project of "rehabilitating" him of any potential association with eugenics and the Nazi regime in the aftermath of the Second World War.

One example serves to demonstrate Kaufmann's characteristic disinclination to engage with Nietzsche's physiological and biological commentaries. In his introduction to the *Portable*

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[19] Brian Leiter, "One Health, One Earth, One Sun: Nietzsche's Respect for Natural Science," *Times Literary Supplement* (October 1998): 30–1; and Gilles Deleuze, *Nietzsche and Philosophy* (New York: Columbia University Press, 1985 [1962]).

*Nietzsche* where he defends the rationale for his translation, he comments about his work on *Thus Spoke Zarathustra*, saying: "When Zarathustra speaks of trying the reins, the archaism is surely preferable to having him test kidneys."[20] While it does not have an entirely stable meaning, the term that Kaufmann took exception to, "*Nierenprüfer*," and its cognates appears at least eleven times in Nietzsche's private and published writings and cannot be so easily ignored. In *The Gay Science* aphorism "Long Live Physics!" he celebrated the kidney tester's observational skills, and in a private letter described himself as a kidney tester and student of human nature.[21] In one fragment from 1887 he described the kidney tester as a sober critic of the Christian ideal, whereas in another fragment from the same year he again described himself as a kidney tester.[22] In *Thus Spoke Zarathustra*, in the aphorism "From the Land of Culture," he chided these same testers for not going far enough because of their unquestioning belief in kidneys. From his reading of Lange Nietzsche was well aware of the terms, and limitations, of the *Materialismusstreit* and Vogt's infamous analogy that was considered to be emblematic of it. Kaufmann's tendency to shy away from such biologically and physiologically inflected terms as *Nierenprüfer* did much to influence the English discussion of Nietzsche and science throughout the twentieth century.

Nevertheless, there has been some early work done on Nietzsche's relationship to natural science. Alvin Mittasch's 1944 study of Nietzsche and chemistry and George Stack's 1983 work on Nietzsche and Lange are particularly valuable examples. However, the past twenty years has seen a boom in studies relating to Nietzsche and science. Not only was there persistent growth in the number of science related articles published in *Nietzsche Studies* and *Nietzsche Research*

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[20] Walter Kauffmann, "Introduction," *The Portable Nietzsche*, ed. and trans. Walter Kaufmann (New York: Penguin Books, 1976), 6.

[21] Friedrich Nietzsche, *The Gay Science: With a Prelude in Rhymes and an Appendix of Songs*, trans. Walter Kaufmann (New York: Vintage Books, 1974), 263. See also, 246. In both cases Kaufmann translates the term as "trying the reins;" Friedrich Nietzsche, "*eKGWB/BVN-1885,574 — Brief AN Marie Köckert: Mitte Februar 1885*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1885,574. He expresses a similar sentiment in Friedrich Nietzsche, "*eKGWB/BVN-1884,482 — Brief AN Franziska Nietzsche: Januar/Februar 1884*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1884,482.

[22] Friedrich Nietzsche, "*eKGWB/NF-1887,9[18] — Nachgelassene Fragmente Herbst 1887*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1887,9[18]; and Friedrich Nietzsche, "*eKGWB/NF-1887,10[197] — Nachgelassene Fragmente Herbst 1887*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1887,10[197].

during this time, but also a growing number of other journal articles, monographs, and books dedicated to the topic.[23]

Nietzsche's relationship to Darwin and Darwinism was one of the earlier aspects of his thoughts about the life sciences to receive extensive treatment. The philosopher Alexander Tille wrote about the relationship in 1893.[24] More recently, this relationship has been explored by

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[23] For studies of Nietzsche's relationship to biological and evolutionary thought, see: Dirk Solies, "*Nietzsche und die Lebenswissenschaften*," in *Handbuch Nietzsche und die Wissenschaften. Natur-, geistes- und sozialwissenschaftliche Kontexte*, eds. Helmut Heit and Lisa Heller (Berlin/Boston: De Gruyter, 2014), 107-118; Andreas Urs Sommer, "*Große Menschen züchten? Nietzsche anti-Darwin*," in *Nietzsche - Macht - Grösse*, eds. Volker Caysa and Konstanze Schwarzwald. (Berlin: De Gruyter, 2012), 171-187; Sören Reuter, "*Vom Embryo zum Übermenschen? Zur Bedeutung entwicklungsbiologischer Denkmodelle für Nietzsches Begriff der individuellen Größe,*" in *Nietzsche - Macht - Grösse*, eds. Volker Caysa and Konstanze Schwarzwald (Berlin: De Gruyter, 2012), 190-199; Andreas Urs Sommer, "*Nietzsche mit und gegen Darwin in den Schriften von 1888*," *Nietzscheforschung* 17 (2010): 31-44; Michael Skowron, "*Evolution und Wiederkunft: Nietzsche und Darwin zwischen Natur und Kultur*," *Nietzscheforschung* 17 (2010): 45-64; Werner Stegmaier, "*'ohne Hegel kein Darwin' Kontextuelle Interpretation des Aphorismus 357 aus dem v. Buch der Frölichen Wissenschaft*," *Nietzscheforschung* 17 (2010): 65-82; Sören Reuter, "*'Dieser Lehre gegenüber ist der Darwinismus eine Philosophie für Fleischerburschen': Grundzüge einer möglichen Darwin-rezeption Nietzsches*," *Nietzscheforschung* 17 (2010): 83-104; Jutta Georg, "*Die Kraft des Mittelmäßigen: Nietzsche, Darwin und die Evolution*," *Nietzscheforschung* 17 (2010): 105-118; Anette Horn, "*Nietzsche Decadence-Begriff und Darwins Evolutionstheorie*," *Nietzscheforschung* 17 (2010): 119-135; Dirk R. Johnson, *Nietzsche's Anti-Darwinism* (Cambridge: Cambridge University Press, 2010); Gregory Moore, "Nietzsche and Evolutionary Theory," in *A Companion to Nietzsche*, ed. Keith Ansell-Pearson (Hoboken: Wiley-Blackwell, 2009), 517-31; John Richardson, *Nietzsche's New Darwinism* (New York: Oxford University Press, 2008); Michael Skowron, "Nietzsches 'Anti-Darwinismus,'" *Nietzsche-Studien* 37 (2008): 160-94; Edith Düsing, *Nietzsches Denkweg: Theologie, Darwinismus, Nihilismus* (München: Wilhelm Fink Verlag, 2006); Robin Small, *Nietzsche and Rée: A Star Friendship* (Oxford: Oxford University Press, 2005); George J. Stack, *Nietzsche's Anthropic Circle: Man, Science, and Myth* (Rochester: University of Rochester Press, 2005); Christa Davis Acampora and Ralph R. Acampora, eds., *A Nietzschean Bestiary* (Lanham: Rowman and Littlefield, 2004); Andrea Orsucci, "Quellen Nietzsches in Nägeli, Carl Wilhelm: Mechanisch-physiologische Theorie der Abstammungslehre," *Nietzsche-Studien* 32 (2003): 435-437; Martin Stingelin, "*Nietzsche und die Biologie - Neue Quellenkritische Studien*," *Nietzsche-Studien* 32 (2003): 503-513; Dirk Solies, "*Die Naturwissenschaften des 19. Jahrhunderts und der Lebensbegriff des Zarathustra*", *Nietzscheforschung* 9 (2002): 277-287; Gregory Moore, "Art and Evolution: Nietzsche's Physiological Aesthetics", *British Journal for the History of Philosophy* 10:1 (2002): 109-126; Gregory Moore. *Nietzsche, Biology and Metaphor* (New York: Cambridge University Press, 2002) (While Moore does discuss elements of Nietzsche's relationship to physiology in this text, the vast majority of the work revolves around Nietzsche's relationship to evolutionary thought); Paul Swift, "On Teleology since Kant," *Nietzscheana*, 8 (2000): 1-20; Jean Gayon, "Nietzsche and Darwin," in *Biology and the Foundation of Ethics*, eds. Jane Maienschein and Michael Ruse (Cambridge: Cambridge University press, 1999), 154-97; Keith Ansell-Pearson, *Viroid Life: Perspectives on Nietzsche and the Transhuman Condition* (New York: Rutledge, 1997); Irving Zeitlin, *Nietzsche: A Re-Examination* (Cambridge: Polity Press, 1994); Alfred I. Tauber, "A Typology of Nietzsche's Biology," *Biology And Philosophy* 9 (1994): 25-44; C. U. M. Smith, "'Clever Beasts Who Invented Knowing': Nietzsche's Evolutionary Biology of Knowledge," *Biology and Philosophy* 2 (1987): 65-91; Werner Stegmaier, "*Darwin, Darwinismus, Nietzsche: Zum Problem der Evolution*," *Nietzsche-Studien* 16 (1987): 264-87; Dieter Henke, "*Nietzsches Darwinismuskritik aus der sicht Gegenwärtiger Evolutionsforschung*," *Nietzsche-Studien* 13 (1984): 189-210; George J. Stack, *Lange and Nietzsche* (New York: Walter de Gruyter, 1983); Wolfgang Müller-Lauter, "*Der Organismus als innerer Kampf: Der Einfluss von Wilhelm Roux auf Friedrich Nietzsche*," *Nietzsche-Studien* 7:1 (1978): 189-223; Jörg Salaquarde, "*Nietzsche und Lang*e," *Nietzsche-Studien* 7:1 (1978): 236-53; and Erich Heintel, "*Philosophie und Organischer Prozess*," *Nietzsche-Studien* 3:1 (1974): 61-104.

[24] Alexander Tille, *Von Darwin bis Nietzsche: Ein Buch Entwicklungsethik* (Leipzig: Naumann, 1893). For other early commentaries, see also: Oskar Ewald, "*Darwin und Nietzsche*," *Zeitschrift für Philosophie und philosophische*

scholars such as Stack in *Lange and Nietzsche* (1983), John Richardson in *Nietzsche's New Darwinism* (2009), Edith Düsing in *Nietzsche's Denkweg: Theology, Darwinism, Nihilism* (2006), and Dirk R. Johnson's *Nietzsche's Anti-Darwinism* (2010). Many of these studies either supported a close connection between Nietzsche and Darwin, or seek to show the tensions between them. However, some of the key studies, such as Gregory Moore's *Nietzsche, Biology, and Metaphor* (2002), and Christian J. Emden's *Nietzsche's Naturalism* (2014) go further than this to show the complexity of the relationship, given the divergent meanings of and influences on German *Darwinismus* at the end of the nineteenth century, and highlight many of the non-Darwinian evolutionary thinkers with whom Nietzsche was familiar.[25]

Contextualizing Nietzsche in the tradition of Kantian thought has also been an important part of appreciating his engagement with, and critiques of, the scientific culture of his day. In this regard R. Kevin Hill's 2003 work on the Kantian foundations of his thought is particularly helpful.[26] In terms of physics, Robin Small's *Nietzsche in Context* (2001) explored how Nietzsche's understanding of time, space, and force point atoms were shaped by his engagement with such contemporary thinkers as Eugen Dühring (1833-1921), Gustav Teichmüller (1832-1888), Johann Karl Friedrich Zöllner (1832-1882), and Afrikan Spir (1837-1890).

Likely the two most important collected volumes on Nietzsche and science to appear in recent years have been *Nietzsche and Science* (2004), edited by Gregory Moore and Thomas H. Brobjer, and the extensive *Handbuch Nietzsche und die Wissenschaften* (2013), edited by Helmut Heit and Lisa Heller.[27] Both volumes discuss how Nietzsche's expansive understanding of *Wissenschaft* as the human need to create unified knowledge of the world contributed to his diverse range of interests. These works seek to correct for the systematic neglect of studies exploring role that the natural and human sciences played in his worldview. Brobjer has also

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*Kritik* 136 (1909): 159-79; and Claire Richter, *Nietzsche et les Théories biologiques contemporaines* (Paris: Mercure de France, 1911).

[25] Andreas Urs Sommer also makes this point, as does Sören Reuter and Dirk Solies. See: Andreas Urs Sommer, "*Nietzsche mit und gegen Darwin in den Schriften von 1888*," *Nietzscheforschung* 17 (2010): 31–44; Sören Reuter, "*Dieser Lehre gegenüber ist der Darwinismus eine Philosophie für Fleischerburschen: Grundzüge einer möglichen Darwin-Rezeption Nietzsches*," in *Nietzsche, Darwin und die Kritik der Politischen Theologie*, Vol 17, eds. Volker Gerhardt and Renate Reschke (Berlin: Akademie Verlag, 2010), 83-104; and Dirk Solies, "*Nietsche und die Lebenswissenschaften*," in *Handbuch Nietzsche und die Wissenschaften. Natur-, geistes- und sozialwissenschaftliche Kontexte*, eds. Helmut Heit and Lisa Heller (Berlin/Boston: De Gruyter, 2014), 107-118.

[26] R. Kevin Hill, *Nietzsche's Critiques: The Kantian Foundations of his Thought* (Oxford: Clarendon Press, 2004).

[27] *Handbuch Nietzsche und die Wissenschaften. Natur-, geistes- und sozialwissenschaftliche Kontexte*, eds. Helmut Heit and Lisa Heller (Berlin/Boston: De Gruyter, 2013).

contributed a number of very helpful works contextualizing Nietzsche's thought, including his 2008 study of Nietzsche philosophical context.[28]

With the increase in scholarship surrounding Nietzsche, science, and the life sciences has come increased interest in the physiological dimensions of his thought.[29] These studies have examined the way that Nietzsche related to his own states of sickness and health, climatological and environmental influences on health, his views on growth and nutrition, as well as the relationship between artistic and physiological decadence, and how philosophies recapitulate the physiological rates of life of those who espouse them.

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[28] Thomas H Brobjer, *Nietzsche's Philosophical Context: An Intellectual Biography* (Urbana: University of Illinois Press, 2008).

[29] For studies of Nietzsche's relationship to physiological thought, see: Tobias Dahlkvist, "Nietzsche and Medicine," *Handbuch Nietzsche und die Wissenschaften. Natur-, geistes- und sozialwissenschaftliche Kontexte*, eds. Helmut Heit and Lisa Heller (Berlin/Boston: De Gruyter, 2014), 138-154; Sören Reuter, "*Nietzsche und die Sinnesphysilogie und Erkenntniskritik*," *Handbuch Nietzsche und die Wissenschaften. Natur-, geistes- und sozialwissenschaftliche Kontexte*, eds. Helmut Heit and Lisa Heller (Berlin/Boston: De Gruyter, 2014), 79-106; Luis Enrique de Santiago Guervós, "Physiology and Language in Friedrich Nietzsche: 'The Guiding Thread of the Body,'" in *As the Spider Spins: Essays on Nietzsche's Critique and Use of Language*, eds. João Constâncio and Maria João Mayer Branco (Berlin/Boston: De Gruyter, 2012), 60-88; Annette Bitsch, "*Physiologische Ästhetic: Nietzsches Konzeption des Körpers als Medium*," *Nietzscheforschung* 15 (2008): 167-188; Josef Ehrenmüller, "*Nietzsches Psychologie bzw. Physiologie der Philosophie*," *Nietzscheforschung* 15 (2008): 221-230; Christian J. Emden, *Nietzsche on Language, Consciousness, and the Body* (Urbana and Chicago: University of Illinois Press, 2005); Richard S.G. Brown, "Nietzsche: 'That Profound Physiologist,'" in *Nietzsche and Science*, eds. Gregory Moore and Thomas H. Brobjer (Aldershot: Ashgate Publishing, 2003), 51-70; Ruben Berrios, "Nietzsche's Vital Aesthetics," *Nietzsche-Studien* 32 (2003), 78-102; Christian J. Emden, "Metaphor, Perception and Consciousness: Nietzsche on Rhetoric and Neurophysiology," in *Nietzsche and Science*, eds. Gregory Moore and Thomas H. Brobjer (Aldershot: Ashgate Publishing, 2003), 91-110; Timo Hoyer, "*'Höherbildung des Ganzen Leibes' Friedrich Nietzsches Vorstellungen zur Körpererziehung,*" *Nietzsche-Studien* 32 (2003): 59-77; Abraham Olivier, "Nietzsche and Neurology," *Nietzsche-Studien* 32 (2003): 124-142; Gregory Moore, "Nietzsche, Medicine and Meteorology," in *Nietzsche and Science*, eds. Gregory Moore and Thomas H. Brobjer (Aldershot: Ashgate Publishing, 2003), 71-90. Gregory Moore, "Art and Evolution: Nietzsche's Physiological Aesthetics," in *British Journal for the History of Philosophy*, 10:1 (2002): 109-126; Stephan Günzel, "*Vernünftige Körper? - Körper ohne Organe! Nietzsche/Deleuze*," *Nietzscheforschung* 5/6 (2000): 105-118; Cathrin Nielsen, "*Der Medusa ins Antlitz schauen - ohne zu erstarren: Zu Nietzsches 'Physiologie der Kunst*,'" *Nietzscheforschung* 5/6 (2000): 123-134; Dirk Solies, "*Die Kunst - eine Krankheit des Leibes? Zum Phänomen des Rausches bei Nietzsche*," *Nietzscheforschung* 5/6 (2000): 151-162. Andrea Orsucci, "'*Die Geschichtliche Entwicklung des Farbensinns und Die "Linguistische Archäologie' Von L. Geiger und H. Magnus: Ein Kommentar zum Aphorismus 426 von Morgenröthe*," *Nietzsche-Studien* 22 (1993): 243-256; Thomas A. Long, "Nietzsche's philosophy of Medicine," *Nietzsche-Studien* 19 (1990): 112-28. Richard S.G. Brown, "Nihilism: 'Thus Speaks Physiology,'" in *Nietzsche and the Rhetoric of Nihilism: Essays on Interpretation, Language and Politics*, eds. Tom Darby, Béla Egyed and Ben Jones (Ottawa: Carleton University Press, 1989), 133-44; Bettina Wahrig-Schmidt, "'*Irgendwie-jedenfalls physiologisch', Friedrich Nietzsche, Alexandre Herzen (fils) und Charles Féré 1888*," *Nietzsche-Studien*, 17 (1988), 434-64; Helmut Pfotenhauer, *Die Kunst als Physiologie: Nietzsches äesthetische Theorie und literarische Produktion* (Stuttgart: Metzler, 1985); Volker Gerhardt, "*Von der ästhetischen Metaphysik zur Physiologie der Kunst*," *Nietzsche-Studien* 13 (1984): 374-93; Stephan Grätzel, "*Physiologie der Kunst - Eine Grundlegung der Vernunft des Leibes*," *Nietzsche-Studien* 13 (1984): 394–398; and Wolfgang Müller-Lauter, "*Artistische décadence als physiologische décadence: Zu Friedrich Nietzsches später Kritik am späten Richard Wagner*," in *Communicatio Fidei: Festschrift für Eugen Biser zum 65. Geburtstag*, eds. H. Bürkle and G. Becker (Regensburg: Verlag Friedrich Pustet, 1983), 285-94.

The increased number of studies of Nietzsche and science also owe something to the end of the Cold War. During my time studying Nietzsche's annotations at the Anna Amalia Bibliothek in Weimar I was able to speak with a number of Nietzsche researchers there, one of whom was from Moscow, as well as the head of the collections, Erdmann von Wilamowitz-Moellendorff, about the history of the Nietzsche archive.[30] The archive is in Weimar, in the former East Germany. Nietzsche, seen as an aristocratic apologist by many within the East German elite, was not positioned to be a particularly celebrated intellectual figure. It is perhaps ironic that the reunification of Germany would occasion such a growth in access to the kinds of materials that has allowed Nietzsche's relationship to the natural sciences to be studied in a new light.

It is now possible to explore how Nietzsche's relativism was grounded in physiology, with roots in many of the same concerns about the limits of knowledge that later contributed to the growth of Albert Einstein's (1879-1955) theories of relativity. To date no one has explored the relationship between genius, dynamic self-regulation, and vivisection in Nietzsche's thought and how these ideas served as important connecting threads between a number of his seemingly disparate interests. Nietzsche's reimagining of these three ideas served as the basis of his unique form of physiological relativism, a basis which nevertheless was furnished by his broader context. Nietzsche's interest in physiology was very characteristic of his age, and was only intensified by his interest in Schopenhauer's beliefs about the nature of genius and the relationship between knowledge and physiology. Yet Nietzsche's growing interest in physiology also contributed to his doubts about the validity of Schopenhauer's larger philosophical system. When he publicly broke from Schopenhauer's system he began further exploring how physiological research and vivisection related to other philosophical questions, such as the role of necessity in nature, how scientific and historical methods demonstrated how things tended to emerge from their opposites, and the tension between knowing something and morally judging it. Vivisection also showed the many ways in which life was characterized by the dynamic self-regulation of fragmentary parts into a consistent whole. This principle applied as much to the organization of cells and secretions as it did to psyches and societies. With their moral strictures and penal codes, societies sought to make individuals into mere organic subunits. To this end,

[30] In a historical irony Erdmann von Wilamowitz-Moellendorff is a descendent of Ulrich von Wilamowitz-Moellendorff, the philologist whose heated polemics against Nietzsche's *Birth of Tragedy* in 1872 and 1873 accused him of attacking the scientific method.

conservative education was largely a process of regulation-as-normalization. In contrast, Nietzsche's vision for educational reform was in the service of helping individuals learn how to regulate themselves in order to accomplish their own ends; not those prescribed for them by their nations or educators. In this way the individual could participate more meaningfully and freely in the greater patterns of dynamic self-regulation that played out at all levels of organization in the natural world. To demonstrate this, I will show the historical and philosophical development of Nietzsche's ideas about education, physiology, and freedom throughout the length of his intellectual career.

Chapter one of this study explores how Nietzsche's ideas about genius changed throughout the 1870s. Schopenhauer emphasized that geniuses were physiologically different from other people. The structure of and amount of blood flow to their brains allowed them to innately perceive the objective unities at the heart of nature. This was also a position that Wagner supported, and in his youth Nietzsche was very influenced by this understanding of genius. However, early on in his career his own reading of Lange and von Baer had already begun to conflict with Schopenhauer's arguments about genius and did so on physiological grounds. This led him to a view that a clearer understanding of physiology showed the relative and fragmentary nature of knowledge, and how genius could only be meaningfully understood as the capacity to create dynamic subjective unities since none were actually present in nature itself. This meant abandoning Schopenhauer's and Wagner's holistic understanding of the world.

Nietzsche's abandonment of Schopenhauer's holistic arguments is evident in his changing response to the role of vivisection in physiological research, which is the subject of chapter two. Anti-vivisectionists surrounded Nietzsche for much of the 1870s. In his public writings he took up their defence of the irreducible holism of living beings, the unity of knowledge, and the genius' ability to intuit the truths of nature without the need to take it apart piece by piece. Following the work of the antivivisectionist and astrophysicist Zöllner, he decried the useless and fragmentary piling up of experiments and data that characterized the modern age in science as well as history. However, his break with Wagner allowed him the space to express his growing support for vivisection, both as a physical practice, and as a metaphorical approach to knowledge and morality. He even couched his earliest "genealogical" projects in the language of vivisection, or moral dissection.

Chapter three explores Nietzsche's understanding of the purpose of metaphorical vivisection and experimentation, for it was the only way to achieve greater knowledge and freedom to creatively refashion one's self. This mirrored Bernard's emphasis that teaching the young the value of experimentation was the path that would lead them toward freedom of mind or spirit (*liberté d'esprit)*. For both thinkers experimentation made humanity freer in its larger cosmic environment, just as the action of the *milieu intérieur* made organisms increasingly, though only relatively, free in terms of their local environments. Nietzsche's concerns about education, and how to produce genius, were thus closely tied to his thoughts about physiology and developed in dialogue with authors who stressed the importance of dynamic self-regulation in education as well as in living systems.

Chapter four examines what has been called Nietzsche's physiological aesthetics and argues that an exclusive focus on the evolutionary dimensions of the term has obscured the role that aesthetics played in what could be called his physio-aesthetic epistemology. Nietzsche's interest in the relationship between aesthetics and physiology goes back to his reading of Schopenhauer, Zöllner, Helmholtz, and Johann Nepomuk Czermak (1828-1873), and the stress that they placed on the active and creative qualities of perception. At an unconscious level the brain compared and selected from amongst its perceptions even before they entered conscious awareness. The brain "learned" how to perceive the world in ways that were not directly accessible to the conscious mind. In certain instances, experience actually shaped and conditioned perception. How human beings experienced the world was not static, but changed over time based on historical and physiological principles, and this in turn shaped how they tended to think about existence. Understanding the physiological, psychological, and cultural limits of the human being was a perquisite for understanding how to further one's own individual freedom, for it was by understanding these limits that one could begin to choose other limits for oneself. Nietzsche argued that the meaningful freedom that could be achieved through both learning and creativity was characterized by an increased ability to place limitations on one's self. He likened this process to the formation of Chladni sand figures, which were both aesthetically pleasing and seemingly spontaneous, but were produced by law-bound natural processes. This also extended to how one chose one's cultural and physical diet. Experience was also a form of sustenance. It provided the organism with a collection of materials, in this case, memories, impressions, perception, and ideas, that furthered or hindered its ability to

dynamically self-regulate and live a life independent of its environment. Nietzsche's continued interest can be seen from his engagement with the Danish philosopher Harald Høffding (1843-1931) and his discussion of ideas as the "blood" of consciousness. Individual freedom was characterized at each level of organization, the physiological, psychological, personal, and cosmic by the ability to assimilate strategically or digest elements of their environment in such a way that allowed for more complicated and nuanced forms of self-limitation and dynamic self-regulation.

Nietzsche's interest in how dynamic self-regulation combined elements of meaningful freedom with a necessary relationship to the environment culminated in his idea of the *Übermensch*. Organic life arrived at a state of relatively free "independence through interdependence" by creating physiological barriers between itself and its environment (for instance, by being warm blooded or cold blooded). Human beings created more elaborate forms of independence through interdependence. They did this at an unconscious level through how their experiences produced ideas and memories that insulated them from being overwhelmed by fragmentary sensory impressions and perceptions. At the personal or conscious level, they achieved this state of independence through interdependence from their experiences of the world and through learning. By willing the totality of all things the *Übermench* became the culmination of this process. Their environment was the eternal return of the same, which they assimilated by willing it in its entirety. Nietzsche's idea of genius thus became the antithesis of Schopenhauer's. Whereas Schopenhauer emphasized the genius' depersonalized wholeness and independence from their environment, Nietzsche's genius, the *Übermensch*, was characterized by their personalized wholeness and interdependence with their environment, whether it was physical, psychological, personal, or cosmic.

## Chapter 1: The Frame of Genius

> Once upon a time, in some out of the way corner of that universe which is dispersed into numberless twinkling solar systems, there was a star upon which clever beasts invented knowing. That was the most arrogant and mendacious minute of 'world history,' but nevertheless, it was only a minute. After nature had drawn a few breaths, the star cooled and congealed, and the clever beasts had to die. – One might invent such a fable, and yet he still would not have adequately illustrated how miserable, how shadowy and transient, how aimless and arbitrary the human intellect looks within nature. There were eternities during which it did not exist. And when it is all over with the human intellect, nothing will have happened. For this intellect has no additional mission which would lead it beyond human life. Rather, it is human, and only its possessor and begetter takes it so solemnly – as though the world's axis turned within it. But if we could communicate with the gnat [*Mücke*], we would learn that he likewise flies through the air with the same solemnity, that he feels the flying center of the universe within himself. There is nothing so reprehensible and unimportant in nature that it would not immediately swell up like a balloon at the slightest puff of this power of knowing. And just as every porter wants to have an admirer, so even the proudest of men, the philosopher, supposes that he sees on all sides the eyes of the universe telescopically focused upon his action and thought.[31]
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> ~Friedrich Nietzsche, "On Truth and Lies in a Nonmoral Sense," 1873.

On the surface of it, Nietzsche's exploration of genius is polyvocal to the point of seeming contradictory. When he wrote about philosophers being the "proudest of men," or extolled the virtues of artists, saints, sages, heroes, and other exceptional individuals he was articulating the myriad of ways that genius manifested itself in different domains of knowledge and ability. Yet Nietzsche's interest in genius also grew up alongside his changing understanding of the limits of knowledge and the consequences of these limits. He spent much of his intellectual career trying to come to terms with whether or not genius could have any meaning in a vast and indifferent cosmos in which the individual was swallowed up by natural necessity. Furthermore, there was no necessary relationship between the human intellect and the

[31] Friedrich Nietzsche, "On Truth and Lies in a Nonmoral Sense," in *The Nietzsche Reader*, eds. Keith Ansell Pearson and Duncan Large (Malden, MA: Blackwell Publishing, 2006), 114.

construction of the cosmos. Human intellect was finite and no matter how exceptional the genius, they would still not be able to access any kind of absolute world or unconditional truth. What, then, was the point of it all? Nietzsche's attempt to try to diagnose and "cure" the nihilism and existential anxieties of the nineteenth century had as its two poles the indifference of the cosmos and the exceptional human agent that acted within it. However, his thoughts about these topics changed over time. Part of the polyvocal character of his discussion of genius was due to the legacy that he inherited from Schopenhauer's pessimistic philosophy and from his relationship with Wagner, as well as the growing sense of physiological relativism that he developed from his readings of Lange and von Baer.

To understand Nietzsche's interest in genius it will first be helpful to comment on his search for "great men" and role models that contributed to his fascination, and later encounter, with Wagner. The understanding of genius that Nietzsche took away from his early reading of Schopenhauer shaped what this encounter meant for him. Wagner appeared to Nietzsche as a "flesh and blood" example of Schopenhauer's definition of genius. Schopenhauer's geniuses were physiological prodigies whose genius was a kind of *monstra per excessum* (monstrosity of excess). These geniuses were born, not made, and their insights came from a range of physiological differences that made them indifferent to the distractions of the phenomenal world around them.

Throughout much of the 1870s there was a pronounced tension between Nietzsche's published and unpublished writings. His published works tended to repeat and reaffirm Wagner's understanding of the role and meaning of genius. However, his unpublished works expressed doubt about the ability of the human mind to grasp fully the vastness and indifference of the cosmos and espoused a form of physiological relativism. Any meaningful definition of knowledge could only be relative to the physiological organization of the human organs of sensation. This meant that humans could never have a privileged knowledge of the inner or objective workings of nature, but only of their own contingent sensations and impressions. Nietzsche's self-censorship can already be seen in *The Birth of Tragedy* (1872) where he repeated Schopenhauer's description of the world as Will and representation in the dichotomy of the Dionysian and Apollonian drives. Following Wagner, he also defended the ideal relationship between the creative genius and the genius' audience, argued that myth and art were truer than critical history, and critiqued scholarly and professional "theoretical men" for being small

minded anti-geniuses. Yet his presentation of a musical Socrates as an example of how theoretical men could overcome the narrow limitations of their reductionist approach to nature and history owed a great deal to his reading of Lange's *History of Materialism*.

Schopenhauer's emphasis on the physiological underpinnings of genius contributed to Nietzsche's interest in further exploring the relationship between an individual's physiological organization and their ability to know the world. According to his letters, at first Nietzsche believed that Lange's *History of Materialism* provided an important support for Schopenhauer's philosophy. Lange, however, explicitly denied Schopenhauer's philosophy and provided a very different definition for what constituted the nature of genius. Lange's genius was a self-consciously creative individual who was aware of how the limits of knowledge placed on him by his own body meant that he could only ever create unities and not "discover" them in nature in any objective sense. Lange even presented Socrates as an example of this form of genius; an individual who was capable of mastering his passions in an act of self-conscious self-fashioning, whose genius emerged from how he responded to his context; not in spite of it. Nietzsche's attempt to reconcile these two visions of genius increasingly began to look like his acceptance of Lange and his rejection of Schopenhauer. This is particularly evident in his lectures on the *Pre-Platonic Philosophers* (1869 to 1872). In this series he described myth as an anthropomorphization of causality that was ultimately discredited when ancient philosophers started to consider how metaphysical beliefs were shaped by physiological limitations.

Nietzsche also discussed von Baer's lecture "Which Conception of Living Nature is the Correct One?" (1860) in his lectures on the *Pre-Platonic Philosophers*. He referenced von Baer's observation that physiological rhythms of life helped to dictate whether a species was more likely to believe that being or becoming were primary in nature. In his lectures, as well as in his unpublished essay "On Truth and Lies in an Extra-Moral Sense" (1873), Nietzsche both drew from and subverted von Baer's metaphors of mosquitoes, spiders, and bees. He did so to show that while materialism was an insufficient hypothesis, so too was the kind of teleological metaphysics that von Baer proposed in its place. Comparing insect and arachnid life to human life showed not only the limits of human sensations and sense of permanence, but also revealed the necessity with which humans made objectively "wrong" metaphysical claims about existence. Humans instinctually falsify the world with the same necessity with which a spider spins the web that it uses as both a shelter and as a source of food. A lack of understanding of the

physiological workings of the human body concealed this point from most philosophers. This flew in the face of Schopenhauer's philosophy, in which the immediacy of an individual's experience of their own bodies served as the basis for an understanding of the world as Will and representation. Yet in Nietzsche's private writings of the early 1870s he was already doubting this and stressing that comparative anatomy and physiology proved that not only was the thing-in-itself unknowable, but that it made no sense to talk about it as a source of human knowledge of the world. All one could hope to understand was the aesthetic relationship between things, their interpretation, and invention. Yet even these interpretations and inventions were conditioned by the historical, physiological, and psychological limitations of the human being.

Nietzsche's continued public support for Wagner and Schopenhauer began to falter in his *Untimely Meditations* (1873-1876). The first essay in the series, "David Strauss, The Confessor and Writer" continued the defence of myth, miracles, and genius that Nietzsche began in *The Birth of Tragedy* and attacked the pedantic demands of critical history and natural science. However, in the second essay, "On the Uses and Disadvantages," Nietzsche sought some mediation between his private understanding of genius and Wagner's. While Nietzsche continued to attack critical historians and natural scientists for being "theoretical men," he presented a vision of artistic genius that did not aim at truth or justice, and attempted to explore how such a genius could be educated, not born, by shaping their first nature into a second nature. Nietzsche continued this argument in "Schopenhauer as Educator," albeit he did so with more nods to Wagner's philosophical position. In the final mediation, "Richard Wagner in Bayreuth," Nietzsche used a series of fragments of Wagner's own writings to show the limitations of Wagner's sense of holism and how Wagner's understanding of genius did violence to history. The fact that the essay met with Wagner's approval only further proved Nietzsche's point.

The publication of *Human, All Too Human* (1878-1880) signaled Nietzsche's public break with Wagner. It was the culmination of Nietzsche's almost decade-long private attempt to reimagine the meaning and nature of genius and education based on his understanding of critical history, natural science, and physiology. Importantly, Wagner's attack on *Human*, *All Too Human* in his article "Public and Popularity" specifically responded to these elements of Nietzsche's text. Wagner repeated the arguments that Nietzsche himself had earlier made in favour of the miraculous qualities of genius and against critical history and natural science. Wagner's defence of Joan of Arc's "miraculous" accomplishments and his criticism of the

popularity of chemistry should be understood in this light. After this point Nietzsche would continue to develop the ideas presented in *Human, All Too Human*. This moment in his intellectual biography serves as an important reference point for how his thoughts about meaningful freedom, physiology, genius, and the limits of knowledge contributed to his interest in vivisection and dynamic self-regulation, as well as his later articulation of the relationship between the *Übermensch* and the eternal return of the same.

## Embodying Genius: Schopenhauer's Indifferent Ideal

Gregory Moore has observed that Nietzsche was representative of a broader fascination with genius that was common in the nineteenth century.[32] Initially, Wagner was merely one of a number of prominent figures that Nietzsche came to admire in this quest for a role model. While studying away from home in 1861 he asked his mother and sister to get him a picture of some "famous living man," either Liszt or Wagner, or some character from Shakespeare, such as Macbeth.[33] Yet of these potential models, it was Wagner who he was able to meet in person. He first met him in November 1868 at the home of Wagner's sister, Ottilie. By his own account, Nietzsche was invited to meet Wagner after Sophie Ritschl (the wife of his teacher Friedrich Ritschl) impressed Wagner with her knowledge of the composer's musical work. She claimed that Nietzsche was the reason she knew so much about him.

Nietzsche first visited the Wagners in Tribschen in May 1869. Soon afterwards he became a welcome member of their social circle. Reading through Cosima Wagner's (1837-1930) journals helps to shed some light on Nietzsche's domestic encounters with the Wagners. In them one can see Nietzsche in his mid-twenties, frequently sick and preoccupied with work,

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[32] Gregory Moore, "Hysteria and Histrionics: Nietzsche, Wagner and the Pathology of Genius," *Nietzsche-Studien* 30 (2001): 246-266. See also: Carl Pletsch, *Young Nietzsche: Becoming a Genius* (New York: The Free Press, 1991) and Michael Tanner, "Nietzsche on Genius," in *Genius: The History of an Idea*, ed. Penelope Murray (Oxford: Basil Blackwell, 1989), 128-140. Tanner is right to argue that Nietzsche's understanding of the idea of genius was shaped by his personal history with Wagner; however, since the analysis he provides uncritically accepts that Wagner was objectively a genius he is prevented from fully unpacking Nietzsche's engaged with the idea. The definition of genius was one of the things at stake in the disagreement between the two. Nietzsche's relationship with the Swiss historian Jacob Burckhardt (1818-1897) also played a role in Nietzsche's thought about the nature and meaning of greatness and self-fashioning. However, in this chapter I will be focusing on Lange and von Baer because of the explicitly physiological dimensions of their thought.

[33] Friedrich Nietzsche, "*eKGWB/BVN-1861,290 — Brief an Franziska und Elisabeth Nietzsche: 05/12/1861*," *Nietzsche Source,* accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1861,290.

eagerly forwarding reports on what the newspapers were saying about the Wagners. Cosima Wagner's journals also show Nietzsche's interest in educational reform, popular culture (and Richard Wagner's place within it), as well as the popularization of knowledge. He also shared with the Wagners an abiding interest in Schopenhauer's philosophical and political works.

Nietzsche encountered Schopenhauer's *The World as Will and Representation* in 1865. According to Brobjer, shortly thereafter he went about collecting most of the philosopher's major works, although the only other text that we know he read was *Parerga and Paralipomena.*[34] It is likely that he read *On the Will in Nature* and his reference to Schopenhauer's colour theory implies that he was at least familiar with *On Vision and Colors*.[35] Nietzsche's early enthusiasm for Schopenhauer had all the excesses of a fresh convert. He encouraged his friends to become Schopenhauerians and treated Schopenhauer's opponents as personal enemies. Wagner would play a pivotal role in supporting Nietzsche's missionary fervor. In a letter to Carl von Gersdorff (1844-1904) sent on September 28th 1869, Nietzsche expressed one of the reasons why he was so excited at the prospect of entering into the Wagners' social circle: "I have already written telling you how invaluable this genius of a man is to me, as a flesh-and-blood illustration of what Schopenhauer calls a genius."[36] A living genius was a far better companion than the picture of one he had requested in 1861. Yet what did Nietzsche mean by a flesh-and-blood example of Schopenhauer's genius and in what ways did Wagner come to embody it?

While Schopenhauer was a self-described idealist, his philosophical system relied heavily on an understanding of the human body as the intersection of the phenomenal world of appearance and the noumenal world of the thing-in-itself, things understood apart from human experience. This is likely in part because of Schopenhauer's early medical training, but also because he embraced a critique of Kant's system that was widespread in the 1790s: Since causality was one of the categories of understanding that shaped human experience of the phenomenal world, how could it be applied to the thing-in-itself and the noumenal world, which are fundamentally outside of experience?[37] How could a category that ordered experience,

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[34] Brobjer, *Nietzsche's Philosophical Context,* 30-1.

[35] Cosima Wagner, *Cosima Wagner's Diaries*, Vol. II: 1878-1883, eds. Martin Gregor-Dellin and Dietrich Mack, trans. Geoffrey Skelton (New York: Harcourt Brace Javanovich, 1981), 303.

[36] Friedrich Nietzsche, *Selected Letters of Friedrich Nietzsche*, ed. and trans. Christopher Middleton (Chicago: University of Chicago Press, 1969), 60.

[37] "Arthur Schopenhauer," Stanford University, accessed April 20, 2016. plato.stanford.edu/entries/schopenhauer/. Philosophers who challenged this aspect of Kant's thought included Friedrich Heinrich Jacobi (1743-1819) in his essay on "Transcendental Idealism" in *David Hume on Belief, or Idealism and Realism* (1787), Salomon Maimon

causality, also cause the relationship between the real world and the human experience of it? Schopenhauer argued instead that existence was composed of two elements, Will and representation. He associated Will with objective reality and the thing-in-itself, and representations with the appearances or experiences immediately available to people as subjective individuals. While Will was ontologically prior to representation, one did not cause the other. They were merely two perspectives of the same world. Schopenhauer argued that the body and its organs were in fact physical manifestations of an individual's will, which was itself part of the larger, noumenal universal Will. The individual will and body were, in a larger sense, identical.[38] Schopenhauer took this position so far that he even claimed that an individual's will shaped their physical appearance; especially their physiognomy.[39] Humans had a double relationship to their own bodies, as representations (their external awareness of themselves) and as will (their internal awareness of themselves).[40] Whenever a person moves a limb they are acting on their will and representation at the same time, a fact that Schopenhauer believed to be "a miracle of such common occurrence that we no longer notice it."[41]

Schopenhauer argued from this "miracle" that a human being's relationship to their body was the source of their ability to understand and sympathize with the rest of existence. Normally, an individual's will, with its blind collection of instincts, drives, passions, and animal yearnings, could only lead to discontent and misery, but it was possible to abrogate, or quiet it, and thus gain special access to the objective world. This objective world was the universal Will contained in Schopenhauer's dichotomy of Will and representation. He made this distinction between the subjective, individual will and the objective, universal Will to highlight that true objectivity was found when an individual could experience the world with the same sense of unity and identity that they experienced in their relationship with their own bodies. Thus unlike Kant,

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(1753-1800) in his *Essay on Transcendental Philosophy* (1790) and *Essay Towards a New Logic or Theory of Thought, Together Letters of Philaletes to Aenesidemus* (1794), one of Schopenhauer's teachers in Göttingen, Gottlob Ernst Schulze (1761-1833) in his *Aenesidemus or Concerning the Foundations of the Philosophy of the Elements Issued by Professor Reinhold in Jena Together with a Defense of Skepticism against the Pretensions of the Critique of Reason* (1792), and Johann Gottlieb Fichte (1762-1814) in *Foundations of the Science of Knowledge* (1797).

[38] Arthur Schopenhauer, *The World as Will and Representation*, Vol. 1, trans. E.F.J. Payne (New York: Dover Publications, 1958), 327.

[39] *Ibid.*, 363.

[40] *Ibid.*, 124-5.

[41] Arthur Schopenhauer, *The World as Will and Representation*, Vol. 2, trans. E.F.J. Payne (New York: Dover Publications, 1958), 36.

Schopenhauer argued that it was possible to have an experience of the transcendent. He believed that this state of impersonal, universal understanding could be achieved through aesthetic experiences, particularly musical ones since music was a direct expression of will in a way that other art forms were not. The aesthetic experience of music abrogates the wills of those who hear it, causing them to forget their individual wills and putting them in a sympathetic relationship with the universal Will behind the music. The listeners forget themselves, and in forgetting themselves they also forget the distinction between subject and object. Outside of rare aesthetic experiences, however, only a genius could achieve this state of dispassionate objectivity.

Schopenhauer naturalized Kant's *a priori* forms of empirical knowledge (time, space, and causality) into "brain-functions."[42] Human experience was structured by how humans were organized at a physiological level. Schopenhauer considered the brain to be the phenomenal equivalent to the noumenal mind. This meant that the categories of understanding were also "in" the brain in a tangible sense. The genius's noumenal insights also had physiological manifestations. Schopenhauer described the qualities of the brain, nervous, and circulatory systems that made a person a genius. All of the geniuses' nervous fibers, the flow of their blood, and their sensations were more sensitive than in ordinary people, and were in fact much more closely related to those of children than adults.[43] They suffered more from noise, pain, and memories because their senses were so refined. In their highest moments of aesthetic insight, they achieved a state of such sensitivity that they could see through their individual wills to have an unmediated access of the objective world.[44] Since the genius' brain was overdeveloped it was important for the rest of their body to be particularly robust, especially their stomach, for: "the brain leads its parasitic life on the organism in a very decided, isolated, powerful, and independent manner."[45] Schopenhauer's emphasis on the convolutions, blood flow, nervous sensibility, and overall size of the brain as the monstrous, parasitic organ of genius lead him to also focus on weight as a key indicator of genius. He observed with some satisfaction that Lord

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[42] Robert Wicks, "Schopenhauer's Naturalization of Kant's A Priori Forms of Empirical Knowledge," *History of Philosophy Quarterly* 10 (1993): 181-196.
[43] Schopenhauer**,** *The World as Will and Representation*, Vol. 2, 393-395.
[44] *Ibid*., 19-21, 29, 252. 389. Also note, for Schopenhauer the physiological conditions that bring about genius can only happen in a male body. He allows women talent, but never genius because he claims that they always remain in the subjective realm. *Ibid*., 392.
[45] *Ibid*.

Byron's brain weighed six pounds, George Cuvier's five pounds, while the ordinary brain only weighed an uninspired three pounds.[46]

The physiological differences between geniuses and non-geniuses meant that the genius could actually perceive universals, totalities, and unities in nature, whereas non-genius remained trapped at the level of subjective experience. Yet this privileged insight made the genius far less aware of the particulars, partial impressions, and contingencies that make up daily life.[47] Schopenhauer described geniuses as often being immodest and antisocial figures who were fundamentally set apart from the rest of society by their double intellects. Unlike "normal" people, their overflowing intellect was far more than was required for the satisfaction of their subjective will and daily needs, and instead gave their perceptions a heightened keenness and objectivity. As Schopenhauer argued, subjectivity could never lead an individual to become a genius:

> The normal man […] has only a single intellect, which may be called *subjective* by contrast with the *objective* intellect of genius. However acute this subjective intellect may be—and it exists in very various degrees of perfection—it is never on the same level with the double intellect of genius.[48]

Geniuses were monstrosities. Each was a "*monstra per excessum*," or monster of excess, whose overdeveloped intellect went far beyond that which would be required for the satisfaction of their will.[49] Indeed, the basic needs of a genius' individual will often suffered because of this excess. They were not able to look after themselves in the mundane world of daily life. Yet this excess of intellect allowed the genius to be indifferent to the subjective aspect of their own wills, and resulted in their insights being closer to objective truth than those of any "normal" person.

Schopenhauer implied that geniuses' indifference was a consequence of the fact that they did not experience a clear distinction between themselves as subject and the world as object. He used Goethe as an example of this indifference. Schopenhauer cited the fact that the older philosopher was still making observations for his theory of colours during the turmoil of the Napoleonic wars.[50] However, Schopenhauer stressed that this indifference did not rob the genius

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[46] *Ibid*.
[47] *Ibid*., 379.
[48] Arthur Schopenhauer, "On Genius," in *The Art of Literature and the Art of Controversy*, trans and ed. T. Bailey Saunders (Stilwell: Digireads.com, 2008), 49.
[49] Schopenhauer, *The World as Will and Representation*, Vol. 2, 377.
[50] Schopenhauer, "On Genius," 49.

of their intellectual goals, which they instinctually pursued in order "to give permanent form to what he sees and feels:" "It works, in the main, by a necessity similar to that which makes a tree bear its fruit; and no external condition is needed but the ground upon which it is to thrive."[51] This "ground" was the genius' early environment.

The external contingencies of a genius' biography could only dictate whether they survived or not, not the content of their genius. While a mature genius could endure the neglect brought about by their indifference to the demands of their individual will, young geniuses were particularly susceptible to the contingencies of mundane life. Yet Schopenhauer stressed that these contingencies in no way shaped the later content of the mature genius's philosophy or art, because insofar as genius was the breaking down of the subjective and objective it could not contain something that was unique to them. This is why Schopenhauer argued against the value of biographies, for he felt that: "To read a philosopher's biography, instead of studying his thoughts, is like neglecting a picture and attending only to the style of its frame."[52] Schopenhauer's physiological understanding of genius reinforced his argument for the indifferent relationship between geniuses and their lived experiences.

Wagner discovered Schopenhauer in 1854. In a letter to his fellow composer and future father in law Franz Liszt (1811-1886) he claimed that he was in agreement with Schopenhauer's understanding of human nature and of genius, its "monstrous" development, its physiological underpinning, its indifference to external circumstance, and that he too saw the important role of aesthetic experiences in revealing the objective truth of the world.[53] He did not, however, mention Schopenhauer's deterministic tendencies. Shortly thereafter Wagner began modeling himself after Schopenhauer's vision of genius. By the time Wagner and Nietzsche met in 1868 the composer's followers had already come to see him as the living embodiment of what Schopenhauer meant by genius. Yet just as there was something self-conscious about how Wagner took up the mantle of Schopenhauer's genius, Nietzsche's adoration of Wagner also had its performative aspects.

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[51] *Ibid*., 56.

[52] *Ibid*., 55. Even then, Schopenhauer himself drew evidence from biographies, placing autobiography above biography in objective value, and biography above academic political and military histories. See: Schopenhauer, *The World as Will and Representation,* Vol. 1, 247; and Schopenhauer, *The World as Will and Representation*, Vol. 2, 30. 390. The nineteenth century saw a boom in "great men" biographies. See, for instance: Pletsch, *Young Nietzsche: Becoming a Genius*, 212-3.

[53] Richard Wagner, *Selected Letters of Richard Wagner*, ed. and trans. Stewart Spencer and Barry Millington (London: J.M. Dent & Sons LTD, 1987), 344-346.

The Rebirth of Schopenhauer from the Spirit of Wagner

Even during his halcyon days at the Wagners' home in Tribschen, Nietzsche showed some misgivings about giving himself up entirely to the master. In her diary entry for August 3rd 1871 Cosima Wagner commented on how Nietzsche was the most gifted of the Wagners' young friends, but that he was also strangely reserved: "as if he were trying to resist the overwhelming effect of Wagner's personality."[54] Earlier Nietzsche had reflected on this very tendency to gravitate towards, but also to resist the effects that powerful personalities had on him.[55] In his letters Wagner could be incredibly supportive and encouraging of his young protégé. Yet this support was conditional upon Nietzsche's own efforts to champion Wagner's various causes. Wagner seldom tolerated opposition, and often responded with either coldness or angry demands when he felt his requests had been denied. Nietzsche wrote that Wagner expected him to visit at least once every four weeks or else risk incurring the composer's displeasure, and in her diaries Cosima Wagner recalls a heated dinner conversation during which Richard Wagner became angry with Nietzsche for having sworn an oath not to eat meat.[56] A little over a week later, Nietzsche wrote to Gersdorff, dissuading his friend from a vegetarian lifestyle and asking him to "bear in mind the struggle and the asceticism of truly great men, Schopenhauer, Schiller, Wagner," who needed a diet rich in meat to fuel their greater acts of artistic asceticism and creation.[57] This pattern of praise and punishment can help to explain why many of Nietzsche's early works are so polyvocal and equivocal.

Readers may be forgiven for suspecting that between 1867 and 1878 there were two Nietzsches. One of them was an apparently devoted Wagnerian who published *The Birth of*

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[54] Cosima Wagner, *Cosima Wagner's Diaries*, Vol. I: 1869-1877, eds. Martin Gregor-Dellin and Dietrich Mack, trans. Geoffrey Skelton (New York: Harcourt Brace Javanovich, 1978), 399-400.
[55] Friedrich Nietzsche, "eKGWB/BVN-1865,478 — Brief AN Hermann Mushacke: 30/08/1865," *Nietzsche Source,* accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1865,478.
[56] Friedrich Nietzsche, "eKGWB/BVN-1869,20 — Brief AN Gustav Krug: 04/08/1869," *Nietzsche Source,* accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1869,20; Wagner, *Cosima Wagner's Diaries*, Vol. I, 148.
[57] Nietzsche, *Selected Letters of Friedrich Nietzsche*, 58-9.

*Tragedy* and the *Untimely Meditations*. The other published nothing of his thoughts, but wrote prolifically, planning a dissertation *On the Concept of the Organic After Kant* and a project on Democritus, writing "On Truth and Lies in an Extra-Moral Sense" and his lectures *On the Pre-Platonic Philosophers*. When asked to write an overview of philosophy in Germany, the physiologist and psychologist Wilhelm Wundt (1832-1920) described the Wagnerian Nietzsche as a timely and likely ephemeral figure. For Wundt, Nietzsche represented a stream of modern enthusiasm for Schopenhauer's mystical tendencies that had aligned itself with Wagnerian music. This is how he described Nietzsche in an article for the English journal *Mind*, which Nietzsche very likely saw shortly after its publication:[58]

> The philosophy of Schopenhauer has still indeed numerous adherents, who give expression to their views in writings not always of a strictly philosophical character, while they accept as much as suits them from Hartmann or other pessimists. A prominent representative of this pessimistic strain in our literature is Prof. Friedrich Nietzsche of Basel, the successive parts of whose *Unzeitgemäße Betrachtungen* [*Untimely Meditations*] have drawn much notice. In the writings of Nietzsche and others of the same stamp, the pessimistic mood is combined in a very peculiar way with an enthusiastic devotion to certain ideas closely related to religious mysticism. Richard Wagner and his music are ardently worshipped by this sect of pessimists. The great composer himself was won over to Schopenhauer by the philosopher's profound views of the nature of music, and his enthusiastic admirers declare that the Will has been revealed as cosmical principle in the Nibelungen.[59]

Nietzsche struck Wundt as an opportunistic apologist for the "religious mysticism" that claimed direct access to the world as Will through Wagner's musical genius. While Wundt was criticizing the published Nietzsche for his mystical zeal, the other, doubtful Nietzsche was far from faithful to the Wagnerian cause.

Porter has observed that the philological studies Nietzsche undertook between 1867 and 1878 (especially his work on Democritus and the personality of Homer) contributed to his doubt that the historical past, like the objective world, was actually knowable by human historians.[60] Likewise, Emden has recently argued that during the same time Nietzsche's studies of the natural sciences, and especially physiology, led him to the same kind of doubts about the accessibility of the natural world. Both these philological and physiological concerns contributed to his

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[58] Brobjer, *Nietzsche's Philosophical Context*, 3.
[59] Wilhelm Wundt, "Philosophy in Germany," *Mind* 2 (1877): 509-10.
[60] James Porter, *Nietzsche and the Philology of the Future*. (Stanford: Stanford University Press, 2000), 10-11.

intellectual split with Wagner.[61] Nietzsche's unpublished work during this time shows how his concern with the question of the accessibility of the objective world manifested in his doubts about whether or not it was possible to go from fragmentary sense impressions or historical documents into unified accounts of history or nature. Unities, or coherent narratives, could only be aesthetic, contingent constructs. Instead of Schopenhauer's inspired genius whose monstrous intellect gave him privileged access to reality, the unpublished Nietzsche equated the profundity of genius to that of a gnat, equal in arrogance, and ignorance, in the face of the vast uncertainties of existence. It did not matter if humanity is blessed with geniuses, for: "when it is all over with the human intellect, nothing will have happened. For this intellect has no additional mission which would lead it beyond human life. Rather, it is human, and only its possessor and begetter takes it so solemnly."[62] The published and unpublished Nietzsche used very different tones that responded to very different pressures, and yet they both typified the theme of fragmentation and the quest for wholeness. Nietzsche was not, of course, two different people and even his published works betray traces of the tension between the devoted Wagnerian and the doubtful philologist interested in critical history and natural science. This can be seen in his earliest major publication, *The Birth of Tragedy*. Here Nietzsche simultaneously reproduced Wagner's arguments about the nature of genius, and how average intellects could never be in a position to question it, while also presenting a decidedly un-Wagernian vision of genius in the figure of the musical Socrates.

*The Birth of Tragedy* (1872) was not only about ancient Greek theatre. In it Nietzsche used Schopenhauer's understanding of the relationship between geniuses and non-geniuses to celebrate Wagner's artistic accomplishments for heralding the rebirth of ancient Greek theatre. In the dedicatory address to Wagner Nietzsche wrote that: "as [I] hatched these ideas, [I] was communicating with you [Wagner] as if you were present, and hence could write down only what was in keeping with that presence."[63] Considering the content of Nietzsche's unpublished works at the time, this statement is likely a sign of self-conscious self-censorship. At the very least, there are themes in this work that are particularly evocative of these tensions.

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[61] Christian J. Emden, *Nietzsche's Naturalism Philosophy and the Life Sciences in the Nineteenth Century* (Cambridge: Cambridge University Press, 2014), 18.
[62] Friedrich Nietzsche, "On Truth and Lies in a Nonmoral Sense," 114.
[63] Friedrich Nietzsche, "The Birth of Tragedy or: Hellenism And Pessimism," in *Basic Writings of Nietzsche*, ed. and trans. Walter Kaufmann (New York: The Modern Library, 2000), 31.

On the surface, *The Birth of Tragedy* examines a distinction Nietzsche made between the Dionysian and Apollonian drives. These opposing drives closely correspond to the world as Will and representation in Schopenhauer's philosophy. The Apollonian drive manifests itself in how human beings engage with the world of appearances, or representation, and in the inevitable way in which they conceptually separate things into either subject or object. This compulsion to categorize, shape and separate, without actually getting at the thing-in-itself lead Nietzsche to associate the Apollonian with the same physiological processes that caused humans to shape their own unrealities in the act of dreaming. Unlike in his later philosophy, here the creative side of the Apollonian is overshadowed by the fact that it can never access the thing-in-itself, but only the world as it appears, and because of this he associates it with the Hindu (and Schopenhauerian) concept of *māyā*, or the realm of illusions. By contrast, the Dionysian hero and Dionysian intoxication are the stand-ins for Schopenhauer's genius and the leaps of reason that allowed them access to the objective world.[64] Again drawing on physiological language, Nietzsche associated Dionysian drives with a state of intoxication that blurred the boundaries between subject and object. In this way it was the opposite of the separating and categorizing Apollonian drive and corresponded to the thing-in-itself (the will) in Schopenhauer's philosophy. Having created this dichotomy, he then went about applying it to the tensions between geniuses and non-geniuses. As the hero (genius), Dionysius had a specific role to play *vis-à-vis* his spectators (non-geniuses).

Nietzsche argued that the ideal spectator was the non-genius who was still able to appreciate works of genius, and who understood themselves to be symbolically members of the chorus. In this way they were able to share in the suffering of the hero-god on the stage and be reassured that the terrible destructiveness of the fragmentary world of becoming was counteracted by the unity and stability of art: "*sharing his suffering* it [the chorus] also shares something of his [the genius'] *wisdom* and proclaims the truth from the heart of the world."[65] Implicitly, Nietzsche was defending Wagner's ability to see into the heart of the objective world, and the elder composer's desire for a group of followers capable of appreciating his genius. Even

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[64] Writing in his notebooks that same year (1872), Nietzsche speculated whether or not the history of a people was really just an invisible bridge from genius to genius. Everything else was just countless shadowy variations of genius crafted from poorer material by untrained hands. See: Friedrich Nietzsche, "*eKGWB/NF-1872,19[1] — Nachgelassene Fragmente Sommer 1872 — Anfang 1873*," *Nietzsche Source,* accessed December 18, 2015, http://www.nietzschesource.org/#eKGWB/NF-1872,19[1].

[65] Nietzsche, "Birth of Tragedy," 65.

while Nietzsche critiqued Euripides for bringing the spectator onstage and qualifying them to pass judgment on the drama, he nevertheless identified the ancient Greek playwright as a genius fighting against the tide of public opinion:

> Why should the artist be bound to accommodate himself to a power whose strength lies solely in numbers? […] If this genius [Euripides] had had the slightest reverence for the pandemonium of the public, he would have broken down long before the middle of his career, beneath the heavy blows of his failures.[66]

Rhetorically, this passage strongly echoes the narratives of Schopenhauer's and Wagner's own trials and tribulations before they achieved public acclaim.[67] This work repeats Schopenhauer's arguments about genius as Nietzsche saw them reflected in the relationship between geniuses and non-genius in ancient Greek society. Implicitly, it was an argument about the "average" person's inability to pass judgment on works of genius. It also repeated the way Schopenhauer described how the depersonalized dynamics of genius played out in the psyche of the individual artist.

In *The Birth of Tragedy* Nietzsche repeated Schopenhauer's denigration of the merely "subjective" artist whose only concern was his individual desires. In contrast, the artistic genius could silence his personal will in order to gain insight into the objective world.[68] This is a point that Nietzsche felt he need to stress. While a lyrical genius, forced to express their genius through conventional language could poetically speak of an "I," this "I" did not refer to themselves, but to the "only truly existent and eternal self resting at the basis of things," an abstracted supra-personal "I."[69] The individual loving, hating, human being could not be a genius, and even when geniuses loved, hated, or expressed any human quality, the part of them that was a genius had no part to play in it, and was not influenced by it. It is thus telling that the desultory effects that the "theoretical man" had on genius was in part the way in which they attempted to reduce genius to the level of common human drives and desires.

Nietzsche's discussion of the "theoretical man" was broad enough to encompass both Socrates and Nietzsche's contemporary fellow scholars. Their common compulsion to separate

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[66] *Ibid*., 79.
[67] David E. Cartwright, *Schopenhauer: A Biography* (Cambridge: Cambridge University Press, 2010), 540-542. Consider that Wagner's financial and living situation was exceedingly precarious until Ludwig II became his patron in 1864, when the composer was 51.
[68] Nietzsche, "Birth of Tragedy," 48.
[69] *Ibid*., 50.

and categorize meant that they could not appreciate the "miraculous" insights of the suffering Dionysian hero or mystical genius, which were fundamentally holistic and intuitive instead of reductionist and analytical. As soon as critical historians attempted to look at myths historically, they lost their life and vitality:

> For this is the way in which religions are wont to die out: under the stern, intelligent eyes of an orthodox dogmatism, the mythical premises of a religion are systematized as a sum total of historical events; one begins apprehensively to defend the credibility of the myths, while at the same time one opposes any continuation of their natural vitality and growth; the feeling for myth perishes, and its place is taken by the claim of religion to historical foundations.[70]

Nietzsche's criticism of historical scholarship reflected his own doubts about the ability of philologists to access the past-in-itself. However, in this instance these doubts were bent to the service of Wagner's glorification of myth as a "truer" artistic representation of the past-in-itself than was available to critical historians. Evoking Schopenhauer's language of genius as a case of *monstra per excessum*, Nietzsche defined Socrates as the typical non-mystic, a hypertrophic antithesis to genius. Socrates possesses "a monstrous *defectus* of any mystical disposition […] in whom, through a hypertrophy, the logical nature is developed as excessively as instinctive wisdom is in the mystic."[71] This dedication to reductionism lead the theoretical man to view myth and tragic genius with suspicion, since a belief in myth and genius was tantamount to accepting that miracles were possible, that there could be causes without effects and effects without causes.[72] In his early published works Nietzsche derided this criticism as nothing more than evidence of the theoretical man's own pedantic inability to appreciate the spontaneous way in which the artistic genius could access the objective world. In private, however, he had already expressed grave doubts about the "miraculous leap" of genius into the objective world, spurred on, in part by his encounter with Lange.

## The Artistic Lange: Lange, Socrates, and Genius

One of the reasons why it can be so difficult to parse the conflicting ideas present in Nietzsche's early work on genius is because he often used the same terms to mean different

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[70] *Ibid*., 75.
[71] *Ibid*., 88.
[72] *Ibid*., 89.

things. In keeping with his double life, this was a strategy Nietzsche used to simultaneously express his own thoughts while he presented them in ways that would be read by Wagner and Wagnerians as supporting their own agenda. At the same time Nietzsche seemed only half-aware of these tensions. Lange offered Nietzsche an alternative account of genius, creativity, art, and the limits of knowledge than those present in Schopenhauer, yet Nietzsche initially understood them to be in accordance with Schopenhauer's philosophy. That Nietzsche moved away from much of Schopenhauer's philosophy, but preserved in a modified form those ideas that were most reminiscent of Lange, shows that he became increasingly aware of these tensions as he began to more openly express his own views throughout the 1870s. This process is apparent in the figure of the artistic Socrates from *The Birth of Tragedy*, which represented Nietzsche's covert move away from Wagner's depersonalized vision of genius and towards a vision whose genius emerged from how they creatively navigated the limitations placed on them by their history, society, and physiology.

Nietzsche first read Lange's *History of Materialism and Critique of its Importance in the Present* in 1866, well before he wrote *The Birth of Tragedy* and shortly after his discovery of Schopenhauer. He would return to it, in different editions, for the rest of his productive life.[73] The work is an encyclopedic study of materialism. Beginning with antiquity, it goes on to summarize, critique, and expand on many of the most pertinent scientific questions of the nineteenth century. Lange described the debates surrounding Greek and Roman natural philosophy, giving special place to theories of atomism. He also entertained the idea that the sophists may be justifiably called precursors to Kantian philosophy because of the way in which they made "man the measure of all things."[74] The work influenced how Nietzsche lectured on Greek philosophy, and his lecture on Democritus is one of the few public places where he explicitly praised Lange.[75]

Nietzsche's early reception of Lange cannot be seen apart from his enthusiasm for Schopenhauer. In a letter to Gersdorff, he wrote: "What we possess in him [Schopenhauer] was

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[73] Brobjer, *Nietzsche's Philosophical Context*, 33-4. It is also worth noting that Wagner was familiar with Lange's *History of Materialism*. In 1878 he classified it along with writings by Alexander von Humboldt and Herman von Helmholtz as works that show how their authors are: "ignoramuses who think that knowledge comes with a bang." Wagner, *Cosima Wagner's Diaries*, Vol. II, 92.

[74] Friedrich Lange, *The History of Materialism and Criticism of its Present Importance: In three Volumes, Second Edition*, trans. E.C.T. (London: Routledge, 2003), 42.

[75] Friedrich Nietzsche, *The Pre-Platonic Philosophers*, trans. and ed. Greg Whitlock (Urbana: University of Illinois Press, 2006), 126.

recently made quite clear to me by another work, which is excellent of its kind and very instructive: [Lange's *History of Materialism*]."[76] Nietzsche claimed that Lange demonstrated how the world available to the senses is the product of human organization, and that even the human ability to examine their organs of perception could only provide them with representations of an unknown object: the objective world. The consequence of this is that objectively their organization was as unknown, and unknowable, as the objective world itself of which the human body formed a part. Instead of finding coherence in nature, humans could only ever create it in accordance with their own physical limitations, and this creative act placed philosophy and natural science on the same level as art. Nietzsche concluded from this that:

> [T]he true essence of things –the thing-in-itself– is not only unknown to us; the concept of it is neither more nor less than the final product of an antithesis which is determined by our organization, an antithesis of which we do not know whether it has any meaning outside our experience or not.
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> Consequently, Lange thinks, one should give the philosophers a free hand as long as they edify us in this sense. Art is free, also in the domain of concepts. Who would refute a phrase by Beethoven, and who would find error in Raphael's *Madonna*?
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> You see, even with this strictly critical standpoint our Schopenhauer stands firm; he becomes even almost more important to us. If philosophy is art, then even Haym [the historical critic] should submit himself to Schopenhauer; if philosophy should edify, I know no more edifying philosopher than our Schopenhauer.[77]

Yet, as has already been shown, for Schopenhauer the noumenal was knowable as Will. By conflating the two positions Nietzsche was smoothing over important differences that he would later emphasize when he made his formal break with Schopenhauer's philosophy. This also shows the associations Nietzsche made between Lange and Schopenhauer when it came to questions about the relationship between art and philosophy, and how physiological organization shaped the human ability to interpret the world and judge the works of genius.

Much has been made of Nietzsche's introduction of the "artistic Socrates" in the *Birth of Tragedy*.[78] The figure seemed to represent the self-overcoming of the theoretical man, whose

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[76] Nietzsche, *Selected Letters of Friedrich Nietzsche*, 18.
[77] *Ibid*.
[78] For Instance, see: Stefan Lorenz Sorgner, "Who is the 'Music-Making Socrates'?," *Minerva: An Internet Journal of Philosophy* 8 (2004); M.S. Silk and J.P. Stern, *Nietzsche on Tragedy* (Cambridge: Cambridge University Press, 1981); Brian G. Domino, "Vincenzo's Portrayal of Nietzsche's Socrates," *Philosophy & Rhetoric* 26, 1 (1993): 39-47; Joseph Vincenzo, "Socrates and Rhetoric: The Problem of Nietzsche's Socrates," *Philosophy & Rhetoric* 25, 2 (1992): 162-182; and Werner J. Dannhauser, *Nietzsche's View of Socrates* (Ithaca: Cornell University Press, 1974); and Walter Kaufmann, "Nietzsche's Admiration for Socrates," *Journal of the History of Ideas* 9, 4 (1948): 472-491. For Walter Kaufmann's description of the artistic Socrates as Nietzsche's self-portrait see: Walter Kaufmann, *Nietzsche: Philosopher, Psychologist, Antichrist* (Princeton: Princeton University Press, 1975), iv, 405.

consistent adherence to reductionist logic eventually led them back around to an appreciation of the role that art played in revealing the "miraculous" unity of existence. Some scholars still follow in Kaufmann's footsteps by considering the artistic Socrates to be a cipher standing in for Nietzsche himself. While there is likely some truth to this claim, a more compelling argument can be made. Lange provided the model for the artistic Socrates. Lange held to the same scholarly standards that Nietzsche had identified in his Wagnerian critiques of the "theoretical man," yet employed these methods to show how creativity and art were the basis of philosophy and knowledge. This was how, as the theoretical man, Lange first killed, and then set the stage for the rebirth of tragic art. Nietzsche initially understood Lange's philosophy as a powerful defence of the privileged position of the inspired artist in Schopenhauer's worldview. It is no surprise that Lange's thoughts about the limits of reductionist and materialist logic would show up in Nietzsche's arguments about the self-overcoming of the theoretical man in the *Birth of Tragedy*.

Nietzsche has the artistic Socrates represent a series of very specific doubts: the question of whether or not what is unintelligible is necessarily unintelligent, whether there can be wisdom without logic, whether or not art was necessary for science [*Wissenschaft*], and whether or not strict causal reasoning can lead to an understanding of the "deepest abysses of being."[79] Importantly, these were doubts that Nietzsche had already encountered in Lange. As Lange had written years earlier:

> Kant would not understand, what Plato before him would not understand, that the 'intelligible world' is a world of poesy, and that precisely upon this fact rests its worth and nobleness. For poesy, in the high and comprehensive sense in which it must be taken, cannot be regarded as a capricious playing of talent and fancy with empty imginations [*sic*] for amusement, but it is a necessary offspring of the soul, arising from the deepest life-roots of the race, and a complete counterbalance to the pessimism which springs from an exclusive acquaintance with reality.[80]

Lange gave a special place to the constructive intellectual role of art and myth in light of the limitations of materialism as a metaphysical system. When Nietzsche described myth as the consequence and purpose of science, or how science turns into art, he was employing Lange's particularly reflective neo-Kantian analysis of the limits of reductionism and materialism. This is why Lange was likely one of the people Nietzsche would have considered as the "noble and

[79] Nietzsche, "Birth of Tragedy," 93, 96.
[80] Lange, *History of Materialism*, 322-3.

gifted men" who "see to their horror how logic coils up at these boundaries [of knowledge] and finally bites its own tail – suddenly the new form of insight breaks through, *tragic insight* which, merely to be endured, needs art as a protection and remedy."[81] In Lange, Nietzsche encountered many critiques of the limits of knowledge. Yet Lange emphatically did not think of himself as one of Schopenhauer's disciples, and it is telling that his vision of genius differed from Schopenhauer's in ways that Nietzsche would adopt after his break with Wagner with the publication of *Human, All Too Human*.

Unlike Schopenhauer's genius, Lange's genius did not gaze into the "deepest abysses of being," but instead gave voice to the yearning of their age for its own creative vision of unity and perfection. While there are definite limits placed on human understanding by the categories of causality, space, and time:

> We are constituted not merely to know, but also to imagine and construct; and though with more or less mistrust of the definite validity of what the understanding and the senses have to offer us, yet mankind will ever hail with joy the man who understands how, by the force of genius, and by employing all the constructive impulses of his era, to create the unity in the world and in our intellectual life which is denied to our knowledge. This creation will, indeed, be only the expression of the yearning of the age after unity and perfection; yet even this is no small thing, for the maintenance and nourishment of our intellectual life is as important as science itself, although not so lasting as this is: since the investigation of the details of positive knowledge, and of the relations which are the exclusive objects of our knowledge, is absolute, owing to its method, while the speculative apprehension of the absolute can only claim a relative importance as the expression of the views of an epoch.[82]

Lange argued that for Kant, the faculty of reason was what made possible a unity of the noumenal world beyond human experience, while imagination was the faculty that produced the unity of sensory experience. However, Lange claimed that he was more doubtful about the role of reason in producing these unities, and instead attributed both kinds of unity to the imaginative faculty. The imaginative genius, aware of the limitations placed upon knowledge, nevertheless was able to create a vision of unity that was historically contingent and human. Nietzsche drew a great deal of inspiration for his "musical Socrates" from his interpretation of the self-overcoming of the theoretical man that he read in Lange. Yet this inspiration also subverted the tragic

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[81] Nietzsche, "Birth of Tragedy," 97-8.
[82] Lange, *History of Materialism*, 90-1.

understanding of art that Nietzsche claimed to be defending with it. Lange's own account of Socrates was quite different.

Lange argued that Socrates was an important example of creative self-fashioning, whose self-control was "not the tranquility of a nature which has nothing to control, but the preponderance of a great mind over strong sensual traits and a naturally passionate temperament."[83] Socrates was one of the examples of a genius whose philosophy of life arose out of a struggle with themselves and their context. Lange stressed that "it is impossible to separate the men from the doctrines, the purely philosophical elements from the whole intellectual movement, if we wish to understand why certain philosophical innovations [as those of Socrates and other Greek philosophers] could attain such an important significance."[84] As opposed to Schopenhauer, Lange claimed that Socrates' genius would not be diminished by historical critique. Instead, a clearer understanding of these historical dimensions was the very prerequisite for being able to see what genius was and how it came to be. As Lange argued: "So long as we do not possess very careful biographies of the chief leaders of scientific progress, which take account of *the whole man*, the ground beneath our feet is very uncertain."[85] This emphasis on context was an important step in Nietzsche's understanding of how a thinker's personal historical and organic development was recapitulated in their metaphysical worldviews. It is even possible to see Nietzsche arriving at some of these conclusions in his lectures on the pre-platonic philosophers.

### Lange's Comparisons and von Baer's lecture "Which Conception of Living Nature is the Correct One?"

From 1869 to 1872 (the year that the *Birth of Tragedy* was published) Nietzsche gave a lecture series on *The Pre-Platonic Philosophers*. His reading of Lange heavily influenced the series. Lange presented Nietzsche with a likely model for the figure of the artistic Socrates with his discussion of how the limits of reductionism and materialist thought, limits that were based in our physiological organization, lent a new, if relative, value to the creative genius of art and myth. In *The Pre-Platonic Philosophers* Nietzsche presented a more refined argument about the

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[83] Lange, *History of Materialism,* 60.
[84] *Ibid.*
[85] *Ibid., 342.*

relationship between myth and physiological relativism. He argued that antiquity first used myth to anthropomorphically explain causality in a way that made causality equivalent to sudden, almost miraculous human acts of will. This was also very much in keeping with how Nietzsche described myth in *The Birth of Tragedy*. Yet in *The Pre-Platonic Philosophers* he claimed that this view of myth was supplanted when ancient philosophers such as Democritus began considering how metaphysical claims, such as the question of whether being or becoming were primary in nature, were shaped by physiological limitations. The celebration of myth was then a self-conscious acknowledgment that the world that humans described would always be a human world, as creatively inspired as it was limited by human perceptions. Yet instead of referencing Democritus, or some other philosopher from antiquity, Nietzsche referenced Karl Ernst von Baer's 1860 lecture "Which Conception of Living Nature is the Correct One?" to demonstrate this point. Drawing on the comparative physiology examined by Lange and von Baer *The Pre-Platonic Philosophers* and "On Truth and Lies" explored how humans brought forth forms of creative genius and mythological accounts of nature, morality, and history, with the same necessity with which spiders spin their webs, or bees build their hives. Nietzsche accepted von Baer's relativistic account of perception even while he rejected the naturalist's teleological account of how all of nature existed for the benefit of human beings. Instead, he employed von Baer's and Lange's examples to highlight the limitations of human self-knowledge, further undermining the basis of Schopenhauer's philosophy. Throughout the 1870s the "two Nietzsches" steadily grew closer and closer together until they fully merged with the publication of *Human, All Too Human* in 1878. At the same time as Nietzsche was criticizing his scholarly and scientific colleagues for being uninspired, anti-geniuses, and theoretical men, he was privately sharing in their critical project, doubt, and relativistic distrust of absolutes. Understanding Nietzsche's unpublished concerns from the early 1870s will help shed light on the traces of this merging in Nietzsche's *Untimely Meditations* (1873-1876).

Nietzsche highlighted the circularities of materialists thought in his lectures on *The Pre-Platonic Philosophers*. He began by highlighting how the Greek philosopher Zeno showed the ways in which space and time were realities for human beings, but were not valid outside of this human frame of reference. As soon as philosophers tried to make space and time absolutes, they found that "extremely relativistic opinions [were] reinterpreted as universal laws."[86] Taken to

[86] Nietzsche, *The Pre-Platonic Philosophers*, 93.

their logical conclusions these opinions became contradictory when presented as eternal truths or *aeternae veritates*. Nietzsche continued this relativistic line of inquiry in his account of Democritus and the atomists. He argued that for Democritus two things were necessary if the senses were actually going to provide human beings with knowledge of the world itself: The sense impression had to be strong enough to be perceived and humans had to have a corresponding receptive organ that would be able to interpret the impression as sensation. However, since only like can be sensed by like in this way: "The result is that we do not perceive much of what is perceptible, because it does not correspond to our senses, and that it could be [perceived] by beings with senses other than our own."[87] Here, Nietzsche paraphrases Schopenhauer's criticism of materialism, but he does so along with Lange's defence of the relative value of materialism as a method:[88]

> All things objective, extended, and efficacious, thus all things material, which qualify as the most solid of foundations to materialism—[all this] is nonetheless only an extremely mediated given, an extremely relative existence that has passed through the machinery of the brain and has entered into the forms of time, space, and causality, by dint of which it is presented as extended in space and working in time. Well, the materialist wants to deduce the truly immediate given —representation— out of a given of this sort. It is an incredibly circular argument (*petitio principii*): the final member suddenly reveals itself as the point of departure, on which the first element of the chain is already hung. […] The absurdity consists in this, that he proceeds from objectivity, while in truth everything objective is conditioned by the knowing subject in multifarious ways and consequently vanishes entirely whenever the subject is denied. On the contrary, materialism is a worthwhile hypothesis of relativity in truth; accordingly, 'all is false' has been discovered to be an illuminating notion for natural science. We still consider, then, all its results to be truth *for us*, albeit not absolute. It is precisely *our* world, in whose production we are constantly engaged.[89]

The critiques of the circularity of materialist thought in *The Birth of Tragedy*, how it ultimately comes back around to show its own limitations, is repeated in this passage from his unpublished works. Here, Nietzsche's defence of materialism as a "hypothesis of relativity in truth" would inform the image of the "musical Socrates." He also articulated two very different definitions of myth in these two projects.

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[87] *Ibid*., 128-9.

[88] Compare with Schopenhauer's statement that: "With this we imagine that we thought of matter, but in fact we had thought of nothing but the subject that represented matter, the eye that sees it, the hand that feels it, the understanding that knows it. Thus the tremendous *petitio principii* disclosed itself unexpectedly, for suddenly the last link shows itself as the fixed point, the chain as a circle." Schopenhauer, *The World as Will and Representation*, 27.

[89] Nietzsche, *The Pre-Platonic Philosophers*, 129-30.

Nietzsche's account of myth differs radically between the *Birth of Tragedy* and *The Pre-Platonic Philosophers*. In his lectures he described myth as an attempt to "understand all transformation following an analogy to human behaviour, to human acts of will."[90] Myth was an anthropomorphic way of explaining causality that made causality analogous to a human will. This is a far cry from how he described tragic myth's ability to provide insight into the "deepest abysses of being" in *The Birth of Tragedy*. While ancient Greek figures such as Empedocles did productively mix mythic and scientific modes of thinking, this led to the eventual rejection of myth as a method of investigating the natural world.[91] Science, and a rigorous understanding of the role played by necessity in nature, was born with atomism:

> Of all the more ancient systems, the Democritean is of the greatest consequence. The most rigorous necessity is presupposed in all things: there are no sudden or strange violations of nature's course. Now for the first time the collective, anthropomorphic, mythic view of the world has been overcome.[92]

The same year Nietzsche wrote *The Birth of Tragedy* he had already turned his own "Cyclops's eye" on myth, citing, not Socrates, but Democritus as his predecessor.[93] However, it is important to note that there are two notions of myth playing themselves out between these two texts. The one, which Democritus is said to have done away with, is the anthropomorphizing effect of myth as a mysterious cipher standing in for causation, allowing for natural occurrences to be explained as sudden, miraculous changes only understandable as acts of will. The other form of myth, following Lange, is the self-consciously creative ability to make unities in the world, which one nevertheless realizes are only unities relative to human beings.

Nietzsche argued that the demythologization of nature began when ancient philosophers began exploring how metaphysical beliefs were shaped by physiological limitations. This was particularly the case with the philosophical question of whether or not being or becoming was primary in nature. Lange had already given Nietzsche an account of why early peoples thought the fixed stars were immovable because of the vast scales involved in measuring their movements.[94] Repeatedly, in the lecture series Nietzsche called those who studied nature in Ancient Greece *Physiologen*. These *Physiologen* had free spirits:

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[90] *Ibid*., 27.
[91] *Ibid*., 115.
[92] *Ibid*., 125.
[93] Nietzsche, "Birth of Tragedy," 89.
[94] Lange, *History of Materialism,* 167.

> The free spirit surveys things, and now for the first time *mundane existence* appears to *it worthy of contemplation as a problem*. That is the true characteristic of the philosophical drive: wonderment at that which lies before everyone. […] Becoming, purpose, knowledge – the contents of pre-Platonic philosophy.[95]

The approach taken by these free spirited *Physiologen* reminded Nietzsche of the approach taken in the natural science in the nineteenth century. Both periods wrestled with the idea that "whenever a human being believes he recognizes any sort of persistence in living nature, it is due to our small standards."[96] This applied to the patterns of the fixed stars, geological processes, and other aspects of deep time, as well as processes that happened too quickly to be perceived. Nietzsche cited a dramatic example employed by the von Baer in his 1860 lecture "Which Conception of Living Nature is the Correct One?" Nietzsche paraphrased von Baer's "remarkable thought experiment" and described how:

> The rates of sensation and of voluntary movements, thus of conscious life, appear among various animals to be approximately proportional to their pulse rates. Well then! Since, for example, the pulse rate among rabbits is four times faster than among cattle, these will also experience four times as much in the same time period and will be able to carry out for times as many acts of the will as cattle—thus, in general, experiencing four times as much. The *inner life* of various animal species (including humans) proceeds through the same astronomical time-space at different specific rates, and it is according to these that they subjectively and variously judge the fundamental standard of time. For this reason alone, only because *for us* this fundamental standard is small, does an organic individual, a plant or an animal, appear to us as something remaining at one size and in one shape, for we could observe it one hundred times or more in a minute without noticing any external alterations.[97]

Nietzsche went on to paint a dramatic picture of what the world would look like to a creature with perceptions thousands of times faster, or slower, than our own, and how this would go on to influence whether or not such a creature would tend to think of being or becoming as the metaphysically more primary experience in nature. This is a remarkable passage that speaks to the same series of doubts that lay behind "On Truth and Lies,." Von Baer's essay offers a number of insights that Nietzsche would later take up more publicly in *Human, All Too Human*.

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[95] Nietzsche, *The Pre-Platonic Philosophers*, 6.
[96] *Ibid*., 60.
[97] *Ibid*., 60-61. For the passage in von Baer, see: Karl Ernst von Baer, "*Welche Auffassung der lebenden Natur ist die richtige? und wie ist diese Auffassung auf die Entomologie anzuwenden*?" in *Reden und kleinere Aufsätze,* ed. Olaf Breidbach (Hildesheim: Olms-Weidmann, 2006), 253-267. The lecture was delivered in 1860 and first published in 1861.

Nietzsche seldom mentioned von Baer explicitly: he only did so once in his lectures on *The Pre-Platonic Philosophers* and once in *Human, All Too Human* (1878) where von Baer was described favourably as "the great naturalist."[98] Von Baer's physiological and embryological researches took on a decidedly neo-Kantian tone in his efforts to preserve the distinction between organic and inorganic matter.[99] His interest in comparative anatomy and physiology, as well as his search for fundamental organic archetypes (*Grundformen*) was also greatly influenced by his reading of the French naturalist Georges Cuvier (1769-1832).[100] Cuvier and his comparative approach were vital for Schopenhauer's understanding of the physiology and anatomy. *The World as Will and Representation* and *On the Will in Nature* make frequent reference to both Cuvier and von Baer. Nietzsche seems to have been primarily interested in how von Baer's critiques of materialism employed comparative physiology and the relativity of sensation and perception. However, he would come to repudiate the older naturalist's teleological placement of humans at the center of creation.

In the lecture "Which Conception of Living Nature is the Correct One?" von Baer rallied a swarm of spiders, mosquitoes, butterflies, bees, and ants to demonstrate the inner working of the economy of nature (*Haushalt der Natur*). Von Baer employed metaphors about the lives of mosquitoes, spiders, bees and other creatures to demonstrate points about the cycling of nutrients through nature, the limitations of the physiology of sensation and perception, the relationship between an organism's inner and outer world, and the meaning of drives and instincts. Nietzsche challenged and adapted these metaphors in his essay "On Truth and Lies" (1873). Von Baer began his lecture with an account of nutrition, and the ways in which organic matter was cycled through nature from the sun, to plants, to "lower" and then "higher" forms of life, which then also passed away and provided sustenance once again for "lower" forms of life. However, von Baer sought to clarify that his account was not entirely circular, for "this eternal transformation of matter, it is really the means by which matter is perfected and refined" leading it to some higher purpose in the human being.[101] He used the case of the mosquito [*Mücke*] to demonstrate this point, recalling a story about a woman he once met who had asked him why mosquitoes

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[98] Nietzsche, *Human, All Too Human*, 126.
[99] Timothy Lenoir, *The Strategy of Life: Teleology and Mechanics in Nineteenth Century German Biology* (London: D. Reidel Publishing Company, 1982), 85.
[100] Lenoir, *The Strategy of Life*, 76.
[101] von Baer, "*Welche Auffassung der lebenden Natur ist die richtige?*," 251-2.

were created: "'For what purpose were the bothersome mosquitoes created?' a woman asked me once, who had just been afflicted by these intrusive visitors. 'So that we can have more fish in our fresh waters,' I had to answer."[102] Von Baer argued that European civilization would not have been possible without mosquitoes, since early peoples depended almost exclusively upon fish for their diet, and a large part of the diet of fresh water fish were the free swimming larvae of mosquitoes. Nietzsche inverted this argument about mosquitoes existing for human beings at the beginning of "On Truth and Lies." Yet he did so while maintaining von Baer's larger argument about the limitation of human perception that followed after it.

Von Baer argued that human sensory experience and human scales placed limits on what humans could perceive and measure. This brought him to the discussion about heart rate and perception that Nietzsche paraphrased in his lectures on *The Pre-Platonic Philosophers*. However, whereas Nietzsche used von Baer's argument as an example of physiological relativism, von Baer stressed that it was still possible to evaluate the approximate objectivity of impressions based upon the scale of the organism that had them. Since nature worked with unlimited time in unlimited space, creatures with larger organs making observations over longer periods of time would be in a privileged position to understand the objective world. For von Baer: "The scale for their activity can never be too great, only always too small."[103]

This emphasis on larger perceptions over longer periods of time meant that von Baer was committed to a view of nature in which becoming was primary over being. Only the underlying patterns of organic forms remained more or less stable. Yet he softened this potentially overly-materialistic account by encouraging his listeners to hope for the immortality of the soul, reminding them that while the human body may be animal, human culture and history were more enduring. He employed a sort of parable to demonstrate this point. A person in the woods hears the sound of a horn playing music, but is chided by a nearby spider that the "music" was not music as humans understood it, but was clearly nothing more than the rhythmic vibration of the horn, something the spider could perceive. Von Baer claimed that the spider was correct as far as it could perceive, but that there was a higher level of understanding available to someone who could also hear the melody, and a higher one still to someone who could read the sheet music for the song being played. Von Baer used this parable to cast doubt on materialistic accounts of

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[102] *Ibid.*, 244.
[103] *Ibid.*, 286.

mind and soul. Simply because materialists could not see and measure something did not mean that it did not exist.[104] This discussion of semi-tangible patterns leads him to his discussion of insect's instincts and drives and how they related to human instincts and drives.

Von Baer claimed that the study of instincts and drives was one of the most important duties of the entomological society because "it must foster consideration for the intellectual [*geistigen*] side of nature."[105] He reasoned that there were different degrees of will in nature and different degrees of self-control.[106] Human beings were at the pinnacle of this hierarchy, for their instincts did not express themselves as necessities, but as moral imperatives. Humans were not only self-conscious, they were conscious of the difference between themselves and the external world around them and the ways that they could act upon the world or upon themselves. This is why von Baer called the ideas of "what should be done," "conscience," or "belief" "the highest form of instincts" that made progress in a historical sense possible.[107] Human beings had a fundamental drive to metaphysical and moral speculation. Von Baer felt that this demonstrated the freedom of the will and the insufficiency of materialistic accounts of nature. Nietzsche agreed with von Baer about the limits of a purely materialist account of nature, but disagreed with him about how an instinctual drive to metaphysical and moral speculation supported a defence of the freedom of the will, or of human's higher capacity to understand themselves relative to the rest of nature.

In "On Truth and Lies" (1873) Nietzsche presented a critique of knowledge that was influenced in part by his reading of Lange and von Baer. It hinged upon the limitations imposed upon human knowledge by the physiology of their sense organs and the role that instinctual drives to construct metaphors played in obscuring these limitations.[108] He called the drive to form metaphors: "the fundamental human drive, which we cannot for a single instant dispense with in thought, for one would thereby dispense with man himself."[109] However, Nietzsche compared this "fundamental human drive" to the instinctually driven activity of a spider building

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[104] *Ibid*., 271-3.
[105] *Ibid*.
[106] *Ibid*., 276.
[107] *Ibid*., 282.
[108] Compare, for instance, Nietzsche's critique of "identical things" with Lange's criticism of mathematical abstractions: Lange, *The History of Materialism*, 175.
[109] Nietzsche, "On Truth and Lies in a Nonmoral Sense," 121.

its web, for metaphor was both the product and the context of human activity. This is an image that he would continue to use throughout his career.

In a neo-Kantian vein, Nietzsche claimed that "we produce these representations [of causality, time and space] in and from ourselves with the same necessity with which the spider spins."[110] While this act of spinning was the driving force behind the human need for myth and art, it also made the idea of absolute knowledge seem increasingly absurd. Humanity would inevitably find in the world exactly what its categories of understanding hid there for it to find. Reflecting on the way the Romans and Etruscans placed their gods in a seemingly arbitrary astronomical pattern of "rigid mathematical lines," Nietzsche argued that every people set up an equally arbitrary conceptual heaven above them and then went about looking for absolute truths within it.

> Here one may certainly admire man as a mighty genius of construction, who succeeds in piling up an infinitely complicated dome of concepts upon an unstable foundation, and, as it were, on running water. Of course, in order to be supported by such a foundation, his construction must be like one constructed of spiders' webs: delicate enough to be carried along by the waves, strong enough not to be blown apart by every wind. As a genius of construction man raises himself far above the bee in the following way: whereas the bee builds with wax that he gathers from nature, man builds with the far more delicate conceptual material which he first has to manufacture from himself. In this he is greatly to be admired, but not on account of his drive for truth or for pure knowledge of things. When someone hides something behind a bush and looks for it again in the same place and finds its there as well, there is not much to praise in such seeking and finding. Yet this is how matters stand regarding seeking and finding 'truth' within the realm of reason.[111]

Nietzsche's use of animal imagery is important here and is strikingly evocative of von Baer's essay. Nietzsche began "On Truth and Lies" with a description of a mosquito imagining that it had "the flying center of the universe within" itself. Here he was turning von Baer's teleological explanation that mosquitoes exist so that humans can have more fresh water fish to eat around to argue that if mosquitoes could reason, they would likely imagine that humans existed for their benefit. Nietzsche's discussions of spiders and bees also subverted metaphors originally found in von Baer's lecture, as well as the materialism against which they were supposed to be directed.

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[110] *Ibid.*, 120. While according to Kantian theory as Kant himself may have understood it, space and time are not the same as the category of causality, Nietzsche's understanding of neo-Kantian thought, as shaped by Schopenhauer and Lange, led him to argue that space, time, and causality, were the only categories.
[111] *Ibid.*, 118.

In his parable von Baer sought to undermine the epistemic authority of the spider (materialists) that could see vibrations, but not hear music. The spider was compelled to build webs, so it could not help but see everything in terms of vibrations. He juxtaposed the limited instincts of the spider with those of bees, whose capacity to build "states" with queens and gather more nutrients than they needed for their own subsistence showed that their instincts were not reducible to the instincts of a single individual. Von Baer suggested that there was a more fundamental pattern behind the activities of the bees as a collective, a semi-tangible instinct that was more like the rhythm or melody of a song than the mere vibration of the trumpet playing it.[112] He compared these instincts to the more rarefied moral instincts possessed by humans: "what should be done," "conscience," and "belief," and even a religious "call to the universal source of being."[113] However, Nietzsche had other intentions in blurring the lines between the creative drives of bees and humans. In "On Truth and Lies" he instead argued how even such rarefied instincts could not avoid the problems facing those of the spider and its web. Simply because humans have a metaphysical "call to the universal source of being" does not mean that such a drive was capable of leading them to anything like an absolute truth about the world.

Nietzsche's use of animal imagery in "On Truth and Lies" was also notable because of the way it drew on contemporary discussions of comparative anatomy and physiology that could be found in von Baer's writings as well as in Lange's discussion of physiology in *The History of Materialism*.[114] Lange compared how a tree would be experienced by a worm, a June bug, a man, and an angel, and asked if this would mean that there were five trees, one as seen by each different creature and one "tree-in-itself."[115] He answered this in the negative, stating that while there were four very different conceptions of the tree, they nevertheless referred to the same, unknowable thing-in-itself. What sets man apart was that: "by the comparison of his organs with those of the animal world and by physiological investigations, he succeeds in regarding his own conception as being just as imperfect and one-sided as those of the different kinds of animals."[116] For Lange this form of comparison reinforced the need for the neo-Kantian position on the

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[112] Von Baer, "*Welche Auffassung der lebenden Natur ist die richtige*," 280-281.
[113] *Ibid*., 282.
[114] In both *The World as Will and Representation* and *On the Will in Nature* Schopenhauer emphasized the importance of comparative anatomy. Yet he did so in light of his lasting interest in Cuvier's ideas about the underlying "ideas" of organic development, and the perfection of the will adapting itself in nature. See, for instance: Schopenhauer, *The World as Will and Representation*, Vol. 1**,** 158-9.
[115] June bugs are called chafers in Europe.
[116] Lange, *The History of Materialism*, 280.

inscrutability of the thing-in-itself. Nietzsche would take an even more radical message from these physiological comparisons, asserting that they demonstrated that there was no meaningful way of talking about things-in-themselves. One could only talk about the aesthetic relationship between things.

Nietzsche followed Schopenhauer's critique of a causal relationship between the thing-in-itself and things as human's experience them while maintaining that there was no way to experience the thing-in-itself as will. Beyond this, he critiqued "the invincible faith" in things-in-themselves laying behind human experience altogether. Such rarified ideas as the sun-in-itself, window-in-itself, table-in-itself, etc., were beliefs that were only possible when one forgot that humans were "artistically creating" subjects:

> It is even a difficult thing for [man] to admit to himself that the insect or the bird perceives an entirely different world from the one that man does, and that the question of which of these perceptions of the world is the more correct one is quite meaningless, for this would have to have been decided previously in accordance with the criterion of the *correct perception*, which means, in accordance with a criterion which is *not available*. But in any case it seems to me that 'the correct perception' – which would mean 'the adequate expression of an object in the subject' – is a contradictory impossibility. For between two absolutely different spheres, as between subject and object, there is no causality, no correctness, and no expression; there is, at most, an *aesthetic* relation.[117]

Nietzsche thus redefined knowledge as a form of aesthetic invention and interpretation whose limits were the limits of human perception. These aesthetic inventions were not entirely free, for they were conditioned by the physiological, psychological, and historical contingencies of human life. Indeed, despite Nietzsche's critiques of history in the *Untimely Meditations* (1873-1876), in "On Truth and Lies" he made historical contingencies primary to psychology and physiology ones. Physiological impressions were themselves historical assessments of pleasure or pain that became physiologically engrained only after millions of repetitions handed down through generations. [118] Eventually these assessments become so conditioned that it appeared as if the nerve stimulus was the cause of the image presented to the eye. This served as further proof for Nietzsche that the working of the human body was still poorly understood.

As early as 1868, in his unfinished dissertation on *The Organic After Kant*, Nietzsche questioned the supposedly self-evident relationship between the human will and human actions.

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[117] Nietzsche, "On Truth and Lies in a Nonmoral Sense," 119.
[118] *Ibid.*

In these notes he repeated Lange's claims that a human's sense of purpose and causation was conditioned by their organization as organic beings. Like Lange's genius, Nietzsche reflected that the human understanding of the world as a coherent whole only emerged from their yearning for unity and their projection of unity into nature and experience.[119] Like Schopenhauer, Nietzsche placed the origin of human understanding of self and world in the human body. Unlike Schopenhauer, he claimed that this understanding was an illusion. He expressed similar sentiments in "On Truth and Lies" five years later:

> What does man actually know about himself? Is he, indeed, ever able to perceive himself completely, as if laid out in a lighted display case? Does nature not conceal most things from him – even concerning his own body – in order to confine and lock him within a proud, deceptive consciousness, aloof from the coils of the bowels, the rapid flow of the blood stream, and the intricate quivering of the fibres![120]

When a person moves a limb they really have very little idea about how their volition brought about the motion. Nietzsche would explicitly question this image again in *Beyond Good and Evil* (1886).[121] He continued to explore the limitations of human self-knowledge, and how these limits related to the human body throughout the 1870s and 1880s. The human understanding of the body and its actions was made up of the same metaphysical cobwebs and drives for unity and meaning as their understanding of the rest of the natural world. On the surface of it, in his next collection of published works, the *Untimely Meditations*, Nietzsche showed relatively little interest in the limits of self-knowledge, being much more concerned with *Bildung* and self-fashioning. However, there are many places in these works where the doubt he highlighted in "On Truth and Lies" continued to show through in his published writings, even while he was claiming to support Wagner and the Wagnerian sense of genius.

## The Timely Meditations

The relationship between physiological relativism and creative genius that Nietzsche explored in his unpublished writings of the early 1870s became more and more overt in his

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[119] Friedrich Nietzsche, "*Die Teleologie seit Kant*," in *Nietzsches Gesammelte Werke, Musarionausgabe*, Vol. I, (Munich: Musarion Verlag, 1920), 421. For Lange's discussion of the relativity of unity and multiplicity see: Lange, *The History of Materialism*, Vol. 3, 39.
[120] Nietzsche, "On Truth and Lies in a Nonmoral Sense," 115.
[121] Friedrich Nietzsche, "Beyond Good and Evil," in *Basic Writings of Nietzsche*, ed. and trans. Walter Kaufmann (New York: The Modern Library, 2000), 215-217.

published works. This movement can be seen in his *Untimely Meditations*. Published between 1873 and 1876 the *Untimely Meditations* increasingly revealed the tensions in his thoughts about the nature of genius, and the relationship that genius had to history and nature. The first meditation "David Strauss, The Confessor and Writer," was published in 1873, followed by "On the Use and Abuse of History for Life" in 1874, "Schopenhauer as Educator," also published in 1874, and "Richard Wagner in Bayreuth," which appeared in 1876.

"David Strauss," was a polemical gift to Wagner and largely maintained the ideas about genius that Nietzsche had already expressed in *The Birth of Tragedy*.[122] David Strauss (1808-1874) was a German theologian whose 1835 historical investigation of Jesus in his *Life of Jesus, Critically Examined* helped Nietzsche through the process of giving up his Christianity. Despite his harsh critiques in "David Strauss," upon news of Strauss' death in 1874 Nietzsche hoped that the aged scholar had not even seen his polemic. Strauss had seen it, yet instead of being dismayed, he expressed confusion over the bile of the attack.[123] This was likely because Strauss the individual was not entirely the intended target of the polemic. Instead, the text was calculated to be an attack on critical historians in general and their pernicious effects on the belief in genius.

Nietzsche's work on Strauss makes one thing abundantly clear: Strauss was not a genius.[124] Strauss is presented as the arch-*Bildungsphilister* "cultivated philistine," the very antithesis of genius. His superficial smattering of historical and scientific scholarship, desire for comfort, and worship of utility and progress led him and his followers to a grotesque level of enervated self-satisfaction, but not to "true" culture. Nietzsche defined culture in "David Strauss" as the "unity of artistic style in all the expressions of the life of a people," and concluded that "a people to whom one attributes a culture has to be in all reality a single living unity and not fall wretchedly apart into inner and outer, content and form."[125] Despite what he had written that same year about the impossibility of any knowledge of the thing-in-itself in "On Truth and Lies," in "David Strauss" he continued to follow Schopenhauer and Wagner in their elevation of the genius as a figure capable of holistically and intuitively uniting the subjective and objective worlds.

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[122] Friedrich Nietzsche, *Untimely Meditations*, ed. Daniel Breazeale. trans. R.J. Hollingdale. (Cambridge: Cambridge University Press, 1997), xii-xiii.
[123] Pletsch, *Young Nietzsche: Becoming a Genius*, 166-7.
[124] Friedrich Nietzsche, "David Strauss, the Confessor and the Writer," in *Untimely Meditations*, ed. Daniel Breazeale. trans. R.J. Hollingdale. (Cambridge: Cambridge University Press, 1997), 14, 30, 46-8.
[125] *Ibid.*, 80.

Nietzsche also repeated his attack on the "theoretical man" in "David Strauss." Just as the unmusical Socrates of *The Birth of Tragedy* looked on miracles and myth with suspicion because they were suspensions of the laws of cause and effect, the philistine hated the genius: "for the genius [had] the justified reputation of performing miracles."[126] In this defence of miracles, Nietzsche was once again defending Wagner's belief that the genius had miraculous or mythical access to the objective world through his holistic intuitions. It also supported Wagner's stance on the miraculous freedom of artistic genius over and against the determinism of natural and historical laws.[127] Nietzsche's continued public support of these Wagnerian doctrines would start to show cracks with the 1874 appearance of his second *Untimely Meditation*, "On the Uses and Disadvantages of History for Life."

"On the Uses and Disadvantages" was partly a repetition of Nietzsche's attack on the "theoretical man" or *Bildungsphilister*. Even though he did not explicitly use the term "genius" in this text it was also a critique of the ways that the Wagnerian artistic genius, the "great man," could be destructive to history.[128] Drawing from the same imagery he used in "Truth and Lies," in "On the Uses and Disadvantages" Nietzsche described how artistic geniuses refashioned fragments of history to weave isolated events into unified artworks. The artist works: "always with the presupposition that if a unity of plan does not already reside in things it must be implanted into them. Thus man spins his web over the past and subdues it, thus he gives expression to his artistic drive – but not to his drive towards truth or justice."[129] This indifference to truth and justice is revealing. The artistic genius did not have any privileged access to truth or justice. This shows how some of Nietzsche's doubts about Wagner and Schopenhauer were already becoming visible in 1874. This was not the only way that the text challenged their accounts of genius.

Nietzsche opened "On the Uses and Disadvantages" with a presentation of history as a physiological phenomenon. Genius depended upon an individual's ability to assimilate the things of the past. This was demonstrated by whether or not one could "develop out of oneself in one's

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[126] *Ibid.*, 33.
[127] Richard Wagner, "Religion and Art," in *Religion and Art*, trans. William Ashton Ellis (Nebraska: University of Nebraska Press, 1994), 215.
[128] Friedrich Nietzsche, "On the Uses and Disadvantages of History for Life," in *Untimely Meditations*, ed. Daniel Breazeale. trans. R.J. Hollingdale (Cambridge: Cambridge University Press, 1997), 70-1.
[129] *Ibid.*, 91.

own way."[130] This definition of genius prefigured the account of creative self-limitation that Nietzsche would later present in "Schopenhauer as Educator," and paralleled Lange's discussion of the ability of "the greatest men of every epoch" to reconcile within themselves the contradictions of their times.[131] Nietzsche used a number of organic metaphors of self-regulation, assimilation, and growth, in this account of genius. Humans did not have only one given nature (as one would expect from Schopenhauer's philosophy) but also a second one that they crafted for themselves out of the contingencies and injustices of their first natures and histories in much the same way that a spider created the web in which it lived or the bee created its hive. Instead of Schopenhauer's idea of inborn greatness, Nietzsche argued that history could actually be used to refashion oneself. Everything that existed was the outcome of earlier generations, which, inevitably also contained many aberrations, passions, and errors:

> [I]t is not possible wholly to free oneself from this chain. If we condemn these aberrations and regard ourselves as free of them, this does not alter the fact that we originate in them. The best we can do is to confront our inherited and hereditary nature with our knowledge, and through a new, stern discipline combat our inborn heritage and implant in ourselves a new habit, a new instinct, a second nature, so that our first nature withers away. It is an attempt to give oneself, as it were *a posteriori*, a past in which one would like to originate in opposition to that in which one did originate: - always a dangerous attempt because it is so hard to know the limit to denial of the past and because second natures are usually weaker than first. What happens all too often is that we know the good but do not do it, because we also know the better but cannot do it. But here and there a victory is nonetheless achieved, and for the combatants, for those who employ critical history for the sake of life, there is even a noteworthy consolation: that of knowing that this first nature was once a second nature and that every victorious second nature will become a first.[132]

Schopenhauer's genius became great because they were great, it was only a question of whether or not the environment was sufficiently nourishing for them to survive to adulthood. Once the seed had "taken" it would grow. In the above passage Nietzsche was arguing instead that genius was a kind of self-fashioning and assimilation of the past. By taking on a second nature it was possible to overcome the many inevitable accidents and limitations of one's first nature. In this passage Nietzsche rejected Schopenhauer's dismissal of biography as a useful way to understand the origin of genius. Instead, he argued that genius emerged from the genius' resistance to, not

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[130] *Ibid.*, 62-3.
[131] Lange, *History of Materialism*, 5.
[132] Nietzsche, "On the Uses and Disadvantages of History for Life," 76-7. See also: 78, 123.

indifference to, their context. Of the four *Untimely Meditations*, "The Uses and Disadvantages" was unsurprisingly Wagner's least favourite. The composer complained that Nietzsche would have done better to write something about Schopenhauer "from a pedagogical point of view."[133] This set the stage for the third meditation, also published in 1874: "Schopenhauer as Educator." Despite Nietzsche overtly seemingly to comply with Wagner's wishes, from "Schopenhauer as Educator" to "Richard Wagner in Bayreuth" he moved even further away from Schopenhauer's and Wagner's philosophies.

The themes Nietzsche explored in "Schopenhauer as Educator" (1874) included education, cruelty to animals, humans as beasts of prey, dissection, and vivisection, which would come to play a major part in his later critiques of Wagner. However, in 1874 he employed them in another apparent attack on critical historians, natural scientists, and other "theoretical men." This time he claimed that they were the atomistic dissectors of knowledge.[134] Nietzsche described the age in which he lived as "the age of atoms, of atomistic chaos."[135] It was one in which natural science and philology had removed the illusions that had previously held the world together. Nietzsche claimed to be rhetorically turning the reductionist methods employed by theoretical men against them in an attempt to dissect the psyche of historical and scientific scholarship. He claimed that doing this revealed the theoretical man to be nothing more than "a confused network of very various impulses and stimuli," who needed to dissect in order to understand fragments, but who was incapable of synthesizing what they had learned into a coherent whole, or of understanding how anything large or sudden was possible.[136] Nietzsche was still writing in deference to Wagner's sense of the genius as the only person capable of miraculously being able to see into and reproduce the objective world. Unlike the theoretical men of learning, geniuses are:

> those true *men, those who are no longer animal, the philosophers, artists and saints*; nature, which never makes a leap, has made its one leap in creating them, and a leap of joy moreover, for nature then feels that for the first time it has reached its goal – where it realizes it has to unlearn having goals and that it has played the game of life and becoming with too high stakes.[137]

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[133] Wagner, *Cosima Wagner's Diary*, Vol. I, 735, 750.
[134] Nietzsche, "Schopenhauer as Educator," 174.
[135] *Ibid.*, 150.
[136] *Ibid.*, 170.
[137] *Ibid.*, 159. Later, in *Thus Spoke Zarathustra* (1883), Nietzsche would attribute the desire to make a "miraculous leap" into the objective world as a sign of weariness that what symptomatic of the body despairing of the body. It is a weariness "that wants to attain the ultimate in a single leap, in a leap of death, a poor and ignorant weariness that

This is a position he would repeat in "Richard Wagner in Bayreuth" (1876).[138] Nietzsche stressed that the genius was the exception to the rules of gradualism and continuity in nature. However, the genius in "Schopenhauer as Educator" was still not Schopenhauer's definition of genius. The title alone indicated as much, for the Schopenhauerian genius was born, not educated. In particular, Nietzsche criticized the idea that geniuses could be left to chance, saying that this belief was "hardly to be distinguished from cruelty to animals protracted into the human world."[139] Nietzsche was steadily breaking away from Schopenhauer's definition of genius even as he was overtly writing in support of it. This was most obvious in "Richard Wagner in Bayreuth."

The original "Richard Wagner in Bayreuth" was far more critical than the final version, and Nietzsche seriously considered abandoning the project. However, his friend Peter Gast (1854-1918) encouraged him to publish a more tactful version.[140] In order to accommodate this, Nietzsche brought together what Montinari has called "an extremely adroit mosaic of quotations" from Wagner's own works.[141] It is no small irony then that the work that Wagner heralded as an incredible triumph should have been composed from the atomistic fragments of his own writings. Nietzsche used Wagner's words in "Richard Wagner in Bayreuth" to show the destructive effect that Schopenhauer's genius has on the genius' understanding of their own past.
Nietzsche had warned how the genius could do violence to history in "The Uses and Disadvantages." However, in "Richard Wagner in Bayreuth" he described this reshaping as a positive attribute of genius because it was actually art, more so than history, that brought people closer to the absolute truth of an event.[142] This "poetic invention" allowed the genius to transform a single event into something that typified whole ages, and achieve "a truth of representation such as the historian can never attain to."[143] This was the last time that Nietzsche would make a claim like this in his published works. However, underneath Nietzsche's apparent

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does not even want to will any more: that is what created all Gods and worlds behind." Friedrich Nietzsche, *Thus Spoke Zarathustra*, trans. Graham Parkes (Oxford: Oxford University Press, 2005), 28.
[138] Friedrich Nietzsche, "Richard Wagner in Bayreuth," in *Untimely Meditations*, ed. Daniel Breazeale and trans. R.J. Hollingdale (Cambridge: Cambridge University Press, 1997), 198.
[139] Nietzsche, "Schopenhauer as Educator," 164.
[140] Richard T. Grey, "Introduction," in *Unfashionable Observations*, trans. Richard T. Grey (Stanford: Stanford University Press, 1995), 406.
[141] Mazzino Montinari, *Reading Nietzsche*, trans. Greg Whitlock (Urbana: University of Illinois Press, 2003), 41.
[142] Nietzsche, "Richard Wagner in Bayreuth," 206.
[143] *Ibid.*

compromising of his own thoughts and his subservience to Wagner was a complete breakdown of his ability to live a double life as Wagner's champion and as his critic. As can be read in his wavering analyses of myth, genius, education, and history throughout the *Untimely Meditations*. The two Nietzsches existed at the expense of Nietzsche as a whole individual. As the veneer of a friendly relationship between the two began to fade, Nietzsche was working on a way to articulate the problems he saw with Wagner's project that led him to see the elder composer, not as a mystically inspired creative genius, but as a fallible human being.

## Wagner, All Too Wagner

*Human, All Too Human: A Book for Free Spirits* appeared in three installments. The first book was published in 1878, the second "Assorted Opinions and Maxims," came out in 1879 and the final book "The Wanderer and his Shadow" appeared in 1880. Over these three years Nietzsche began to resolve the tensions between his public and private writings. In this work he supported reductionist methods for the study of history and the natural sciences, dismantled his earlier public support for Wagner and Schopenhauer's genius, and instead offered his own alternative to genius in the figure of the "free spirit." Importantly, this is how Wagner understood the text as well.

In *Human, All Too Human* Nietzsche explicitly stated that the precondition of the appearance of genius was the destruction of the visible traces of the genius' own past, with all of its inevitable accidents and contingencies. As he claims in the aphorism "Taking Care of One's Past:"

> Because men really respect only that which was founded of old and has developed slowly, he who wants to live on after his death must take care not only of his posterity but even more of his *past*: which is why tyrants of every kind (including tyrannical artists and politicians) like to do violence to history, so that it may appear as preparation for and step-ladder to them.[144]

[144] Nietzsche, *Human, All Too Human*, 283. Nietzsche would repeat this point in *Thus Spoke Zarathustra*: "This is my compassion for all that is past, that I can see: it has been abandoned—/ —Abandoned to the favour, the spirit, the madness of every generation that comes up, and which reinterprets all that has been as a bridge to itself! / A great despot could come, a shrewd fiend who would and could compel all that is past with his favour and disfavour: until it became a bridge to him and a portent and herald and cockcrow." Nietzsche, *Thus Spoke Zarathustra*, 176.

The cult of genius that then surrounded such figures was "an echo of [the] reverence for gods and princes," which required a mythological origin story to legitimize it. In obscuring his past the genius made "whole classes of the people," the "folk," appear less than what they were.[145] However, the folk were also complicit in this. Nietzsche explained how such figures as Raphael and Shakespeare became elevated into miraculous and ahistorical icons to soothe the folk's sense of vanity. As he wrote: "our self-love […] promotes the cult of the genius: for only if we think of him as being very remote from us […] does he not aggrieve us."[146] In this way Nietzsche was obliquely critiquing both Wagner and his supporters.

Wagner made a great deal of "the folk" as his audience of choice: a specific, archaic, and unified German people whose undivided essence could still be seen in the artistic use of the German language, in folktales, and folk music. However, he also claimed that the folk's sense of itself had been diluted by foreign, particularly Semitic, influences. His frequent appeals to German nationalism served to justify his own search for popularity and public acclaim. The folk were the imagined ideal audience that Nietzsche had praised in *The Birth of Tragedy*. In "Richard Wagner in Bayreuth" Nietzsche also claimed that to really see the effects of Wagnerian music one would have to look toward the future, for only then would one "come to understand *what Wagner will be to this folk*: something he cannot be to any of us, namely not the seer of a future, as he would perhaps like to appear to us, but the interpreter and transfigurer of a past."[147] This ambivalent assessment helped to set the stage for Nietzsche's critique of the relationship between genius and folk that saw its culmination in *Human, All Too Human*.

In *Human, All Too Human* Nietzsche argued that Wagner's genius actively discouraged the development of alternative geniuses by destroying any account of their origins. This genius "repulses all thinking as to how it has become, it tyrannizes as present completeness and perfection."[148] As he claimed in "fatality of greatness:"

> Every great phenomenon is succeeded by degeneration, especially in the domain of art. The example of greatness incites all vainer natures to extreme imitation or attempt to outdo; in addition to which, all great talents have the fatal property of suppressing many weaker shoots and forces and as it were laying nature to waste all around them. The most fortunate thing that can happen in the evolution of an art is that several geniuses appear

[145] Nietzsche, *Human, All Too Human*, 185.
[146] *Ibid*., 86.
[147] Nietzsche, "Richard Wagner in Bayreuth," 254.
[148] *Ibid*.

> together and keep one another in bounds; in the course of this struggle the weaker and tenderer natures too will usually be granted light and air.[149]

Nietzsche's language of nature echoes both his discussion of second nature in "The Uses and Abuses" and "Schopenhauer as Educator." Intending to secure his position, Wagner's genius simultaneously paved the way for the gradual atrophying and destruction of the very ideas that first elevated them to their place of authority and power.

Nevertheless, Nietzsche did not merely attribute genius to a misunderstanding of origins or a lack of opposition. Exceptional people did exist. However, these people existed exactly because of their history and often by virtue of their very incompleteness. In *Human, All Too Human* he inverted the value that Schopenhauer gave to genius as a "*monstra per excessum,*" with twice the intellect needed to accommodate the appetites of their wills, turning the geniuses' "indifference" to their surroundings into a potentially fatal imbalance. Nietzsche expanded upon this point further in "the origin of genius" where he observed that:

> It has already been remarked that a mutilation, crippling, a serious deficiency in an organ offers the occasion for an uncommonly successful development of another organ, the reason being that it has to discharge not only its own function but another as well. It is in this way we can suppose many a glittering talent to have originated.[150]

The incompleteness that made this form of genius possible precluded it from ever granting its owner insight into the depths of being, or the thing-in-itself. In *Thus Spoke Zarathustra* (1883-1885) Nietzsche would dramatically describe this belief about genius as a celebration of "inverse cripples:"

> And when I came out of my solitude and went across this bridge for the first time, I could not believe my eyes and had to look, and look again, before saying at last: 'That is an ear! An ear as large as a human being!' Then I looked more closely, and in fact under the ear there was something else moving, something pitifully small and meager and puny. And in truth, the enormous ear was sitting on a thin little stalk— but the stalk was a human being! With the help of a magnifying glass one could even make out an envious little face, as well as a bloated little soul dangling from the stalk. The people told me, however, that the huge ear was not only a human being but a great human being, a genius. But I never did believe the people when they talked of great human beings— and I held to my belief that it was an inverse cripple, with too little of everything and too much of one thing.'[151]

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[149] Nietzsche, *Human, All Too Human*, 84.
[150] *Ibid.*, 110-1.
[151] Nietzsche, *Thus Spoke Zarathustra*, 120. On April 18th 1869 the French journal *L'Eclipse* published a caricature of Wagner in which he was shown to be the size of an ear as he drove a musical note into it.

In *Human, All Too Human*, Nietzsche no longer defended his earlier position that some genius was the result of some miraculous inborn hypertrophy. Instead, he dedicated a great deal of the work to exploring the role that education and experience played in the origins of genius.

Nietzsche's developing understanding of genius in *Human, All Too Human* required a reconsideration of the purpose and direction of education. In the aphorism "Miraculous Education" he contradicted Wagner's idea that the genius' insights were miraculous:

> To the present day, however, all the world continues to believe in miraculous education: for the greatest disorder, confusion of objectives, unfavourable circumstances have succeeded in producing the most fruitful and capable men […]. Soon these cases too will be examined more closely and tested more carefully: no miracles will ever be discovered.[152]

Genius could be taught. Its origins could be questioned and understood. The educational trajectory of a genius that no longer relied upon miracles would be characterized by three main considerations: the amount of energy inherited by the student (the "givens" of their physiological and psychological history), how new energy could be ignited within them, and thirdly, the question:

> how can the individual be adapted to the enormously diversified demands of culture without being distracted by them and his individuality dispersed – in short, how can the individual be set in place within the counterpoint of private and public culture, how can he play the main theme and at the same time the subordinate themes as well?[153]

This third point was crucial, for it made Nietzsche's vision for education into one of freedom and self-creation without the excesses of the cult of genius. Indeed, it was what made *Human, All Too Human* a handbook for the autodidactic education of other free spirits. If the free spirit was to survive and thrive it must be able to play a diversity of roles without its identity being subsumed by the folk, while at the same time it must also be able to acknowledge and adjudicate between those aspects of culture it accepts into itself, adapts, challenges, or can accept as simply other than it.

Nietzsche proposed a "cult of culture" in opposition to the cult of genius. It was an idea that owed much to his reading of Lange. He emphasized the need for a balanced culture and an

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[152] Nietzsche, *Human, All Too Human*, 115.
[153] *Ibid.*, 115-6.

appreciation of the inevitable contingencies, accidents, and fragmentary qualities of human life and history:

> For the system of all that which humanity has need of for its continued existence is so comprehensive, and lays claim to so many and such varying forces, that humanity as a whole would have to pay heavily for any *onesided* [sic] preference, whether it be science or the state or art or trade, to which these individuals [geniuses] would entice it. It has always been the greatest fatality for culture when men have been worshipped […] – Next to the cult of the genius and his force there must always be placed, as its complement and palliative, the cult of culture: which knows how to accord the material, humble, base, misunderstood, weak, imperfect, onesided [sic], incomplete, untrue, merely apparent, indeed to the evil and dreadful, a proper degree of understanding and the admission *that all this is necessary*; for the harmonious endurance of all that is human.[154]

This cult of culture was the counterpart that prevented the cult of genius's holistic longings from becoming tyrannical and self-defeating.

From its very first page *Human, All Too Human* was strewn with references that seem to have been calculated to gall Wagner. Nietzsche dedicated the first edition of the work to the French enlightenment thinker Voltaire (1694-1778). In Cosima Wagner's diaries she recounts an exchange she had with Wagner about how much David Strauss' work on Voltaire angered the composer, alongside his frustrations with scientists who seemed always so quick to claim that as individuals they were nothing, but that their science was infallible.[155] In *The History of Materialism* Lange had repeated du Bois-Reymond's 1868 assertion in *Voltaire in his Relation to Natural Science* that modern scientists were more or less Voltairians, following his arguments about the limits of free will and the relationship between mind and body.[156] Nietzsche's first meditation on Strauss attempted to address this issue, and it is reasonable to assume that his dedication to Voltaire was also a rejection of his early work as Wagner's propagandist.

Strauss' *Voltaire* was a short history of Voltaire's life and thought that described the poet's daily habits, family, sexual relationships, his creative works, scandals, and means of subsistence. It also had a section on Voltaire's thoughts about Joan of Arc and human nature.[157] Strauss argued that Voltaire's poem *The Maid of Orleans* was a scathing critique of knowledge biased on divine revelation, the idea of purity, and of spirit without body. He also believed that it

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[154] *Ibid*.
[155] Wagner, *Cosima Wagner's Diaries*, Vol. 1, 302-3.
[156] Lange, *History of Materialism*, 13, 17, 61.
[157] David Friedrich Strauss, *Voltaire: Sechs Vorträge* (Leipzig: Verlag von G. Hirzel, 1870), 222-227.

depicted its title character as either a brave but mentally afflicted woman who was used as a political tool to inspire resistance to France's enemies, or a calculating political player in her own right who used the stories of her miracles to her own advantage.[158] Voltaire made Joan of Arc all too human. For Wagner, this only demonstrated the arrogance of natural science and critical history in the face of miracles and the mysterious workings of genius. These attacks on Strauss and Voltaire recurred in his condemnation of *Human, All Too Human*.

In the April, June, and August 1878 editions of the *Bayreuther Blätter* Wagner published a series of three articles entitled "Public and Popularity." The third of these articles contained his public response to *Human, All Too Human*.[159] Wagner claimed to take umbrage at the academic public for the pedantic, and publicly funded, way in which it bred the kind of "cultural philistine" (*Bildungsphilister*) that Nietzsche had critiqued in "David Strauss."[160] He took issue with how Nietzsche was challenging Schopenhauer's idea of genius, claiming that such challenges were merely representative of scholars' envious relationship to greatness that lead them to cast the very idea of genius overboard as "a radical error."[161] To prove this point Wagner set up a dichotomy between Voltaire, "that idol of all 'free minds [spirits]" and the poet Friedrich Schiller in their diverging treatments of Joan of Arc.

Wagner claimed that Voltaire depicted Joan of Arc as a mere human because his understanding of her only depended on the historical documents available to him. Schiller, by contrast, inspired by no documents other than his own genius saw in her "humanity's all-noble type:" "not only did his poetic canonization of the heroine bestow upon the Folk an infinitely touching and e'er-loved work, but it also anticipated Historical [*sic*] criticism, hobbling after, which a lucky find has at last put in possession of the rightful documents for judging a marvellous phenomenon."[162] It seemed to Wagner that nothing was sacred to historical criticism, not even Jesus, the archetype of biblical genius.[163] By looking to trace back the origins of genius into strictly chemical, physiological, or historically contingent parts, defenders of historical

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[158] *Ibid.,* 99-103.
[159] Wagner explicitly meant this section of Public and Popularity to be a coded attack on *Human, All Too Human*. See: *Cosima Wagner's Diaries*, Vol II, 118. Nietzsche recognized that this criticism was meant for him. See: Nietzsche, *Selected Letters of Friedrich Nietzsche*, 153.
[160] Richard Wagner, "Public and Popularity," in *Religion and Art*, trans. William Ashton Ellis (Nebraska: University of Nebraska Press, 1994), 76.
[161] *Ibid.*, 74.
[162] *Ibid.*, 79.
[163] *Ibid.*, 78-9.

criticism and natural science made themselves incapable of seeing greatness for what it was: unifying, intuitive, spontaneous, and miraculous.

Wagner lamented how the state had given special place of pride to physics, and especially chemistry, instead of art. In response to this scholars from every discipline, even philology, were scurrying to mimic the style of the natural sciences.[164] Philologists like Nietzsche found in the experiments of the natural sciences a "profound authority for an altogether special skepsis" that Wagner described as a confused and chaotic swinging between the extremes of popular academic opinion. Nevertheless, from this: "both philologists and philosophists [*sic*] obtain peculiar encouragement, nay obligation, to an as yet illimitable progress in the art of criticizing [*sic*] all things human and inhuman."[165] This was another oblique attack on *Human, All Too Human*, one that echoed the passage in Cosima Wagner's diaries where Wagner charged David Strauss with the same combination of scientific skepticism and dogmatism. However, Wagner did have some sympathy for the natural sciences. This helps to shed some light on how he thought about the tensions between science and genius.

In "Public and Popularity" Wagner claimed that scientists like Charles Darwin were not to be blamed for the atomizing and chaotic effect that modern science and scholarship was having on culture, provided that they were content to only have hypotheses and stay within their own narrow professional spheres. The problem was that some of Darwin's followers (and here he strongly implied Strauss and Nietzsche) were using his emphasis on gradualism in nature to make reckless arguments about the gradualness and contingency of historical figures and events. Wagner stressed that the main flaw of reductionist science and scholarship was how both excluded the possibility of "spontaneous" events in nature, history, and society:

> For we now are told that, as no change has ever taken place without sufficient ground, so the most astonishing phenomena—of which the work of 'genius' forms the most important instance—result from various causes, very many and not quite ascertained as yet, 'tis true, but which we shall find it uncommonly easy to get at when Chemistry has once laid hold on Logic. Meanwhile, however, the chain of logical deductions not stretching quite so far as an explanation of the work of Genius, inferior nature-forces generally regarded as faults of temperament, such as impetuosity of will, one-sided energy and stubbornness, are called in to keep the thing as much as possible upon the realm of Physics.[166]

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[164] *Ibid.*, 73.
[165] *Ibid.*
[166] Wagner, "Public and Popularity," 74-5.

This was one of Wagner's many defences of "the miraculous leap of genius" in which he argued against the tendency of lesser intellects to pass judgment on genius out of a misguided adherence to causality. It was partly an attack on determinism and reductionism in historical scholarship and natural science and partly a defence of the holistic insights of genius and the role that art played in enabling a direct experience with Schopenhauer's objective realm of the Will. While the fact that Wagner chose to present a defence of Darwin, and single out chemistry and Joan of Arc in his critique of Nietzsche may seem strange, all three points struck to the root of the physiological and historical doubts Nietzsche raised in *Human, All Too Human* about the nature of genius. They were doubts that he had already expressed in "On Truth and Lies" and his lectures on the *Pre-Platonic Philosophers*, where he critiqued the idea that causality could be understood as being analogous to human will (which would make it "miraculous"), and argued that critical history and natural science both showed how knowledge consisted of the human ability, and need, to create apparent unities where none had previously existed in nature or history.

## Conclusion

Nietzsche's work throughout the late 1860s and 1870s was characterized by his attempts to balance his defence of Wagner's interests and Schopenhauer's philosophy with his own private exploration of an alternative vision of genius. It was a vision of genius that incorporated the insights of critical history, physiology, and the natural sciences, instead of largely rejecting them as Wagner did. Despite this tension, Nietzsche's interest in physiology and the relationship between knowledge of the objective world and the working of the human body was largely inspired by his readings of Schopenhauer. Schopenhauer grounded the holistic and miraculous insights of genius in the physiological organization of geniuses themselves that were unaffected by the arbitrary forces of biography, context, or indeed, of causality itself. Pursuing this interest in the relationship between physiology and philosophy led Nietzsche to believe that the reductionist methods of modern scholarship and science revealed the limits of self-knowledge, and indeed, the limits of knowledge itself. He gleaned this understanding from figures like Lange and von Baer, who led him further away from Schopenhauer's and Wagner's worldviews.

Instead, he came to believe that a more meaningful definition of genius rested in individuals who could intentionally fashion themselves from out of the accidents, indifference, and limitations of their historical, physiological, and psychological contexts.

The tension between his own ideas and his commitment to Wagner can be seen throughout Nietzsche's early writings. Nietzsche was being truer to his own thoughts in his lectures on *The Pre-Platonic Philosophers* and "On Truth and Lies" than in *The Birth of Tragedy* or "David Strauss." He tried, and, arguably, he failed, to find a compromise of the two positions in "On the Uses and Disadvantages," and "Schopenhauer as Educator," before covertly parodying Wagner in "Richard Wagner in Bayreuth." There was a polyvocal aspect to Nietzsche's writings in support of Wagner's ideals that can be seen well before the publication of *Human, All Too Human*. His arguments about the musical Socrates, the increasingly ambiguous way he presented the relationship between Wagner's genius and history, and his changing definitions of genius between "David Strauss" and "Schopenhauer as Educator" all point to this. Even more striking are the ways that Nietzsche recast arguments he had made in the *Untimely Meditations* in *Human, All Too Human* as he critiqued the idea of miracles and sudden leaps in nature, the cult of genius, the folly of believing in the miraculous education of geniuses, and the idea that genius was a sort of ideal case of "*monstra per excessum*." These critiques depended, at their base, on Nietzsche's developing understanding of critical history and physiology as it applied to the idea of genius. The fact that Wagner specifically attacked Nietzsche's appeals to critical history and chemistry in his response to *Human, All Too Human* serves as further proof that these were important and contentious backgrounds to Nietzsche's intellectual and personal break with the composer.[167] Nietzsche's interest in the relationship between, genius, physiology, and philosophy would continue on into the 1880s. From *Human, All Too Human* onwards he continued to develop his ideas about self-fashioning and its relationship to genius and education as he explored notions of dynamic self-regulation and the definition of meaningful freedom in a deterministic and amoral cosmos. These ideas would eventually lead him to an understanding of the relationship between the *Übermensch* and the eternal return of the same. They also served as

[167] "Chemistry" here understood as including both inorganic and organic chemistry, which served as the basis of physiology. Wagner's attack on scholars for aping the methods of chemistry was also an attack on attempts to show the chemical basis for the physiology of mind, which harkened back to the materialism controversy of the 1840s and 1850s in which Strauss was a participant.

the background to his changing understanding of the meaning and value of vivisection as a physiological and philosophical methodology.

## Chapter 2: Nietzsche as Vivisectionist

> "I would like to know how to meet my fate (vivisection) and my pain with the silent gaze of a dog."[168]
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> ~Friedrich Nietzsche, from a fragment found in Nietzsche's *Nachlass*. Dated around November 1882-February 1883.

Late nineteenth-century debates about whether the insights of genius depended on a holistic or reductionist understanding of the world were not limited to artistic or historical topics. In the natural sciences these debates became matters of life and death. This was especially the case in the study of physiology and the practice of medicine where vivisection became an ever more common resource for the study of the basic elements of life and living systems. Those, like Wagner, who supported holistic models of genius also supported holistic studies of living organisms and campaigned against vivisection and other reductionist approaches for being useless and immoral. Vivisection thus became another arena in which Nietzsche challenged the basis of Schopenhauer's philosophy and Wagner's political and artistic legacy.

Even after his break with Wagner, Nietzsche continued to find himself in circles that included antivivisectionists and vegetarians who paid allegiance to Schopenhauer's philosophical system. Nietzsche's sister Elizabeth was one such antivivisectionist, who married the anti-Semitic, antivivisectionist Bernhard Förster in 1885. Bernhard's brother, Dr. Paul Förster, became one of the leaders of the antivivisectionist movement in Germany at the end of the nineteenth century. Nietzsche was also aware that Wagner had supported the project of the antivivisectionist Baron Ernst von Weber (1830-1902) and the doctor Ernst Grysanowski (1824-1888). On an intellectual front, Nietzsche had already enthusiastically followed Zöllner's career, who, aside from being an astrophysicist was also a prominent antivivisectionist. All of these figures were mentioned in, or actively wrote for the *Bayreuther Blätter*, the organ of Wagnerism founded in 1878 to coincide with the establishment of the *Bayreuth Festspielhaus*, and Nietzsche continued to comment on this periodical in his correspondence until his breakdown in 1889. Finding himself surrounded by antivivisectionists whose political, intellectual, and moral world-views he found increasingly distasteful, Nietzsche sought to antagonize and refute them.

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[168] Friedrich Nietzsche, "*eKGWB/NF-1882, 4 [91] — Nachgelassene Fragmente November 1882 — Februar 1883*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1882,4[91].

Nietzsche's early support for, and later critique of, genius, parallels his early resistance to, then promotion of, vivisection. The claims that Schopenhauer and Wagner made about the irreducible holism of genius and the intuitive nature of their insights lent themselves to debates about the holism of living organisms and the methods best suited to understanding them. Despite his holistic claims, Wagner presented the world as a series of dichotomies, particularly between the genius and the non-genius, freedom and determinism, and self-interest and self-denial. In contrast, Nietzsche's reductionism systematically broke down these dichotomies in his search for the basic elements of physiological and psychological life. He identified three forms of vivisection that taken together showed how reductionist methods revealed the interconnected and necessary character of existence. Physiological vivisection showed the physical necessities of life, how living beings were organized, and how they related to their physical surroundings. Moralizing vivisection was how human beings, especially those from acetic traditions, suppressed their own motivations and drives towards some moralistic end. Nietzsche referred to this "pre-scientific' form of reflection as the "spiritualization," but also as the "torture," of the animal life of the human being. This form of vivisection was conducive to some kinds of self-reflection and doubt. However, since it focused on judging and morally evaluating rather than knowing and understanding, it could only accomplish so much before it ultimately prevented the development of more systematic, or scientific forms of self-reflection. The final form of vivisection was psychological. Nietzsche first described psychological vivisection as "psychological observation," but he often talked about this method as a form of dissection or vivisection. Nietzsche sought to use psychological vivisection to understand human values and drives scientifically, without judging them good or evil, in order to show their many historical and physiological contingencies and necessities. While Nietzsche never explicitly articulated his ideas about vivisection in these terms, they help reveal three different but interconnected streams of thought in his writing. They also help to show how Nietzsche described the different forms of suffering that coincided with the growth of human understanding. This sheds light on some of his more controversial rhetorical comments about the necessity of pain and cruelty.

Physiological vivisection was a necessary complement to psychological vivisection, for it furthered understanding of human drives and values at their most basic level. The debates about the necessity of vivisection, and how a reductionist understanding of living beings lent itself to philosophical determinism, also contributed to Nietzsche's thinking about the broader nature of

necessity and its relationship to knowledge. His interest in the idea of *amor fati*, the love of fate, or of life exactly as it was and must be, developed in the context of these debates. Vivisection was often used to study the ways in which organisms were dynamic self-regulating systems. The "freedom" of organisms consisted of the ways in which they fashioned themselves from out of their material environment. It consisted of a kind of "independence through interdependence." This was a freedom that Nietzsche would latter attribute, in increasingly nuanced ways, to his own ideas about the education of the genius, the free spirit, and ultimately, the *Übermensch*.

Despite the importance of vivisection to Nietzsche's intellectual development there have been no major studies exploring his interest in it. Walter Kaufmann briefly noted that just as Socrates was the "gadfly" of Athens, Nietzsche sought to be the vivisectionist of modern values. Yet vivisection was more than a shorthand for the sometimes unpleasant, but vital role of the philosopher in society, and he neglected to comment on Nietzsche's relationship to the very physical practice of vivisection in the late nineteenth century.[169] Geoff Waite represents the opposite extreme of this trend, and has instead used Nietzsche's interest in vivisection to paint a picture of him as a covert "esoterrorist," or secret terrorist, who not only celebrated cruelty, pain, and euthanasia, but whose influence was responsible for sabotaging left wing political movements from inside their own ideological ranks.[170] This portrait misrepresents both Nietzsche's and Schopenhauer's relationship to vivisection, which is better understood in terms of their historical contexts.

This chapter begins with an overview of Schopenhauer's and Wagner's thoughts on vivisection. A more radical and anti-Semitic group of antivivisectionists cited Schopenhauer as an inspiration after his death. This group, led by Weber, Grysanowski, and Marie-Esperance von Schwartz (1818-1899) put out a prominent antivivisectionist pamphlet called *The Torture Chambers of Science* (1879). *Torture Chambers* contained several arguments about pity and the meaning and role of *Wissenschaft* in society that Nietzsche would later critique. These arguments were very much in keeping with Wagner's worldview, and the composer met with Weber shortly after the publication of the pamphlet. The section concludes with a look at Wagner's relationship

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[169] Kaufmann, *Nietzsche: Philosopher, Psychologist, Antichrist*, 108, 111, 181, 187, 404, 414.
[170] Geoff Waite, *Nietzsche's Corps/e: Aesthetics, Politics, Prophecy, or, The Spectacular Technoculture of Everyday Life* (Durham: Duke University Press, 1996), 296.

to vegetarianism and vivisection, and how Weber used Wagner's influence after his death to support the antivivisectionist cause.

The chapter then explores Nietzsche's early attack on, and later support for, vivisection. Starting from a common position with the antivivisectionists that humans were indeed animals, he broke down their notions of innocence, pity, and purity. In *Human, All Too Human*, published between 1878 and 1880, he argued that the only way to understand human motivations and morality was through a process of "psychological observation," which he understood as a form of psychological vivisection. Antivivisectionists claimed that physiology was not a true science because it had to rely upon vivisection, which, because of the violence involved, could never be performed in any kind of systematic way. Nietzsche argued instead that different forms of vivisection were defining features of science and scholarship. While antivivisectionists often compared physiologists to the torturers of the Catholic Inquisition, Nietzsche subverted this anti-Catholic image by pointing to a historical case where a protestant, John Calvin, actually burnt the vivisectionist Miguel Serveto at the stake. This consideration of the Inquisition served as part of the backdrop to his early thinking about the relationship between innocence, cruelty, knowledge, and necessity.

This chapter will go on to consider Nietzsche's commentaries on vivisection in light of his opposition to the writings in the *Bayreuther Blätter*, especially those of the Förster brothers, as well those of Zöllner. In his early career, Nietzsche supported Zöllner's critique of reductionism in the sciences as the ideological twin of his critique of reductionism in the study of history. However, he also found a precedent in Zöllner for the idea of psychological vivisection. For Zöllner, this was a form of personal polemics that the astronomer leveled against figures like Helmholtz and du Bois-Reymond. Nietzsche would make vivisection into a tool of self-analysis that went beyond moralizing judgments to try and understand the origin and nature of moral evaluations and values. However, he recognized that such analysis was a sublimated kind of cruelty and "cutting up" of the psyche, and he classified it along with physiological vivisection as an example of the relationship between cruelty and knowledge. He contrasted the sublimated cruelty of psychological vivisection to the festival of cruelty of the moralizing vivisection undertaken by antivivisectionists and members of the *Bayreuther Blätter* circle. Yet even here he sought to qualify his attacks with a reminder that moralizing vivisection also brought about the creation of new values.

Schopenhauer's Mercies: Wagner, Weber, and Antivivisection in Germany

The debate about the human use of animals, both as food and as experimental subjects, did not begin in the nineteenth century. However, the scope and scale of these debates expanded drastically as animal experimentation became the touchstone of the new experimental physiology. Magendie and Bernard, in France, and Ernst von Brücke (1819-1892), Carl Ludwig (1816-1895), du Bois-Reymond, and Helmholtz, in Germany, moved to make nineteenth-century physiology into a systematic, experimental science based on physics and chemistry. To accomplish this goal, they sought to employ the exacting methods of measurement, analysis, and instrumentation used in these inorganic sciences. Ludwig's invention of the kymograph in 1847, which could graphically show rate of change in blood pressure or muscle contractions was one such symbol of the instrumental precision of the new physiology. Du Bois-Reymond contributed to this trend with his use of galvanometers to detect the minute changes of electrical impulse that coincided with the transmission of nerve impulses in frogs and in 1850 Helmholtz used a ballistic galvanometer to measure the velocity of the propagation of the nerve impulse itself.[171] These methods required an ever increasing number of experimental subjects, as control groups, and as ways to test and confirm the results of other researcher's experiments. Germany also became a European-wide center for physiological teaching, with government supported physiological laboratories. This further increased the demand for experimental animals as teaching tools. However, these changes did not go unchallenged. Animal protection societies developed along with the rise of experimental physiology.

The first formalized animal protection societies in Germany and Switzerland began in the 1840s to prevent the cruel treatment of domestic animals. As Tröhler and Maehle point out, these early societies had an explicitly anthropocentric focus. Animals were not to be protected for their

[171] Frederic Lawrence Holmes, "Physiology," in *The Oxford Companion to the History of Modern Science*, ed. John L. Heilbron (Oxford: Oxford University Press, 2003), 649-50. For more on Helmholtz's work measuring the propagation of the nerve impulse, see: Robert Brain, "Representation on the Line: The Graphic Method and the Instruments of Scientific Modernism," in *From Energy to Information: Representation in Science, Art, and Literature*, eds. Linda Dalrymple Henderson and Bruce Clarke (Stanford: Stanford University Press, 2002), 155-178; and Robert Brain and M. Norton Wise, "Muscles and Engines: Indicator Diagrams and Helmholtz's Graphical Methods," in *The Science Studies Reader*, ed. Mario Biagioli (New York: Routledge, 1999), 51-66.

own sakes, but for the sake of the humans who had to witness their brutalization.[172] Schopenhauer, however, was a notable voice opposing this justification at the start of the century. He rejected what he considered to be Kant's "Jewish Christianity" and its utilitarian argument that cruelty to animals was only blameworthy because it might make humans less compassionate towards each other.[173] Citing the Sanskrit phrase "*tat tvam asi*" (this art thou), he praised the Hindu and Buddhist religions for recognizing the fundamental identity of animals and humans and for their prescription of a vegetarian diet.

The early to mid-nineteenth century saw the rise of a range of "back to nature" movements, sometimes referred to collectively as naturalism or *Naturalismus*, that claimed to draw their authority from ancient (often Pythagorean) and eastern (Hindu and Buddhist) wisdom about health and the body. In 1867, Eduard Baltzer (1814-1887) founded the Society for Healthy Living, an organization that promoted vegetarianism, exercise, and health retreats. Baltzer had been partly inspired to found the society based on his reading of the chemist Theodor Hahn (1824-1883). Hahn's vegetarian bestseller *The Paradise of Heath, the One Lost, and the One Regained* was published in 1865. In it he proposed that health was tied up with living according to nature. "Living according to nature" meant many things to Hahn, including taking water cures, seeking out healthy or pure environments, vegetarianism, an aversion to modern, allopathic medicine, and the protection of animals.

Hahn's vegetarianism and defence of animals was tinged with the belief that meat eating was an unnatural and Jewish practice.[174] As it did for Schopenhauer, Hahn, Wagner, Weber, and many of their followers, anti-Semitism went hand in hand with the return to nature. The Old Testament sentiment that humanity had "dominion over nature" was often cited as an example of Jewish arrogance and cruelty, and attacks on the inhumanity of kosher methods of butchering animals were used to target both Jews and "Judaized" vivisectors. The revolutions of 1848 led many Jewish Germans to hope that they would soon benefit from the same rights and freedoms

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[172] Ulrich Tröhler and Andreas-Holger Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland: Motives and Methods," in *Vivisection in Historical Perspective*, ed. Nicolaas A. Rupke (London: Croom Helm, 1987), 150. For more on the history of animal protection see: "The Ethical Discourse on Animal Experimentation, 1650-1900," in *Doctors and Ethics: The Earlier Historical Setting of Professional Ethics*, *The Wellcome Series in the History of Medicine, Clio Medica,* Vol. 24, eds. A. Wear, J. Geyer-Kordesch, R. French (Amsterdam and Atlanta, GA: Rodopi, 1993), 203-251.

[173] Arthur Schopenhauer, *Parerga and Paralipomena*, Vol. 2, trans. E. F. Payne (Oxford: Clarendon Press, 1974), 370-372.

[174] Klaus Bergdolt, *Wellbeing: A Cultural History of Healthy Living* (Cambridge: Polity Press, 2008), 286.

as their neighbours. However, the rapid industrialization, urbanization, and gross inequalities that characterized nineteenth-century capitalism led to periods of intense economic instability that culminated in the recessions of 1873. Jews were increasingly associated with both distant and wealthy urban intellectuals and liberals, as well as poor, subversive revolutionaries and criminals. Whether over-refined or under-civilized, this scapegoating presented Jews as an unnatural or degenerate people.[175]

Schopenhauer was relatively moderate compared to those who followed after him. He believed that it was unfortunate, but true, that human beings who lived in the north had to eat meat for the sake of their health. Only using chloroform to render the animals insensate before they were slaughtered could make this process anything like humane.[176] He also made some allowances for vivisection. He had performed fatal animal experiments while still a student in Göttingen in 1809.[177] Forty-two years later he claimed that vivisection should be restricted to well-defined purposes with immediate practical results, and even then only conducted when the practitioner was absolutely sure that there was no solution to the problem under investigation that could be found in the existing medical literature.[178] In his *Parerga and Paralipomena* he recounted his time spent studying under Blumenbach at Göttingen:

> Blumenbach in his lectures on physiology spoke very seriously to us about the horrors of vivisection and pointed out to us what a cruel and shocking thing it was. He therefore said that it should very rarely be resorted to and only in the case of very important investigations that are of direct use. But it must then be done with the greatest publicity in the large lecture-hall after an invitation has been sent to all the medical students, so that the cruel sacrifice on the altar of science may be of the greatest possible use. Every quack, however, now considers himself entitled to carry out in his torture-chamber [*Folterkammer*] the cruelest tortures on animals in order to decide problems whose solution has long since appeared in books, which he is too lazy and ignorant to look up.[179]

Schopenhauer was insistent on the use of chloroform in those rare cases when vivisection was necessary. Yet he also saw the difficulty that this principle posed when investigating the working of the nervous system itself:

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[175] Pierre James, *The Murderous Paradise: German Nationalism and the Holocaust* (Westport: Greenwood Publishing Group, 2001), 155-6.
[176] Schopenhauer, *Parerga and Paralipomena*, Vol. 2, 375.
[177] Cartwright, David E. Schopenhauer: A Biography (Cambridge: Cambridge University Press, 2010), 143.
[178] Schopenhauer, *Parerga and Paralipomena*, Vol. 2, 375.
[179] *Ibid.*, 373.

> This method, however, is necessarily excluded in the case of operations which are performed on the activity of the nervous system and its sensitiveness and which are now so frequent, for the very thing to be observed would thus be stopped. Alas, the animal most frequently taken for vivisection is morally the noblest of all, the dog, who is, moreover, rendered more susceptible to pain by his highly developed nervous system.[180]

Offering no ready solution to this problem, but tacitly seeming to accept the necessity of vivisection, even when it could not be done with chloroform, Schopenhauer was a much more moderate figure than those who followed after him.

Schopenhauer's increased popularity after his death in 1860 corresponded with the expansion and professionalization of animal experimentation. As the century wound on vivisection became one of the main resources for physiological education and research. Yet this also coincided with the rise of a much more radical antivivisectionist block, for whom all experiments on animals were anathema. These groups were particularly concerned with experiments performed on dogs, cats, and other animals that were increasingly moving into the homes of the middle classes as pets. While animals such as frogs and chickens were far more commonly employed in physiological research, they tended not to be the focus of antivivisectionist indignation, except where they served as further proof of the cruelty of vivisectors. In the 1870s a number of prominent antivivisectionist writings from Great Britain were translated into German just as antivivisectionist sentiments in Germany had begun to peak. These sentiments reached full force in the early 1880s.[181]

Scholars generally agree that Britain was the centre of European antivivisectionist agitation from the 1870s onwards.[182] The movement was led by such vocal and influential figures as the Irish suffragette and writer Frances Power Cobbe (1822-1904), cofounder of the National Anti-Vivisection Society (NAVS) in 1875 and the English suffragette and theosophist Anna Kingsford (1846-1888). The NAVS was one of the the catalysts that led to the founding of a Royal Commission in 1875 to investigate the necessity and cruelty of vivisection and animal experimentation. While antivivisectionists instigated the commission, however, it was largely led by supporters of vivisection, such as the scientific naturalist Thomas Henry Huxley (1825-1895),

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[180] *Ibid.*, 376.
[181] Tröhler and Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland," 153, 164.
[182] W.F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994), 169. See also: Richard French, *Antivivisection and Medical Science in Victorian Society* (Princeton: Princeton University Press, 1975).

who sought to set the limits of legal vivisection under terms that were favorable to physiological research.[183] The act that the commission proposed, and which was passed by parliament in 1876, the *Act to Amend the Law Relating to Cruelty to Animals*, was seen by many opponents and supporters of vivisection as an unsatisfactory compromise. Despite this, however, the fact that antivivisectionist agitation could lead directly to legal reform galvanized many antivivisectionist movements around Europe, including in Germany.

The aristocratic anglophile, Baron Ernst von Weber, was one of the major German-speaking opponents of vivisection in the 1870s and 1880s. He had come to the antivivisectionist cause after reading a moralistic novel by the aristocrat Marie-Esperance von Schwartz on the cruelties of animal experimentation: *Gemma, or Virtue and Vice* written under her pseudonym, Elpis Melena in 1877. Afterwards, he agreed to publish the works of her friend, the medical doctor and antivivisectionist Ernst Grysanowski. Together the three embarked on a campaign to marginalize or assimilate moderate animal protection societies and bring about the complete abolition of vivisection. One of the most successful texts in this campaign was Weber's pamphlet on *The Torture Chambers of Science* that was first published in 1879. Distributed in public places throughout German-speaking Europe, the work received a very wide circulation and was frequently reviewed in the newspapers.[184] There is no direct evidence that Nietzsche read Weber directly, but Weber was known by, and referenced in the works of Wagner, Zöllner, and the Förster brothers. *Torture Chambers* was one of his best-known writings, and it will be helpful to consider it in more detail.

*The Torture Chambers of Science* tried to be many things at once: A programmatic call for the end of vivisection; a how-to guide for the establishment of antivivisectionist societies across the German speaking world; a populist, Christian work that sought to call on the aid of the elite, cultivated [*gebildete*] public; and an argument against the dominance of professionals in determining legal policy. It was a list of vivid atrocities with the names of the offenders included, as well as a list of those, particularly women, who opposed them. It sought to appeal to its audience's reason, ethics, religion, culture, humanity, and especially pity (*Mitleid*) in the fight

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[183] Nicolaas Rupke, "Pro-vivisection in England in the Early 1880s: Arguments and Motives," in *Vivisection in Historical Perspective*, ed. Nicolaas A. Rupke (London: Croom Helm, 1987), 188.
[184] Tröhler and Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland," 163. See also: Hubert Bretschneider, *Der Streit um die Vivisektion im 19. Jahrhundert: Verlauf, Argumente, Ergebnisse* (Stuttgart: Gustav Fischer Verlag, 1962), 41.

against scientific barbarism. It also included a photograph "according to nature" of a smiling dog that was enjoying smoking a pipe beside a glass of beer. Under it was written: "Should animals such as this one be allowed to be cut up alive?"[185]

Nach der Natur photographirt.)
Sollen Thiere wie dieſes lebendig zerſchnitten werden dürfen?

Weber, *Die Folterkammern der Wissenschaft*, 29.

Aside from these more visceral appeals, it also contained arguments about the definition of science (*Wissenschaft*, in the larger German sense), the relationship between knowledge, suffering, and morality, and the moral and physiological relationship between humans and other animals. Theoretical physiologists performed their experiments with the intention of exploring such organic processes as the physiology of nutrition, self-regulation, the senses, the nervous system, and the effects of poisons and therapeutics. While claiming to eschew the "practical" arguments about the utility or nonutility of vivisection, Weber also emphasized that physiology was not a "*positive science*," and that it was specious to conflate physiological study with other sciences, especially physics, for it lacked both practical and scientific justification.[186] Despite the claims of the vivisectionists, Weber argued, the discoveries of past physiologists like William

[185] Ernst von Weber, *Die Folterkammern der Wissenschaft. Eine Sammlung von Thatsachen für das Laien-Publikum* (Berlin and Leipzig: Verlag von Hugo Voigt, 1879), 29.
[186] *Ibid.*, 38, 41; *Ibid.*, 11-12.

Harvey, John Hunter, Sir James Simpson, and John Bell did not result from live animal experimentation, but from the effective use of autopsies, deduction, and *a priori* reasoning.[187] Worse, vivisection could only muddle these forms of reasoning because the vivisected body was quite different from the healthy body.[188] *Wissenschaft*, science and scholarship, he argued, existed to serve human ends, and was not an end in itself. Therefore, cruelty, suffering, barbarism and the "demoralization" of society could not be part of it. Vivisection had all of these consequences.

Weber also argued that there were definite limits to human knowledge. With all of its complexities the brain could never be known in its entirety, but only appreciated through the unity of its effects. Here Weber cited George Jesse's *Notes upon the Report of the Royal Commission on Vivisection* from 1876:

> What would we think of a person who wished to cut up and tear into pieces an image by Raphael or Titian, and to examine them under the microscope in the hope that he could thereby come to an understanding of the secrets of the composition and colouring of these artworks? Are not the actions of the vivisectors exactly the same, when they seek the wonderful secrets of life through crude cutting and tearing apart of those living works of art: to try and fathom breathing and feeling organisms?[189]

As we have seen in the previous chapter, this line of reasoning was nearly identical with that employed by Schopenhauer and Wagner in their understanding of the working of genius, and the geniuses' ability to intuitively see the unities of nature without getting lost in fragmentary particulars. It is no wonder then that this was the text that Wagner claimed led him to his staunch support for the antivivisectionist cause.

At some point *Torture Chambers of Science* came to Wagner's attention, and on the 11th of August 1879 he wrote to the Dresden Animal Protection Society asking to become a member.[190] In response to his inquiry, Weber visited the Wagners in September of that year. Weber visited the Wagners on and off for the rest of that year and even sent them a copy of a work by Claude Bernard as further proof of the cruelty of vivisection.[191] After this meeting Wagner's circle

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[187] *Ibid*., 58-9.
[188] *Ibid*.
[189] *Ibid*., 76.
[190] Tröhler and Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland," 160. See also: Benjamin Steege, *Helmholtz and the Modern Listener* (Cambridge: Cambridge University Press, 2012), 225.
[191] Wagner, *Cosima Wagner's Diary, Vol. II*, 354, 355, 365, 382, 384. (Cosima Wagner does not record which book by Bernard Weber sent them, though it is likely that it was his *Introduction to the Study of Experimental Medicine*.)

became the centre of a matrix of beliefs including anti-Semitism, Schopenhauer's philosophy, antivivisectionism, and vegetarianism.[192] As Hermand observes, this matrix of beliefs played an important role in Wagner's composition of *Parsifal* (1882). Part of the narrative was dedicated to an appeal for a return to the gentle and pure vegetarianism that humans had enjoyed before they had fallen to the level of beasts of prey (*Raubtier*) by their carnivorous diet.[193] When the antivivisectionist split between moderates and radicals the same month that Wagner met him, Weber and his supporters formed the radical International Society for the Prevention of Scientific Animal Torture with Weber as the president.

Despite his overt support for Weber's cause, however, Wagner had a complicated relationship to both vegetarianism and vivisection. He claimed that he had not joined earlier animal protection societies because of their emphasis on the human cost of cruelty to animals, and rather thought it cowardice to protest their mistreatment on anything other than moral grounds. While campaigning for vegetarianism, he was a practicing omnivore, and remained so throughout his life.[194] While he abhorred vivisection, the physician was one of his highest cultural ideals, and he hoped that his son would one day become a surgeon. He made a distinction between physicians as "the secularized savior[s] of life," and the "speculative physiology" of vivisectors.[195] In part because of the friendship between his wife Cosima Wagner and Helmholtz's wife Anna von Helmholtz (1834-1899), Wagner maintained a cordial, if intellectually distant, acquaintanceship with the physiologist, even as he condemned Helmholtz's other vivisectionist colleagues.[196] Wagner cited Schopenhauer as his guiding light in matters relating to the importance of pity in the relationship between humans and animals, yet ignored the fact that Schopenhauer had only called for a restriction, not the abolition, of vivisection.

Wagner's "Open letter to Mr. Ernst von Weber, author of the pamphlet 'The Torture Chambers of Science'" appeared in the October 1879 edition of the *Bayreuther Blätter*. Wagner used many of the same arguments in it that he had previous employed against Nietzsche in

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[192] For more on Wagner's circle, see: Winfried Schüler, *Der Bayreuther Kreis von seiner Entstehung bis zum Ausgang der Wilhelminischen Ära* (Münster: Aschendorff, 1971). See also chapter four "Wagner on the Human Use of Animal Beings," in L. J. Rather, *Reading Wagner: A Study in the History of Ideas* (Baton Rouge and London: Louisiana State University Press, 1990).

[193] Jost Hermand, "Wagner's Last Supper: The Vegetarian Gospel of His Parsifal," in *Re-Reading Wagner*, eds. Reinhold Grimm and Jost Hermand (Madison: The University of Wisconsin Press, 1993), 108-113.

[194] *Ibid.*, 114.

[195] Richard Wagner, as in L. J. Rather, *Reading Wagner: A Study in the History of Ideas* (Baton Rouge and London: Louisiana State University Press, 1990), 98.

[196] Steege, *Helmholtz and the Modern Listener*, 225-227.

"Public and Popularity" (1878). Just as the genius was profaned by any attempt at systematic or fragmentary analysis, so too was living nature. Life, like genius, was a holistic, spontaneous, and even miraculous phenomenon. State funded science and the "cult of utility" that came with it was only capable of encouraging scientists and physiologists to destroy the very things that they sought to understand. The holistic impression of pity was what truly allowed individuals to understand the world around them. In his "Open Letter," Wagner offered compassion, or pity (*Mitleid*) in the place of utility, appealing to an "exact analysis of that mocked-at 'feeling' [of pity]."[197] He offered no exact analysis of this feeling in the text, although he did seek to refute those who believed that pity was a form of "sublimated egotism."[198] The text also echoed "Public and Popularity" in seeking to exonerate Darwin from charges that he had contributed to the stultifying and fragmenting effects of modern science. Here, Wagner claimed that Darwin: "an honest inquirer, a careful breeder and comparer, a scientific friend of beasts, laid once more open to us men the teachings of primeval [Brahmin] wisdom, according to which the same thing breaths in animals that lends us life ourselves; ay, shewed [sic] us past all doubt that we descended from them.[199] As this passage shows, a salient feature of the vivisection debates in Germany was how most of the major players treated the basic kinship of humans and animals as unproblematic. While Darwin's 1859 publication of the *Origin of Species* served to further support this kinship in the eyes of both physiologists and antivivisectionists, like evolutionary thought in general, Darwin was not seen as the origin of this idea. Following Schopenhauer, Wagner and his supporters saw this kinship as a primeval truth of nature that brought with it the human responsibility to protect their fellow creatures. Pity was what led to an understanding of this primal truth. As Schopenhauer had written in 1851: "*tat tvam asi*" (this art thou).

Wagner continued supporting Weber's causes until his death in 1883. Shortly thereafter, Weber released a collection of the composer's letters to him showing how the "greatest heroes of German history," Wagner and the chancellor Otto von Bismarck (1815-1898), both opposed

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[197] Richard Wagner, "Against Vivisection. *Offenes Schreiben an Herrn Ernst von Weber, Verfasser der Schrift: 'Die Folterkammern der Wissenschaft,'*" in *Richard Wagner's Prose Works, Vol. 6, Religion and Art*, trans. William Ashton Ellis (New York: Broude Brothers, 1966), 195.
[198] *Ibid.*, 197.
[199] *Ibid.*, 204. Wagner read translations of both the *Origin of Species* and *The Descent of Man*. He does not seem to have known about Darwin's support for vivisection. See: Paul Lawrence Rose, *Wagner: Race and Revolution* (New Haven: Yale University Press, 1996), 136-8.

vivisection.[200] Weber continued to benefit from the support of the *Bayreuther Blätter* and its followers until his own death in 1903.[201] Even after Wagner's death Nietzsche was still forced to wrestle with the composer's legacy.

## The Curare-arrow of Knowledge

Nietzsche's Wagnerian context was saturated with antivivisectionist sentiment that was as much personal and political as it was metaphysical and artistic. Both vivisectionists and antivivisectionists argued from a common standpoint of the many similarities between humans and other animals, and Nietzsche picked up on this point as he began publicly breaking away from Wagner's social circles. As he began to push back, at first covertly, and then openly, against Wagner he also reimagined the meaning of vivisection. Aside from physical vivisection, he also began to think in terms of subtler forms of analysis; psychological forms of vivisection that he called "psychological observations" in *Human, All Too Human*. Importantly, all forms of vivisection brought with them the question of what was meant when proponents and detractors talked about them being necessary or unnecessary. Nietzsche became increasingly convinced that some kinds of cruelty, including the cruelty of coming to terms with the nature of necessity, were required for knowledge and growth. Even the idea of "innocence" that was so often used by antivivisectionist to give a special status to animals that they denied to people was itself a form of cruelty.

Nietzsche would only overtly explore the relationship between knowledge, necessity, and cruelty that typified vivisection in *Human, All Too Human* and the works that followed after it. Publicly, his early comments on physiological vivisection were uniformly negative. In *Schopenhauer as Educator* (1874) he attacked what he called the scholarly "theoretical man's" poverty of feeling and dissecting approach to knowledge for causing the "atomistic chaos" of the modern world. He also made it clear that he did not just mean academic historians when he mentioned that they were capable of anything, "even of vivisection."[202] In his early writings vivisectionist sympathies were another sign of the *Bildungsphilister*, or anti-genius, who could

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[200] Ernst von Weber, *Bisher ungedruckte Briefe von Richard Wagner an Ernst von Weber* (Dresden: Verlag des Internationalen Vereins zur Bekämpfung der wissenschaftlichen Thierfolter, 1883), 15.
[201] Tröhler and Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland," 162.
[202] Nietzsche, "Schopenhauer as Educator," 171.

not grasp the immediate and objective unities available to true genius, or appreciate them like the genius' admirers. He even ironically asked the question how something "extra- and suprahuman" could emerge from these all too human impulses.[203] However, in his private readings and writings he had a much more complicated relationship to vivisection.

Nietzsche was actively reading the works of many provivisectionists during the late 1860s and early 1870s. As the previous chapter demonstrated, supporters of vivisection such as Lange and von Baer employed research derived from vivisection that influenced Nietzsche's thoughts about the relativity of knowledge and the physiological dimensions of genius. He also explored the works of practicing vivisectionists during the 1870s, such as Hermann Ludimar (1838-1914) and du Bois-Reymond. These physiologists would later be specifically attacked in Weber's *Torture Chambers of Science*. Nietzsche was also reading commentators who were friendly to Schopenhauer's philosophical system, but who also supported vivisection as a practice during this time. These figures included the philosopher Eduard von Hartmann (1842-1906) and Czermak. While Nietzsche expressed his antipathy to Hartmann's worldview, he had many more positive things to say about Czermak. On April 12th 1870, Nietzsche sent the Wagners a copy of Czermak's "On Schopenhauer's Theory of Colour: A Contribution to the History of the Theory of Colours." He was excited about the text because it claimed that Schopenhauer had been the first to discover the Young-Helmholtz theory of colour vision.[204] While Weber would call out Czermak for his experiments on the nervous physiology of dogs in 1879, Nietzsche had already expressed positive interest in Czermak and his work in 1870.[205] This is important to note, because it helps to show how Schopenhauer's writings helped to serve as the basis for Nietzsche's interest in vivisection in the first place, and how the young philosopher did not see any problems with sharing a physiological text by a known vivisectionist with the Wagners while they were still on friendly terms.

But Nietzsche was also cognizant of the pain inflicted on animals through vivisection. In a fragment in his early *Nachlass* from the spring/summer of 1878 he wrote: "It is like I have been

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[203] *Ibid.*, 173.
[204] Friedrich Nietzsche, "*eKGWB/BVN-1870,111 — Brief AN Carl von Gersdorff: 12/12/1870*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1870,111. See also: Wagner, *Cosima Wagner's Diaries, Vol. I,* 302-3.
[205] Weber, *Die Folterkammern der Wissenschaft*, 21.

shot by the curare-arrow of knowledge: I see everything."[206] Curare, a poison from South America that causes paralysis of the muscles that eventually leads to death by asphyxiation, was a major target of antivivisectionists' agitation. It was used in cases where anesthetic was deemed likely to interfere with the results of the experiment, particularly when experimenting on the nervous systems of animals. Weber was quick to observe that Bernard had already shown that curare was not actually an anesthetic, and that animals experimented on under its influence could feel everything that was done to them.[207] It is tempting to see this fragment from Nietzsche's *Nachlass* as a commentary on his own experience in his relationship to Wagner just before their break, and at the very least it shows his knowledge of a substance that played a major role in the debates surrounding vivisection in the 1870s and 1880s. This connection is strengthened when one considers what *Human, All Too Human* had to say about the consequences of human beings being animals.

Like Schopenhauer and Wagner, Nietzsche remained committed to the idea that humans were animals. Yet the way he sought to understand the relationship between them, and the consequences this relationship had for how human beings lived their lives was quite different. Instead of appealing to vegetarianism as the only "pure" diet for the human animal and calling for an end to animal experimentation, like Wagner, or calling for a release of our animal will that would allow us to perceive the objective "Will" in itself, like Schopenhauer, in *Human, All Too Human* Nietzsche returned to the program of physiological relativism he had begun to develop in his early unpublished writings and lectures. The text simultaneously undermined Wagner's ideas about Schopenhauer's genius while dismantling the composer's antivivisectionist position. While Nietzsche used the term psychological observation for his analysis of morality and psychology in this text, the way he talks about it sounds a great deal like a form of psychological vivisection.

In *Human, All Too Human* Nietzsche appealed to the practice of psychological observation to demonstrate that not only were humans animals, but, just like any other animal, they were not morally accountable for their actions. Both were ruled by necessity, with instinctive attraction to pleasures and the aversion to pains. If self-defence was morally justified, then every action was morally justified, for every wicked act was related to self-preservation, or the intention of

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[206] Friedrich Nietzsche, "*eKGWB/NF-1878,28[18] — Nachgelassene Fragmente Frühling–Sommer 1878,*" *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1878,28[18].
[207] Weber, *Die Folterkammern der Wissenschaft*, 40.

procuring pleasure and avoiding displeasure.[208] Even when people were pointlessly wicked, this was not evil so much as it was a kind of stupidity, failure of imagination, or innocence. Nietzsche observed that:

> When one does not know how much pain an act causes, it is not an act of wickedness; thus a child is not wicked, not evil, with regard to an animal: it investigates and destroys it as though it were a toy. But does one ever fully *know* how much pain an act causes another? As far as our nervous system extends we guard ourselves against pain: if it extended further, namely into our fellow men, we would never do harm to another.[209]

The fact that this child is investigating and destroying an animal is one of the many oblique references to vivisection in the text, which explicitly vivisects the idea of pity itself. Here it is relevant to point out that the German word that was used in these discussions, *Mitleid*, means "suffering with." This passage suggests that the German word for compassion, or pity, understood as a kind of "suffering with" is actually impossible. It is impossible to truly suffer with another person or creature because one's sense of self, one's nervous system, does not extend that far. It is only possible to know one's own suffering, and the suffering caused by the knowledge or sight of the suffering of others. Yet that form of "suffering with" is not impersonal or purely altruistic, but is instead fundamentally grounded in how an individual relates to themselves.

Nietzsche is most explicit that one of the goals of psychological vivisection or psychological observations is the vivisection of pity in the second book of *Human, All Too Human*, "On The History of the Moral Sensations." The first aphorisms of this section, beginning from "Advantages of Psychological Observation," reads like a balancing of the pros and cons of the use of physiological and psychological vivisection, coming out in their favour. He complained that: "The art of psychological dissection [*Zergliederung*] and computation is lacking above all in the social life of all classes, in which, while there may be much talk about people, there is none at all about *man*," and that such discussions cannot be found in current assessments of public events and personalities.[210] Personal polemics could not help individuals understand human psychology; psychological vivisection, however, could. It is likely that this was a critique of journals like the *Bayreuther Blätter*.

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[208] Nietzsche, *Human, All Too Human*, 53-56.
[209] *Ibid.*, 56.
[210] *Ibid.*, 31.

Despite the skill involved, Nietzsche admitted that psychological vivisection could be unpleasant to look at for those motivated only by philanthropy and not the spirit of science. It laid human motives bare and seemed to implant a sense:

> of suspicion and reductionism into the souls of men: A certain blind faith in the goodness of human nature, an innate aversion to the dissection [*Zerlegung*] of human actions, a kind of modesty in regard to the nakedness of the soul may indeed be more desirable things for the total happiness of an individual than that psychological perspicacity which may be helpful in particular cases.[211]

However, Nietzsche nevertheless came down on the side of vivisection as a mode of psychological observation and analysis because he believed that it had become necessary. The analytical basis of science as a form of *Wissenschaft*, here implying both the historical and natural sciences, could not dispense with such methods. Investigators needed to be able to take things apart in order to understand where they came from. The errors of all philosophy hitherto had depended on false assumptions about human actions and sensations, and these sensations, as psychological, historical, and indeed, physiological phenomena, could not be understood apart from their origins. To understand origins, one had to take things apart, and learn how they were built up "brick upon brick" with the courage not to be ashamed of such "modest labour." Those who have been ashamed of such labour, and here we can read Wagner, the Wagnerians, and the antivivisectionists, erected a false ethics on the basis of their erroneous analysis: "religion and mythological monsters [*Unwesen*] are then in turn called upon to buttress it, and the shadow of these dismal spirits in the end falls across even physics and the entire perception of the world."[212] This was an attack on Wagner's "mythological" worldview, as well as his ethical position. Wagner was aware of this attack in *Human, All Too Human*, and responded to it in his open letter to Weber by dismissing those who thought that *Mitleid* and unegotistical actions were just a form of "sublimated egotism."[213] Yet for Nietzsche, this kind of response was exactly why psychological observation had become necessary: "and mankind can no longer be spared the cruel sight of the moral dissecting table [*Secirtisches*] and its knives and forceps."[214]

Wagner derided the usefulness of vivisection even as he claimed that questions of usefulness should not enter into the discussion of morality. Nietzsche also equivocated about the

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[211] *Ibid.*, 32.
[212] *Ibid.*, 33.
[213] Wagner, "Against Vivisection," 197.
[214] Nietzsche, *Human, All Too Human*, 32.

extent to which psychological observation was *useful*, but stood firm on its *necessity* because science in all of its forms could not dispense with it. In defending psychological vivisection on these grounds, he provided his own description of science:

> Science, however, knows no regard for final objectives, just as nature knows nothing of it: but, as the latter occasionally brings into existence things of the greatest appropriateness and usefulness without having willed them, so genuine science, *as the imitation of nature in concepts*, will also occasionally, indeed frequently promote the wellbeing of mankind and achieve what is appropriate and useful - but likewise *without having willed it*.[215]

It is in this early discussion of psychological observation, and in its relation to vivisection, that we can start to see the seeds of the ideas that formed the basis of his "*fröhliche Wissenschaft*," or gay science. Nietzsche's gay science was a kind of innocent and playful approach to analysis that involved taking things, concepts, and morals apart, recognizing their basic components and internal necessities, and then choosing how to put them back together. Importantly, it was the willful creativity of this "putting things back together" that differentiated gay science from other forms of science that claimed to merely be uncovering an objective world. This is what made gay science closer to nature than conventional scientific approaches, because gay scientists could recognize that they were assimilating, modifying, and reproducing their experiences in a creative and relative way. However, at this earlier stage of Nietzsche's thinking he was focusing on the "incidental" qualities of science to prove a point about the contingent or non-teleological qualities of knowledge, nature, and necessity.

Arguments about the necessity of vivisection were well known to the antivivisectionists. In *Torture Chambers of Science* Weber insisted that vivisection was not necessary. It was not possible to get nature to answer questions about its organization like an inquisitor. He argued that the arguments about the necessity of vivisection were the very same ones used by the Inquisition. Just as his contemporaries considered the Inquisition to be a barbarous and senseless event, Weber argued that posterity would also judge his vivisectionist adversaries in the same way.[216]

Nietzsche inverted Weber's claim about the Inquisition when he commented on the death of the Spanish physician Miguel Serveto. Serveto featured in a serious of studies about the history of vivisection that were written in the 1870s. In 1876 Henri Tollin, a scholar from Magdeburg,

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[215] *Ibid.*, 33.
[216] Weber, *Die Folterkammern der Wissenschaft*, 59-61.

published a book on Serveto in which he sought to give the physician pride of place for the discovery of the circulation of blood. Tollin stressed that Serveto's works on the physiology of the pulmonary and nervous systems were performed to observe the "seat of the soul," and that the Spanish physician felt the only way to do this with approximate certainty was to vivisect human beings. However, since Serveto recognized that this was inappropriate [*unthunlich*] he was forced to work on embryos and observe their development.[217] Tollin would go on to write a number of books and articles on the topic of Serveto, and the relationship between religion and vivisection more generally.[218] We do not know if Nietzsche read Tollin, or reviews of his works, but a reference to Serveto in *Human, All Too Human* suggests a familiarity with the debates about Serveto that Tollin had reignited at the end of the 1870s. Nietzsche's aphorism "Judge Not" begins by cautioning readers against judging those from earlier periods of time according to modern values. Yet the first example he uses, John Calvin's burning of Serveto, inverts the anti-Catholic and anti-Semitic undercurrents of Weber's account as it presents a Protestant burning a vivisector to death. Not only was Serveto burned by Calvin, but he was burned in *absentia* by Catholic authorities and charged with being a "judaizer," a heretic who was introducing Jewish ideas into Christianity, by Catholics and Protestants alike.[219] Tollin's works were broadly reviewed in the periodical press in Germany and France.[220] His interest in Serveto was partly spurred on by his interests in both vivisection, and attempts to understand the seat of the soul, and Nietzsche's references to the Spanish physician strongly implies that Nietzsche thought

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[217] Henri Tollin, *Die Entdeckung des Blutkreislaufs durch Michael Servet, 1511-1553* (Jena: Hermann Dufft, 1876), 15-6.

[218] Henri Tollin, "*Die Engländer und die Entdeckung des Blutkreislaufs*," in *Archiv für pathologische Anatomie und Physiologie und für klinische Medizin* 98 (1884): 193-230; Herni Tollin, "*Die Engländer und die Entdeckung des Blutkreislaufs*," in *Archiv für pathologische Anatomie und Physiologie und für klinische Medizin* 97 (1884): 431-482; Henri Tollin, "*Harvey und seine Vorgänger*," in *Biologisches Centralblatt*, ed. Rosenthal, 3, 17 (November 1883): 513-537. (Which appears right before an article by Du Bois-Reymond on electrophysiology); Henri Tollin, *Matteo Realdo Colombo's Sektionen und Vivisektionen*, (Bonn: Emil Strauss, 1880); and Henri Tollin, *Charakterbild Michael Servet's* (Berlin: Carl Habel, 1876).

[219] Jerome Friedman, "Michael Servetus: The Case for a Jewish Christianity," *The Sixteenth Century* 4, 1 (1973): 87-110.

[220] See for instance: Charles Dardier, "*Michel Servet: D'Aprés ses Plus Récens Biographes,*" in *Revue Historique: Paraissant tous les deux mois*, 10 (Paris: Germer Balliére, 1879): 1-54; Kleinwächer, "*Disesa della mia memoria intorno alla scoperta della circolazione del sangue contro l'assalto dei signori H. Tollin Teologo in Magdeburg e W. Preyer Fisilogo in Jena, e qualche nuovo appunio circa la storia della scoperta medesima per G. Ceradini. Genova 1877*," in *Deutsches Archiv für Geschichte der Medicin und Medicinische Geographie*, Vol. 1, eds. Heinrich Rohlfs and Gerhard Rohlfs (Leipzig: C. L. Hirschfeld, 1878), 475-476; and Theile, "*C. Kritiken: Die Entdeckung des Blutkreislaufs durch Michael Servet (1511-1553)*," in *Schmidt's Jahrbücher der In- und Ausländischen Gesammten Medicin*, ed. Adolf Winter (Leipzig: Otto Wigand, 1877), 292-295.

about the physician as someone involved in an enterprise similar to his own, vivisecting "psychological observations."

The burning of heretics by both Catholics and Protestants were both examples of the cruelty of earlier generations. Nietzsche argued that at the time both Calvin's burning of Serveto and the tortures of the Inquisition were equally innocent because everyone involved believed that they were saving the world from eternal damnation. The idea of how others suffer was very weak within individuals and could easily be overridden by the belief in eternal ideals. Nietzsche argued that while his contemporaries had come to believe that the views about God and religion that motivated the Reformation were false, contemporary political dissidents were treated just as cruelly because modern society believed instead in the necessity of the state. The torturers of the Inquisition and Reformation were innocent in the same way children were innocent towards animals, even as they destroy them: "The cruelty towards animals exhibited by children and Italians is attributable to want of understanding; the animal has, especially in the interest of ecclesiastical teaching, been placed too far below man."[221] He concluded from his considerations of the cruelty of innocence that egoism was not evil, because the idea of another is very weak in the human animal: "That the other suffers has to be *learned*; and it can never be learned fully."[222] Humanity had not had much time in which to learn that others suffer, and even the humans of the nineteenth century were essentially the same as those of the Reformation.

Nietzsche admitted that people in the nineteenth century no longer forced their opinions on others physically in quite the same way as their Reformation forbearers. Nevertheless, there were still those who contradicted the opinions of others with violent polemics and outbursts of rage. Nietzsche implied that any critic involved in personal polemics only: "betrays clearly that he would have burned his opponents if he had lived in another age, and that he would have had recourse to all the methods of the Inquisition if he had been an opponent of the Reformation."[223] While the Inquisition was reasonable at the time, insofar as the inquisitors involved saw themselves acting out of necessity and self-defence, they were only able to commit their violence because they believed that they possessed an absolute truth and were thus obliged to do anything possible to maintain it. Here, Nietzsche is indirectly subverting the vivisectionists' arguments to

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[221] Nietzsche, *Human, All Too Human*, 55. Nietzsche's reference to Italians here may well be a reference to how Zöllner described human vivisection in Italy in his antivivisectionist writings.
[222] *Ibid.*, 55.
[223] *Ibid.*, 201.

show that their own heated polemics indicated a similar backward (*zurückgeblieben*) inquisitorial mindset as the Reformation. Those who were more in tune with the current age recognized that no one was in possession of the truth:

> [T]he rigorous procedures of inquiry have propagated distrust and caution, so that anyone who advocates opinions with violent word and deed is felt to be an enemy of our present-day culture, or at least as one retarded. And the pathos of *possessing* truth does now in fact count for very little in comparison with that other, admittedly gentler and less noisy pathos of seeking truth that never wearies of learning and examining anew.[224]

Nietzsche recognized the importance of uncertainty and the dangers of absolutes. However, he also saw how those values that people esteemed the most grew out of those they esteemed the least. Even the dangers and cruelties of the Inquisition and the Reformation were necessary from a historical perspective, and could not be judged in any absolute moral way if modern observers wanted to go beyond the same kinds of moralizations that led to the Inquisition and the Reformation in the first place. This acknowledgment of uncertainty and necessity led Nietzsche to the position of the curare-paralyzed observer of natural and moral phenomenon.

One of the great ironies of existence that Nietzsche explored in *Human, All Too Human* was the way in which human beings are from their very beginnings illogical and unjust, because their judgments about the value of life have evolved from more basic material: "Good actions are sublimated [*sublimirte*] evil ones; evil actions are coarsened, brutalized good ones."[225] Not only this, but human evaluations are by necessity premature and limited in relationship to both themselves and to other things in the world because both are constantly in a state of flux. However, the irony creeps in because human beings are particularly well placed to recognize the illogical aspect of their origins and judgments. They cannot even avoid forming these illogical and unjust judgments, because human aversions and attractions are judgments at their most basic physiological level.[226]

Nietzsche's psychological observations continue a theme he developed in his essay on "Truth and Lies" (1873). Humanity has no goal (just as science as "the imitation of nature in concepts" has no goal). Humans interpret and evaluate the world with the same physiological necessity with which spiders spin their webs, and human intelligence is squandered as nature

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[224] *Ibid.*
[225] *Ibid.*, 54.
[226] *Ibid.*, 28.

squanders thousands of seeds for the sake of producing a single tree. This knowledge oppresses those who feel that their freedom of will is the seat of their dignity. Yet those with a cheerful and creative temperament able to "hover" over and compare individuals, customs, laws, and traditional values will find in this very necessity the source of their contentment. These people do not need to be on their guard: "against malice or sudden outbursts and in whose utterance there is nothing of snarling and sullenness - those familiar tedious qualities of old dogs and men who have long been kept on the leash."[227] In this regard free spirits were the very opposite of those who took after the Reformation and Inquisition, the antivivisectionists and their allies.

It is telling that the last aphorism of the second section of *Human, All Too Human*, "Unaccountability and Innocence," returns to the theme of how different historical periods judge each other differently. This time, however, it is not the past, and the Inquisition, that Nietzsche considers, but the way in which all present actions are stupid [*dumm*] considered from the perspective of the future. Yet before humanity gives into despair, it is important to remember that such pain was the pain of the creation of new values:

> The butterfly wants to get out of its cocoon, it tears at it, it breaks it open: then it is blinded and confused by the unfamiliar light, the realm of freedom. It is in such men as are *capable* of that suffering - how few they will be! - That the first attempt will be made to see whether mankind could *transform itself from a moral to a knowing mankind*.[228]

Nietzsche's claim, that everything is necessary, that even egoism, vanity, and cruelty have as "their finest flower, the sense for truth and justice in knowledge," and that therefore everything is innocent, reads like a counterpoint to Wagner's Parsifal, the "holy fool" of purity, innocence, and vegetarianism.[229] Yet while Parsifal began his journey to Wagnerian purity and innocence after having shot a swan with his bow and arrow, it was Nietzsche himself who felt struck by the "curare-arrow of knowledge." The paralysis was not muscular, but was a paralysis of accountability brought about by the knowledge of what was necessary in nature. With this realization Nietzsche's "holy fools," the intellectually vivisecting, comparing free spirits were developing:

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[227] *Ibid.*, 30.
[228] *Ibid.*, 58.
[229] Nietzsche's critiques of "innocence" as critiques of Wagner's worldview are particularly pointed considering a passage from Cosima Wagner's diaries from 1879. In one passage she records an exchange she had with Wagner: "Wagner 'I live like a sort of animal.' Cosima: 'Yes, in innocence.'" Wagner, *Cosima Wagner's Diary, Vol. II*, 367.

> a new habit, that of comprehending, not-loving, not-hating, surveying is gradually implanting itself in us […] and will in thousands of years' time perhaps be strong enough to bestow on mankind the power of bringing forth the wise, innocent (conscious of innocence) man as regularly as it now brings forth - *not his antithesis but necessary preliminary* - the unwise, unjust, guilt conscious man.[230]

This is a very different image of innocence from the one found in Parsifal, or in Weber's *Torture Chambers of Science*. Not only did it develop out of Nietzsche's changing thoughts about genius in the context of the vivisectionist controversies, but it highlighted his thought about the kinds of actions that were possible and meaningful for those who were not part of a moral, but of a knowing humanity.

## Zöllner's Psychological Vivisection

Nietzsche arrived at his understanding of the the close relationship between necessity, knowledge, cruelty, and innocence from how he applied the methods of physiological vivisection to his own particular form of psychological vivisection. His understanding of psychological vivisection also had precedence in the writings of the astrophysicist and antivivisectionist Friedrich Zöllner. However, rather than being a form of analysis and reflection, Zöllner's version of psychological vivisection largely amounted to personal attacks and invectives against vivisectionists themselves. He argued that such cruel rhetoric was necessary, since it was the only language that vivisectionists could understand. Initially, Nietzsche supported Zöllner as a fellow outsider intellectual whose attacks on reductionism complemented Nietzsche's own early attacks on historical reductionism. Yet when he broke with Wagner's circle he also broke with Zöllner. Zöllner claimed that there was a close, pathological, relationship between vivisection, nihilism, and immorality. Nietzsche would invert Zöllner's assessment to argue that antivivisectionism was closer to a pathology. Likewise, Zöllner argued that vivisection could never be part of a systematic science and had more in common with what he considered to be the haphazard and non-theoretical practice of alchemy. Nietzsche countered this by arguing that moralizing was a pre-scientific form of psychology, and that just as alchemy was a necessary precursor to chemistry, moralizing would give way to psychology.

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[230] Nietzsche, *Human, All Too Human*, 59.

Nietzsche was not just rejecting Wagner's and Schopenhauer's sense of holism, genius, and innocence with his renewed interest in vivisection, he was also responding to the continued influence of the *Bayreuther Blätter*, the anti-Semitic antivivisectionists in his own family, and to the writings of Zöllner. Zöllner died a year before Wagner, but both continued to influence the polemics surrounding vivisection throughout the 1880s, and both were praised as some of the most important artistic and scientific opponents of vivisection. Zöllner trained in Berlin before moving to Leipzig in 1872 to take up a position at Leipzig University. He became known for the improvements he made to the spectroscope, which allowed him to prove that the Doppler effect applied to the apparent red shift of stars, as well as for his invention of the Zöllner illusion, which will be discussed further in chapter four. He counted among his friends the well-known physiologist and experimental psychologists Wilhelm Wundt and Gustav Fechner (1801-1887). However, he was most infamous for his anti-Semitism, his support of spiritualism, and for his frequent polemics against "foreign" influences in German science. Helmholtz and du Bois-Reymond were frequently the target of these attacks. Zöllner charged them with enthroning the naive empirical approaches of England (Helmholtz) and France (du Bois-Reymond) into German science. Robin Small, in his *Nietzsche in Context* has observed the influence that Zöllner had on Nietzsche's early thought about the structure of space and the scientific method, and describes Nietzsche's early sympathy for the astrophysicist as a fellow outsider scholar and educational reformer.[231] Nietzsche was likely first introduced to Zöllner's ideas through *On the Nature of Comets*.

Nietzsche enthusiastically read Zöllner's *On the Nature of Comets* when it was first published in 1872, and borrowed it from the Basel University library several times in 1872, 1873, and 1874. The main point that Nietzsche praised during this time was Zöllner's critique of the "endless experiments and the lack of logical-deductive force" that he claimed haunted the historical sciences just as much as the natural.[232] Here, Nietzsche cited the historian Leopold von Ranke (1795-1886), now considered the father of modern, source based history, as an example of this trend. He complained about: "The faulty developmental logic! It is atrophied through

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[231] Robin Small, *Nietzsche in Context* (Aldershot: Ashgate, 2001), 59-79.
[232] Friedrich Nietzsche, "*eKGWB/NF-1873,29[24] — Nachgelassene Fragmente Sommer–Herbst 1873. 29[24],*" *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1873,29[24].

historical studies. Zöllner, too, complains."[233] This interest is in keeping with Nietzsche's early critiques of the scholarly vivisector, *Bildungsphilister*, or theoretical man who was unable to see the whole of life, but only its parts. Zöllner made his only appearance in Nietzsche's published writings in "On the Uses and Disadvantages" (1874) in his *Untimely Meditations* where Nietzsche sought to show how the dramatist, unlike the historian, was able to "think of all things in relation to all others and to weave the isolated event into the whole."[234] The unity that he described here was not in the historical events themselves, but was lent to them through the creative imagination of the dramatist. While generalizations were what made laws possible in other sciences, historians only showed the weakness of their science through their generalizations, for what they produced was completely familiar and trivial: "To incommode whole nations and expend years of wearisome toil on it, however, is merely to pile experiment upon experiment long after the law intended to be extracted from them has been amply demonstrated: a senseless excess of experimentation which has in fact plagued the natural sciences since the time of Zöllner."[235] Indeed, in his early notes Nietzsche almost exclusively refers to Zöllner in the context of his own attacks on historical reductionism. As we have already seen, this was the same line of reasoning that led him to equate historical criticism with vivisection in "Schopenhauer as Educator" (1874). Zöllner's critique of the "excess of experimentation" would likewise be picked up by Weber in the context of the antivivisectionist debates.[236]

After *On the Nature of Comets* appeared in 1872 Zöllner wrote a series of essays from 1878 to 1881 that were eventually collected together and titled *Scientific Papers*. One of these papers, "On the Freedom of Science and the Necessity of a Moral Rebirth of the German Spirit" appeared in 1878 and was cited by Weber in *Torture Chambers of Science*. In 1880 Zöllner's major antivivisectionist work *On the Scientific Abuse of Vivisection* also appeared. It is noteworthy that *On the Scientific Abuse of Vivisection* did support some forms of vivisection,

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[233] Friedrich Nietzsche, "*eKGWB/NF-1873,29[200] — Nachgelassene Fragmente Sommer–Herbst 1873. 29[200],*" *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1873,29[200]. See also, Friedrich Nietzsche, "*eKGWB/NJ-1 — Ein Neujahrswort: [Text]. Erste Veröff. 17/01/1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NJ-1; Friedrich Nietzsche, "*eKGWB/NF-1873,29[92] — Nachgelassene Fragmente Sommer–Herbst 1873. 29[92],*" *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1873,29[92].

[234] Nietzsche, "On the Uses and Disadvantages," 91.

[235] *Ibid.*, 92.

[236] Weber, *Die Folterkammern der Wissenschaft*, 28.

what Zöllner called the "psychological vivisection" (*psychologischen Vivisectionen*) of personal polemics.[237] Zöllner admitted that there was something unpleasant in every polemical exchange "like the sight of a battle or a bloody battlefield." It was unpleasant because it reminded people of the "imperfections and infirmities" of humanity's earthly form of existence.[238] He insisted that his readers should not turn away from such unpleasantness, because the struggle was worth it for the creation of a new culture. Zöllner couched this discussion in the rhetoric of the military sacrifices made during the Franco-Prussian War for the founding of Germany, implying that he, too, was fighting for the honour of the fatherland. This led him to believe that future generations would forgive him for the vitriol of his polemics. He had already argued that such polemics were necessary in *On the Nature of Comets* because scientists were also part of a social structure that was susceptible to moral and intellectual corruption.[239] This meant that in order to expose the corruption of a specific clique of scientists, it was necessary to target the major representatives of the group. Here he cited the physicist Georg Christoph Lichtenberg (1742-1799), who had written that: "It is a kind of duty to make the weaknesses of great people known, so that you set thousands right without harming them [the great people]."[240] By 1880 Zöllner had begun turning this form of psychological vivisection against physiologists themselves. He argued that the only way to combat the "generally recognized intellectual and moral defects" of German society was to target their "outstanding personal supporters."[241] Yet even here he was referencing what he had already written in *On the Nature of Comets*, where he made the claim that: "I consider such psychological vivisection no less morally permissible in the service of truth and knowledge than the more painful physiological [vivisection] and even necessary, if it can not be done in any other way."[242] Although Zöllner was more amenable to the idea of physiological vivisection when necessary in the early 1870s, by the end of the decade he was calling for it to be severely

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[237] Friedrich Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection* (Leipzig: Commissionsverlag von L. Staackmann, 1880), 14-15. See also: Friedrich Zöllner, *Über die Natur der Cometen. Beiträge zur Geschichte und Theorie der Erkenntnis*, second edition (Leipzig: Verlag von Wilhelm Engelmann, 1872), LXIII. Considering the role of personal polemics in Zöllner's account of psychological vivisection, and what it became through Nietzsche's practice of psychological observations, it is worth noting that Nietzsche chose to call *The Genealogy of Morals*, where he was practicing his own kind of psychological vivisection, a *Streitschrift*, or polemical pamphlet.
[238] Friedrich Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 14-15.
[239] Zöllner, *Über die Natur der Cometen*, LXII-LXIII.
[240] *Ibid.*, LXIII.
[241] Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 15.
[242] *Ibid.*

restricted, if not outright abolished.[243] The idea of psychological vivisection was a rhetorical tool that he used to justify his heated polemics against proponents of physiological vivisection and those, like Helmholtz or du Bois-Reymond, who he took to be corrupting influences on German science.

Zöllner explored a further psychological dimension of vivisection in *On the Scientific Abuses*: the relationship between nihilism, psychology, and vivisection. Here he had in mind what he called the politically radical and subversive "Russian" nihilism of figures like Karl Nobiling (1848-1878), the German liberal who made an attempt on the life of Kaiser Wilhelm I in 1878. Political nihilism in Russia was understood as a branch of anarchism that refused to acknowledge external authorities, especially those imposed by the nation state. There were figures who identified themselves as nihilists in Russia, such as the radical socialist and materialist philosopher Nikolay Chernyshevsky (1828-1889). However, like the term anarchist, nihilist was often used as a broad term of abuse. Despite the fact that Nobiling does not appear to have identified himself as a socialist or anarchist, Bismarck used his attempt on the Kaiser's life to pass antisocialist legislation. In 1884 Bismarck gave a lecture in front of the *Reichstag* where he associated the rise of political radicals, broadly construed as socialists, communists, anarchists, and nihilists with the rise of Russian nihilism among Russian and German students:

> The nihilists are composed of the *Abiturproletariat* [sic] [proletariat who had passed their final secondary-school examinations], that surplus that the scholarly instruction at the [Russian] Gymnasium supplies to a society unable to digest them [...]. The Russian authorities find that university students, who in their last years of secondary school dreamed of a future at the apex of public affairs as governors and high dignitaries, are happy after their stipends expire to find a position as a night watchman. It is this overproduction of half educated people that leads to nihilism.[244]

Zöllner claimed that certain forms of education, like a background in physiology, ensured the training of political radicals by instilling a poverty of socially acceptable moral feeling and a disrespect for authority. He argued that Nobiling's "nihilism" was largely a product of the fact that he studied medicine and likely witnessed several vivisections. Zöllner argued that

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[243] Weber, *Die Folterkammern der Wissenschaft*, 68-75.

[244] Otto von Bismarck, as in James C. Albisetti, *Secondary School Reform in Imperial Germany* (Princeton: Princeton University Press, 1983), 102. See also: Matthew P. Fitzpatrick, "A State of Exception? Mass Expulsions and the German Constitutional State, 1871–1914," in *The Journal of Modern History*, 85, 4 (December 2013): 772-800.

vivisection led to this kind of socially harmful nihilism and described a series of heated exchanges he had had with the physiologist Carl Ludwig to prove his point.[245]

As Small has observed, there are several similarities between Zöllner's polemical approach and Nietzsche's, many of which are attributable to the general style of German academic polemics at the time.[246] Zöllner and Nietzsche both employed rhetorical magnanimity alongside their personalized polemics. Like Nietzsche, Zöllner claimed that despite his vitriol he could say with a clear conscience that he had neither personal nor professional enemies.[247] However, some of their rhetorical similarities are more specific. In particular, Zöllner argued that it was necessary to employ the rhetoric of nutrition, digestion, and violence if he wanted to be understood by vivisectionists and physiologists such as Ludwig and du Bois-Reymond.[248] Zöllner also cited the infamous passage in Bernard's 1865 work *Introduction to the Study of Experimental Medicine* to demonstrate the kind of language used by vivisectors. He argued that it was representative of the kind of language antivivisectionists would have to also employ in order to make their case heard:

> the physiologist is not an ordinary man: he is a scientist [*ein Gelehrter*, in Zöllner's translation], possessed and absorbed by the scientific idea he pursues. He does not hear the cries of animals, he does not see their flowing blood, he sees nothing but his idea, and is aware of nothing but an organism that conceals from him the problem he is seeking to resolve.[249]

While current scholars such as Waite single out Nietzsche for the violence of his rhetoric, they do not realize that it was common at the time, and characterized both those in favour of, and those opposed to, the practice of vivisection at the end of the nineteenth century. Nietzsche rejected Zöllner's physiological antivivisectionism and holism when he broke from Wagner, but her retained some of his strategies of rhetorical vivisection.

But going beyond Zöllner, Nietzsche came to believe that psychological vivisection was not just a way to dissect rhetorically one's intellectual opponents through personal polemics. Properly understood as a form of psychological analysis it was an important resource for self-

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[245] Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 27-33.
[246] Small, *Nietzsche in Context*, 64.
[247] Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 16.
[248] *Ibid.*, 45-46.
[249] Claude Bernard, *Introduction to the Study of Experimental Medicine*. Referenced in: Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 25-26, 58-59.

understanding and the understanding of where morals and values come from. Importantly, for Nietzsche this form of psychological vivisection presupposed a basis in physiological vivisection. Physiological vivisection grounded those interested in understanding psychology in how the brain and nervous system functioned, and how these functions related to the feeling of mind, consciousness, perception, and values, which were themselves objects of study suited to psychological observations and vivisection. In Nietzsche's *Nachlass* in the early part of 1884 he explicitly listed Zöllner's antivivisectionism as one of the astrophysicist's failings:

> The courage of head and heart is what characterizes us Europeans: acquired through the wrestling of many opinions. The greatest flexibility in the struggle with religions that have become subtle, and a harsh rigour, indeed cruelty. Vivisection is a test: whoever can not withstand it, is not one of us. (And otherwise it usually gives us an indication that he does not belong to us, e.g. Zöllner.)[250]

There was an element of necessary, methodological cruelty in psychological vivisection. It required the same kind of attention to intellectual honesty and realization that the truth was not necessarily comfortable that Nietzsche thought characterized its physiological counterpart. In this context Zöllner's opposition to vivisection was a sign of his decadence, which also characterized Wagner, for it showed how the astrophysicist could not come to terms with what it took to learn how ideas, morals, individuals, or living things came in to existence. Yet nihilism and the pathology of decadence were not the only concepts that Nietzsche inverted from the heated polemical exchanges of the vivisection debates. He also employed Zöllner's attack on alchemy to show how Zöllner's moralizing was the antithesis of knowledge and science.

Just as in the case of Nietzsche's use of the Inquisition, understanding the vivisection debates helps to shed light on the subtext of some of Nietzsche's discussions of alchemy.[251] For Zöllner and many antivivisectionists at the end of the nineteenth century vivisection was like

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[250] Friedrich Nietzsche, "eKGWB/NF-1884,25[307] — Nachgelassene Fragmente Frühjahr 1884. 25[307]," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1884,25[307].

[251] See for instance in Nietzsche's published work: Nietzsche, "Beyond Good and Evil," 234-5; Friedrich Nietzsche, *Daybreak: Thoughts on the Prejudices of Morality*, eds. Maudemarie Clarke and Brian Leiter, trans. R.J. Hollingdale (Cambridge: Cambridge University Press, 1997), 71. In England many antivivisectionists associated vivisectionists with both inquisitors and alchemists. See: Edward Berdoe, "Is Vivisection Physiology," in *The Animal's Defender and Zoophilist* 12 (August 1 1892): 107-8; Louise de la Ramee (Ouida), "The New Priesthood" in *Animal Welfare and Anti-Vivisection 1870-1910: Nineteenth Century Women's Mission*, ed. Susan Hamilton (New York: Routledge, 2004), 267-268, 430; Mark Thornhill, *The Morality of Vivisection* (London: Hatchards, 1885), 16; Lawson Tait, *The Uselessness of Vivisection Upon Animals as a Method of Scientific Research* (Philadelphia: The American Anti-Vivisection Society, 1883), 21; Frances Power Cobbe, *The Moral Aspects of Vivisection*, fourth edition (London and Edinburgh: Office of the Society for Protection of Animals from Vivisection, 1882), 10; and Anonymous, *Physiological Fallacies* (London: Williams and Norgate, 1882), 199.

alchemy. Both were presented as senseless movements that sought to take things apart in the vain effort to understand them. In response to an anonymous article that emphasized that vivisection was hardly an arbitrary and goalless "cutting and destroying" of living beings, Zöllner replied that even alchemy had goals. However, that was not enough to prevent the alchemists from sacrificing untold amounts of time and money trying to achieve the impossible.[252] While the alchemists had goals, they had no coherent overarching theory, in short, no *Wissenschaft*, that would let them know if those goals were attainable, and if so, how to attain them. Zöllner, like many of his contemporaries, equated alchemy with what he saw as haphazard empirical practices.[253] In this regard his critique of alchemy was a corollary to his critique of the piling up of "useless" and immoral experiments that Nietzsche had found so attractive in his early work.

But in 1881 Nietzsche challenged this alchemical rhetoric by turning it back around to those, like Zöllner, who thought about morality in absolute terms. In *Daybreak*, in the aphorism "There Are Two Kinds of Deniers of Morality" he insisted that moral judgments were not based on truth, but that instead they were really errors that brought about human actions. He claimed that: "I deny morality as I deny alchemy, that is, I deny their premises: but I do *not* deny that there have been alchemists who believed in these premises and acted in accordance with them."[254] Morality and immorality were not in the world, so much as they were in the human need to form interpretations of the world, and it was a testament to a person's degree of circumspection that they could tell the difference. A year later Nietzsche expanded upon this thought, implying that religion and morality themselves were the pre-scientific preludes to the actual science of psychology, much as alchemy was one of the preludes to the natural sciences.[255] He asked in the aphorism "Preludes to Science [*Wissenschaft*]":

> Do you really believe that the sciences would ever have originated and grown if the way had not been prepared by magicians, alchemists, astrologers, and witches whose promises and pretensions first had to create a thirst, a hunger, a taste for *hidden* and *forbidden* powers? Indeed, infinitely more had to be *promised* than could ever be fulfilled in order that anything at all might be fulfilled in the realm of knowledge.[256]

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[252] Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 23.
[253] Zöllner, *Über die Natur der Cometen*, LXI.
[254] Friedrich Nietzsche, *Daybreak*, 60.
[255] He was to repeat this comparison between morality and alchemy in aphorism 32 in *Beyond Good and Evil*: Nietzsche, "Beyond Good and Evil," 234-5.
[256] Friedrich Nietzsche, *The Gay Science: With a Prelude in Rhymes and an Appendix of Songs*, trans. Walter Kaufmann (New York: Vintage Books, 1974), 240-1.

Just as these "preludes and preliminary exercises" were the basis of science, Nietzsche reasoned that religion and morality were likewise preludes and preliminary stages of the hunger for knowledge about the self, and in particular, how the self creates the objects of its own desires. He was implying that religion was the pre-scientific prelude to the "vivisection" of psychological observation. Previous accounts of morality never sought to study it, to take it apart, but only provide justification for preconceived ideas. Earlier moral commentators only approached morality:

> as the morality of their environment, their class, their church, the spirit of their time, their climate and part of the world— just because they were poorly informed and not even very curious about different peoples, times, and past ages— they never laid eyes on the real problems of morality; for these emerge only when we compare *many* moralities.[257]

In a likely nod to physiological analysis, and possibly Bernard himself, Nietzsche concluded the passage with the comment that what was needed, instead of a justification for morality and the faith in morality, was "an examination, analysis, questioning, and vivisection" of the faith in morality itself.[258] He continued this line of thought in the aphorism "The Wanderer Speaks," in which he encouraged his readers to try and see European morality from a distance, measuring it against other moralities from the past and future: ""Thoughts about moral prejudices,' if they are not meant to be prejudices about prejudices, presuppose a position *outside* morality, some point beyond good and evil to which one has to rise, climb, or fly— and in the present case at least a point beyond *our* good and evil."[259] Nietzsche would later suggest that one of the key reasons why novelty was so often equated with evil was exactly because such novelty forced the members of a society to compare themselves with it, and thus begin to try and examine themselves critically.[260] From within any system of morality comparison was necessarily a transgression because by definition in order to be a comparison instead of a prejudice about a prejudice it had to look beyond the limits of any given moral system. What was needed in order to understand morality, instead of exercising it, was a typology and comparison of different moral systems. Yet:

> What the philosophers called 'a rational foundation for morality' and tried to supply was, seen in the right light, merely a scholarly variation of the common *faith* in the prevalent

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[257] *Ibid.*, 287-88.
[258] *Ibid.*, 288.
[259] *Ibid.*, 342.
[260] *Ibid.*, 79.

> morality; a new means of *expression* for this faith; and thus just another fact within a particular morality; indeed, in the last analysis a kind of denial that this morality might ever be considered problematic— certainly the very opposite of an examination, analysis, questioning, and vivisection of this very faith.[261]

Shortly after this critique he referenced the "almost venerable innocence" Schopenhauer displayed when he tried to describe the scientific standing of morality. Here he quoted Schopenhauer's claim that:

> The principle, […] the fundamental proposition on whose contents all moral philosophers are *really* agreed— [Hurt no one; rather, help all as much as you can] that is *really* the proposition for which all moralists endeavour to find the rational foundation … the *real* basis of ethics for which one has been looking for thousands of years as for the philosopher's stone.[262]

It is no accident that this reference comparing moral philosophers' quest to find a rational grounding for morality with the alchemists' quest for the philosopher's stone follows immediately after a discussion of psychological vivisection. They were intimately linked in the broader debates around vivisection and Zöllner's rejection of it as a scientific practice. This point is reinforced by a section from Nietzsche's *Nachlass* from 1882 in which he wrote: "Morality is a pre-scientific form of explanation to come to terms with our emotions and states. Morality relates to an erstwhile pathology of common sensibility [*Gemeingefühle*], as alchemy does to chemistry."[263] Nietzsche had a persistent interest in the relationship between sensibility and emotions; the relationship between emotional and physical feelings and what was believed about those feelings.[264]

The term *Gemeingefühl* is important here. It is a specifically physiological definition for the sensation of inhabiting one's body that comes about from the interpretation of multiple different stimuli from around the body. Such sensations as thirst, hunger, fatigue, or lust, would be considered as the byproducts of "common sensibility." Nietzsche borrowed Otto Funke's (1828-1879) 1863-1866 work *Physiology Textbook for Academic Lectures and for Independent Study* from the Basel University Library in 1870. It contained a number of references to the

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[261] Nietzsche, "Beyond Good and Evil," 288.
[262] *Ibid.*, 288-9.
[263] Friedrich Nietzsche, "*eKGWB/NF-1882,3[1] — Nachgelassene Fragmente Sommer–Herbst 1882*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1882,3[1].
[264] Christopher Janaway and Simon Robertson, *Nietzsche, Naturalism, and Normativity* (Oxford: Oxford University Press, 2012), 244-5.

German physiologist Ernst Heinrich Weber (1795-1878), whose 1851 work *The Doctrine of the Senses of Touch and Common Sensibilities Experimentally Established* presented common sensibility as the vital, but illusory sense of wholeness that is inferred by an organism.[265] While Funke's was not the only work on sensibility that Nietzsche encountered during the 1870s, it was one of the few places where the term *Gemeingefühle* was mentioned. Nietzsche's 1882 reference to the term likely signals his thoughts about the rhetorical debates that related alchemy to vivisection at the start of the 1880s and Zöllner's place within those debates. By calling morality a pathology of common sensibility, like alchemy to chemistry, Nietzsche was implicitly inverting Zöllner's arguments about alchemy to argue that vivisection in all of its physical and metaphorical forms was in fact the very basis of *Wissenschaft* and not its antithesis. Indeed, in order to be a form of *Wissenschaft*, psychological vivisection required physiological vivisection. As he wrote in his *Nachlass* during the winter of 1883-1884:

> The belief in 'affects' [*Affekte*]. Affects are a construction of the intellect, a fabrication of causes that do not exist. All common sensibilities [*Gemeingefühle*] of the body, that we do not understand, are interpreted intellectually; that is, a reason to feel such or such is sought after, in persons, experiences, and so on. Thus something harmful, dangerous, strange is posited as if it were the cause of our displeasure: actually it is sought after in addition to the displeasure, to allow us to conceive our state. — Frequent influxes of blood to the brain, accompanied by a feeling of suffocation, are interpreted as anger. — The people or things that provoke us to anger are triggers of the physiological state. Subsequently, through long habit certain occurrences and common sensibilities are so regularly connected that the sight of certain occurrences produces that state of the common sensibilities and brings with it specifically that congestion of the blood, arousal of the semen, etc.: thus, we then say by proximity that "the affect is excited." In "pleasure" and "displeasure" there are already judgments: the stimuli will determine whether they are conducive to the feeling of power or not.[266]

In order to understand how humans interpret their sensations and judgments, one had to understand their physiological preconditions, which were in themselves a form of judgment.

Nietzsche grew to have much more overt respect for empirical methods and methodological reductionism in the 1880s than he had throughout most of the 1870s, and along with this came his reexamination of vivisection. He was not the only person talking in terms of psychological vivisection around the early 1880s. Even here, his rhetoric was shaped by German

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[265] Otto Funke, *Lehrbuch der Physiologie für akademische Vorlesungen und zum Selbststudium*, Vol. 1 (Leipzig: Leopold Voss, 1866), 574, 578, 614, 617.

[266] Friedrich Nietzsche, "*eKGWB/NF-1883,24[20] — Nachgelassene Fragmente Winter 1883–1884. 24[20]*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1883,24[20].

academic norms and the vivisection controversy. Antivivisectionists accused vivisectors such as Bernard and du Bois-Reymond of pursuing the "impossible" and immoral goal of showing how living beings were like organic machines composed of basic chemical elements, and this brought the rhetoric of chemistry, and alchemy, into the debates. This may be one reason why Nietzsche often chose the word *sublimieren* over the more Hegelian sounding *aufheben* when describing the sublimation of "evil" things into "good" things.[267] It was an explicitly chemical analogy that implicitly showed his support for the forms of analysis performed by vivisectionists and historians alike. Part of denying physiology's status as a proper *Wissenschaft* involved likening it to other "unscientific" practices, such as alchemy. Yet in the face of these discussions Nietzsche rhetorically repositioned the value of alchemy, presenting it as a necessary precursor to chemistry, in just the way that religion and morality were pre-scientific precursors to psychological analysis or psychological vivisection. Even if vivisection was in some ways at the "pre-scientific" stage of alchemy this nevertheless did not destroy its value as a source of hunger and interest, spurring on humanity's desire to understand itself, and from where its values came.

## The *Bayreuther Blätter* and the Brothers Förster

Nietzsche developed his own form of psychological vivisection that inverted the moralizing direction of Zöllner's ideology. He also inverted Zöllner's claims that vivisection led to nihilism and degeneration, as well as the astrophysicist's denial that vivisection could be part of a systematic science. However, the arguments that Wagner and Zöllner had made throughout the 1870s lived on after them in the pages of the *Bayreuther Blätter*, propagated by Nietzsche's brother in law Bernhard Förster, and Bernhard's brother Paul Förster. When Nietzsche singled out Wagner in his published writings, he was also using him to target the remains of Wagner's circle who were perpetuating the composter's arguments about vivisection and science throughout the 1880s.

In *The Case of Wagner* (1888) Nietzsche commented that the moral and intellectual dishonesty of Wagner's circle in Bayreuth and in the *Bayreuther Blätter* were not exceptional,

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[267] For another discussion of Nietzsche and chemistry, see: Duncan Large, "Nietzsche's Conceptual Chemistry," in *Nietzsche and Science*, eds. Gregory Moore and Thomas H. Brobjer (Aldershot: Ashgate Publishing, 2003), 192-195.

but characterized a broader pattern of hypocrisy with a 'good conscience' that was typical of modern life. Harkening back to Zöllner's approach to psychological vivisection that stressed the importance of targeting a movement's "outstanding personal supporters," Nietzsche set his sights on Wagner:[268]

> *A diagnosis of the modern soul*— where would it begin? With a resolute incision into this instinctive contradiction, with the isolation of its opposite values, with the vivisection of the *most instructive* case.— The case of Wagner is for the philosopher a *windfall*— this essay is inspired, as you hear, by gratitude.[269]

Nietzsche's resistance to the community surrounding the *Bayreuther Blätter* set the tone for his later critiques after the composer himself passed away in 1883. Wagner increasingly played a double role in Nietzsche's writings. On the one hand, he was the composer who Nietzsche had admired in his youth and then come to see as human, all too human. On the other hand, he was the symbolic figurehead of a larger movement that Nietzsche outright opposed. In *Ecce Homo* (1888) Nietzsche further elaborated on the entanglement of Wagner with his followers. He claimed that he had special knowledge of their methods and follies: "I think I know the Wagnerians; I have experienced three generations, beginning with the late Brendel who confounded Wagner and Hegel, down to the 'idealists' of the *Bayreuther Blätter* who confounded Wagner and themselves."[270] It is thus important to understand something of the arguments made in the *Bayreuther Blätter* in order to understand Nietzsche's larger intellectual project. His personal life continued to intersect with the concerns of the journal, most dramatically through his indirect relationship with the brothers Paul and Bernhard Förster.

In the appendix to *The Basic Writings of Nietzsche*, Kaufmann comments on the odd fact that shortly before or during his 1889 collapse that left him in a semi-lucid condition until his death in 1900, Nietzsche sent off a page that he claimed was intended to appear in his commentaries to *The Case of Wagner* in *Ecce Homo*. However, instead of sending it to his publisher in Leipzig, he sent it to his sister, Elisabeth, and her husband, Bernhard Förster, who had been living in an Aryan colony in Paraguay. While many of Förster's papers were destroyed, along with many of Nietzsche's own papers that were critical of his sister and her husband, this one survived.

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[268] Zöllner, *Über den wissenschaftlichen Missbrauch der Vivisection*, 15.
[269] Nietzsche, "The Case of Wagner," in *Basic Writings of Nietzsche*, trans. Walter Kaufmann (New York: The Modern Library, 2000), 648.
[270] Nietzsche, "Ecce Homo," in *Basic Writings of Nietzsche*, trans. Walter Kaufmann (New York: The Modern Library, 2000), 740-1.

Nietzsche harshly criticized Förster in it, writing: "Shall I here divulge my 'German' experiences?— Förster: long legs, blue eyes, blond (straw head!), a 'racial German' who with poison and gall attacks everything that guarantees spirit and future: Judaism, vivisection, etc."[271] Elizabeth's marriage to Förster on May 22nd 1885 only increased the tensions between the siblings.[272] Writing to his sister from Nice around the end of December 1887, Nietzsche asked: "Do you want a catalog of the sentiments to which I feel antipodal? You will find them quite neatly next to each other in your husband's 'Echoes of P[arsifal].'"[273] Indeed, in many ways Förster was Nietzsche's shadowy opposite. While Förster employed fiery rhetoric to support sweeping cultural and educational reforms based on an understanding of the life sciences, the reforms he sought — vegetarianism, antivivisectionism, anti-Semitism, Christianity inflected with Schopenhauerian philosophy, and ultimately, an expansion of German power and culture throughout the world — were the antithesis of Nietzsche's vision of the future. Few Nietzsche scholars have commented on the intense relationship between Nietzsche's extended family and the antivivisectionist movement in Germany. Not only were the Förster brothers fervent antivivisectionists, but Paul even went on to become the editor for the antivivisectionist *Friend to Animals and Humans*, as well as becoming the president of the New Berlin Animal Protection Society in 1888.[274] Yet as Nietzsche's barbs show, his critiques of Förster revolved around both his brother-in-law's anti-Semitism and opposition to vivisection.

Zöllner died on the 25th of April, 1882. Bernhard Förster's memorial for the astrophysicist appeared in the May/June edition of the *Bayreuther Blätter*. In it, he highlighted Zöllner's devout, though unorthodox Christianity and devotion to pity as well as his opposition to materialism and vivisection.[275] Förster called vivisection the "shame of the nineteenth century […] analogous to the witch trials and torture chambers of past centuries."[276] Not only was it supported by physiologists, but by a closed phalanx of medical professionals and educated elite.

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[271] Friedrich Nietzsche, "Appendix: Variants from Nietzsche's Drafts," in *The Basic Writings of Nietzsche*, ed. and trans. Walter Kaufmann (New York: The Modern Library, 2000), 797.
[272] Julian Young, *Friedrich Nietzsche: A Philosophical Biography* (Cambridge: Cambridge University Press, 2010), 363-4.
[273] Friedrich Nietzsche, "*eKGWB/BVN-1887,968 — Brief AN Elisabeth Förster: Ende Dezember 1887*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1887,968.
[274] Tröhler and Maehle, "Anti-vivisection in Nineteenth-century Germany and Switzerland," 165, 170.
[275] Bernhard Förster, "*Beiträge zur Charakteristik der Zeit. XVII. Lichtblicke aus der Zeitgenossenschaft. 4. Friedrich Zöllner. Ein Beitrag zur Würdigung des Menschen, des Kämpfers, des wissenschaftlichen Charakters. Von Bernhard Förster*," *Bayreuther Blätter* (1882): 369.
[276] *Ibid.*, 368.

Förster claimed that it was vital to the antivivisectionist cause that it had supporters of Zöllner's intellectual pedigree. That same year, Förster had sharply criticized the outcome of the debates over vivisection in the German *Reichstag*. He insisted that the reformation of German *Bildung* required that there be limits to the "freedom of science [*Wissenschaft*]" that the vivisectionists were using to defend their activities.[277] Science existed for the sake of morality, and not morality for science, and so the freedom of science could not be used to justify the cruelties that Förster saw in vivisection. Förster was not a particularly innovative thinker, and most of his arguments against vivisection could be found in the writings of Weber and others. When Bernhard left Germany in 1886, his brother Paul took over writing against vivisection and the freedom of science in the *Bayreuther Blätter*.

Paul Förster began his 1886 attack on vivisection with a quotation from Wagner that emphasized that humans misunderstood their relationship with other animals, making themselves not only beastly, but devilish. They did not understand that there was an inverse relationship between truth and self-interest.[278] Echoing Zöllner's critique of the uselessness of experiment piled up upon experiment, Förster employed a sort of pessimistic induction, observing how vivisection was a very uncertain method of investigation. The results of such experiments were invariably superseded by subsequent studies. Thus, how could proponents of vivisection make arguments about the greater good, if each new theory produced with the help of vivisection eventually turned out to be false?[279] Aside from that, how could they claim that vivisection was actually necessary if they had not really tried to perform their researches without it? Instead of actually trying to discover if it was necessary or not, they were merely attracted to the "forbidden fruit" of vivisection.[280] It was wrong to believe that vivisection was only performed to improve medical therapies. More often it was only to satisfy the idle curiosity of physiologists.

The Försters repeated arguments that were made earlier by Wagner, Weber, and Zöllner (arguments that were very similar to those made by Nietzsche himself throughout the 1870s). In doing this, they kept these arguments in the public eye throughout the 1880s. The *Bayreuther Blätter* was one of their main organs of publication and lent Wagner's credibility to their

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[277] Bernhard Förster, "*Beiträge zur Charakteristik der Zeit. XIII. Die Frage der Vivisektion im Deutschen Bundestage. Ein Stück Kulturkampf*," *Bayreuther Blätter* (March 1882): 93.
[278] Paul Förster, "*Die Bewegung wider die Vivisektion*," *Bayreuther Blätter* (1886): 125.
[279] *Ibid.*, 130.
[280] *Ibid.*

political projects. This helps to explain Nietzsche's persistent attacks on Wagner and Wagnerism well after Wagner's death in 1883. Between them the Försters continued his arguments on a startling number of fronts: from specialization, pity, vegetarianism, anti-Semitism, vivisection, the limitations on the freedom of science, the relationship between truth and self-interest, to the belief that physiology was not a real science at all. They presented Nietzsche with living examples of a worldview that he had repudiated, so much so that his critiques of them often sound like self-critiques of his published works during the 1870s. This should be kept in mind when Nietzsche begins to explore the relationship between knowledge and cruelty from 1878 onwards.

## Knowledge as Cruelty

The persistence of a Wagnerian antivivisectionist presence on the edges of Nietzsche's social circles throughout the 1880s helps to explain his continued vocal support for vivisection. However, by then it had also become an important aspect of his thought about the world in its own right. While Nietzsche perpetuated the antivivisectionist view that knowledge and morality could not be separated, he stressed that they did not exist in a straightforward relationship. He inverted the common antivivisectionist argument that immoral actions could never lead to an increase in knowledge about the world. Instead, since one of morality's consequences was the maintenance of a socially acceptable *status quo*, knowledge was inherently subversive and immoral. The search for knowledge required the seeker to live beyond good and evil. While "good and evil," moral evaluations, played a role in the history of knowledge, these moral evaluations were not themselves knowledge. This position can already be seen in Nietzsche's critique of morality as a pre-scientific form of psychology. He eventually began to think of moralizing as another form of vivisection. Moralizing vivisection was the torture of the animal that was the human being; the suppression of their drives towards some moral end. While it did allow some kinds of moral doubt and self-reflection, moralizing vivisection was just as cruel as physiological vivisection. It was even crueler than psychological vivisection because it perpetuated human ignorance, self-loathing, and self-harm by encouraging moralizing vivisectors to hold it in higher esteem that knowing, living, growth, and understanding. While it contributed to the thirst for systematic and scientific forms of self-reflection, it eventually

confronted them as their antithesis. Nietzsche's acceptance of the necessity of all three forms of vivisection, moralizing, physiological, and psychological, played an important role in the development of his ideas about the love of necessity, or *amor fati* and its relationship to the *Übermensch*. Yet his *amor fati* emerged initially out of the way he inverted the antivivisectionist arguments about the relationship between cruelty, necessity, and knowledge.

One of the common rhetorical charges leveled against vivisectionists by their opponents was that they were hard, stony, or cold hearted. Antivivisectionists like the Försters argued that this was likely a byproduct of their training and specialization, which was a kind of vivisected *Bildung*.[281] At other times, vivisectionists were simply charged with being crueler than other people. Nietzsche antagonized antivivisectionists by inverting this evaluation and showing the important relationship between cruelty and knowledge.[282] Cruelty came to serve many roles in his thought, yet they all developed against the backdrop of the debates over vivisection. Nietzsche's rhetoric is best understood within this context.

In keeping with his critique of opposite values that he began in *Human, All Too Human*, Nietzsche argued that the highest fruits of culture developed out of the sublimation of cruelty. In *Beyond Good and Evil* (1886), he claimed that: "Almost everything we call 'higher culture' is based on the spiritualization of *cruelty*, on its becoming more profound."[283] The "savage beast" in the human had simply become more divine, but it was far from extinguished. Indeed, the very attempt to extinguish it was itself a less than subtle cruelty directed back towards the animal in the human being. He repeatedly emphasized these points in *Daybreak* (1881), *Beyond Good and Evil* (1886), and the *Genealogy of Morals* (1887).[284] Nietzsche ascribed to a psychological and material understanding of spirit, or mind [*Geist*]. Generally, when he talks about a psychological force becoming more spiritualized, he means that it has become sublimated into a subtler and

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[281] See also Nietzsche's own comments about specialization as a vivisected form of education in: Friedrich Nietzsche, "*eKGWB/NF-1873,29[13] — Nachgelassene Fragmente Sommer–Herbst 1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1873,29[13]; Friedrich Nietzsche, "*eKGWB/NF-1871,9[64] — Nachgelassene Fragmente 1871*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1871,9[64]; and Friedrich Nietzsche, "*eKGWB/NF-1871,14[25] — Nachgelassene Fragmente Frühjahr 1871 — Anfang 1872*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1871,14[25].

[282] See, for instance: Friedrich Nietzsche, "*eKGWB/NF-1885,41[2] — Nachgelassene Fragmente August–September 1885*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1885,41[2].

[283] Nietzsche, "Beyond Good and Evil," 348.

[284] See: Nietzsche, "Beyond Good and Evil," 348. Nietzsche, "On the Genealogy of Morals," in *Basic Writings of Nietzsche*, trans. Walter Kaufmann (New York: The Modern Library, 2000), 502; and Nietzsche, *Daybreak*, 17-8, 46-7, 68-9.

more intellectual form. Since there was no pre-established harmony between truth and human comfort, the search for knowledge was itself one of the highest and most sublimated forms of cruelty to emerge from the human psyche. The drive for knowledge actually worked against human comfort and contentment. In *Beyond Good and Evil* Nietzsche asked his readers to consider that:

> even the seeker after knowledge forces his spirit to recognize things against the inclination of the spirit, and often enough also against the wishes of his heart—by way of saying No where he would like to say Yes, love, and adore—and thus acts as an artist and transfigurer of cruelty. Indeed, any insistence on profundity and thoroughness is a violation, a desire to hurt the basic will of the spirit which unceasingly strives for the apparent and superficial—in all desire to know there is a drop of cruelty.[285]

Seen against the backdrop of the antivivisection debates, Nietzsche's understanding of the relationship between knowledge and cruelty helps to elucidate the seemingly shocking rhetoric behind some of the comments about vivisection in his *Nachlass*. This is evident in the case of the passage that Waite used to brand Nietzsche an "esoterrorist," which reads:

> Vivisection - that is the point of departure! Many are now becoming conscious of the fact that it is going to hurt many beings *if knowledge is going to occur!* As if it has ever been different! And what pain!! Cowardly feeble rabble![286]

As has already been shown, Nietzsche increasingly turned to the methods of psychological vivisection or analysis for insight into the human condition. This was one of the main tools he used to probe the limits of human knowledge. As a profoundly unsettling, but profoundly fruitful, method of investigation, it was also a sublimated form of cruelty. Importantly, Nietzsche considered it to be a more profound form of cruelty than the festivals of pity and self-mortification promoted by the supporters of the *Bayreuther Blätter* in their appreciation of Wagnerian art and opposition to vivisection.

In his later writings Nietzsche discussed three kinds of vivisection, physiological vivisection, psychological vivisection, and moralizing vivisection. He characterized moral vivisection as the cruelty towards the human animal. While the supporters of the *Bayreuther Blätter* were quick to call out their opponents for their cruelty to animals, Nietzsche turned the

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[285] Nietzsche, "Beyond Good and Evil," 349.
[286] Friedrich Nietzsche, "*eKGWB/NF-1884,25[467] — Nachgelassene Fragmente Frühjahr 1884*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1884,25[467].

charge back around to them, stressing that they were obsessed with being cruel to the human animal itself. Nietzsche sought to show the continuity between the cruel festivals performed by the Romans at the expense of Christians, the Christian celebration of the sufferings of Christ, the Spanish celebrations of *auto-da-fés* or bullfights, and, in particular, the ways in which Wagnerians witnessing *Tristan and Isolde* gave themselves over to tragedy and the religion of pity. He argued that all of these were celebrations of cruelty, at first turned in innocence to the things outside of oneself, and then turned inwards, towards oneself. Unlike in antiquity, now there was an abundance:

> over-abundant enjoyment at one's own suffering, at making oneself suffer— and wherever man allows himself to be persuaded to self-denial in the *religious* sense, or to self-mutilation, as among Phoenicians and ascetics, or altogether to desensualization, decarnalization, contrition, Puritanical spasms of penitence, vivisection of the conscience, and *sacrifizio dell'intelletto* à la Pascal, he is secretly lured and pushed forward by his cruelty, by those dangerous thrills of cruelty turned *against oneself*.[287]

This form of vivisection, like the vivisection of psychological observation, was an attempt to gain mastery over oneself, but unlike psychological observation, it greatly increased the amount of suffering in the world without increasing the amount of knowledge. In the aphorism "Misuse of the Conscientious" in *Daybreak* (1881), Nietzsche commented: "Oh, how much superfluous cruelty and vivisection have proceeded from those religions which invented sin! And from those people who desire by means of it to gain the highest enjoyment of their power!"[288] The puritanical, moralizing vivisector was far crueler than the physiological or psychological vivisector because the pleasure they took in it was far greater.

It is likely that when Nietzsche described this form of moralizing vivisection as "torture," he was referencing Weber's *Torture Chambers of Science* and Wagner's support of it. In *On The Genealogy of Morals* Nietzsche wrote that: "We modern men are the heirs of the conscience-vivisection and self-torture of millennia."[289] In the same work he wrote that: "our attitude towards *ourselves* is *hubris*, for we experiment with ourselves in a way we would never permit ourselves to experiment with animals and, carried away by curiosity, we cheerfully vivisect our souls."[290] Nietzsche often used the term "sorcerer" when he sought to indirectly reference

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[287] Nietzsche, "Beyond Good and Evil," 349.
[288] Nietzsche, *Daybreak*, 34. For an elaboration on this theme, see: Nietzsche, "On the Genealogy of Morals," 524.
[289] Nietzsche, "On the Genealogy of Morals," 531.
[290] *Ibid.*, 549. See also the aphorism "Moral Souls" in: Nietzsche, *Daybreak*, 204.

Wagner and the alluring effects of his legacy and influence.[291] In *The Genealogy of Morals* he described how the secrets of the torture chamber were used to serve the interests of the sorcerer's ascetic ideal:

> Every painful orgy of feeling, everything that shattered, bowled over, crushed, enraptured, transported; the secrets of the torture chamber [*Folterstätten*], the inventiveness of hell itself— all were henceforth discovered, divined, and exploited, all stood in the service of the sorcerer, all served henceforth to promote the victory of his ideal, the ascetic ideal.[292]

Moral vivisection was the only form of vivisection sanctioned within the ascetic ideal, and Nietzsche had in mind Wagner and Weber as two of its representative proponents. The presence of these ideas in *The Genealogy of Morals* in particular also points to how Nietzsche's genealogical method partially developed out of his thinking about vivisection. Whereas physiological vivisectors turned their knives on creatures who could not refine their capacity to feel pain, and psychological vivisectors could further human understanding of the necessities of life, moralizing vivisectors and other ascetics actively cultivated the ways in which humans could suffer and actively sought them out for the sake of suffering.

Even Nietzsche's attempts to soften the blow of his insight about the relationship between knowledge and cruelty speaks to his engagement with the debates surrounding vivisection and around how different creatures, and, importantly, different groups of humans, differed in their susceptibility to pain. As he wrote in *On the Genealogy of Morals*:

> Perhaps in those days [in prehistory]—the delicate may be comforted by this thought—pain did not hurt as much as it does now; at least that is the conclusion a doctor may arrive at who has treated Negroes (taken as representatives of prehistoric man—) for severe internal inflammations that would drive even the best constituted European to distraction—in the case of Negroes they do *not* do so. (The curve of human susceptibility to pain seems in fact to take an extraordinary and almost sudden drop as soon as one has passed the upper ten thousand or ten million of the top stratum of culture; and for my own part, I have no doubt that the combined suffering of all the animals ever subjected to the knife for scientific ends is utterly negligible compared with *one* painful night of a single hysterical bluestocking [*Bildungs-Weibchens*]).[293]

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[291] Nietzsche, "Richard Wagner in Bayreuth," 224, 226. Nietzsche, *Thus Spoke Zarathustra*, 219-225. Nietzsche, "The Case of Wagner," 616. Barry Millington, *The Sorcerer of Bayreuth: Richard Wagner, his Work and his World* (Oxford: Oxford University Press, 2012).
[292] Nietzsche, "On the Genealogy of Morals," 577.
[293] *Ibid.*, 504.

In his comments about a racial, gendered, and class based hierarchy of pain tolerance Nietzsche was repeating nineteenth-century conventions.[294] His comparison between the suffering of the animals subjected to vivisection and to educated women was a direct provocation to the antivivisectionist movement, in which educated women played a major role. Yet in some ways, it also hid his implicit approval of some aspects of moralizing vivisection.

Nietzsche took note of both the perils and promises of moralizing vivisection and the acetic ideal. From the time of his aphorism on "Unaccountability and Innocence" in *Human, All Too Human* (1878), to his later writings he consistently described both as a kind of sickness, but a "sickness as pregnancy;" namely, the necessary pain that came before the creation of new values.[295] While humans ultimately lived in an immoral and ungodly world, the Abrahamic religions interpreted it through the errors of the godly and moral, which, while errors, were in many ways invaluable. As Nietzsche stressed in his *Nachlass*: "Nor should we forget the positive gains: the refinement of the exegesis, the moral vivisection, the pangs of conscience have increased the falsity of the human being to the utmost and made them spirited [*geistreich*]."[296] That same year he had also written a note contemplating:

> The beginning of the end. To what extent this self-destruction of morality is still a piece of its own power. We Europeans have the blood of those who have died of their faith within us; we have taken up the fear and seriousness of morality and there is nothing we have not at some point sacrificed for it. On the other hand: our spiritual refinement has essentially been achieved through the vivisection of conscience.[297]

Upon reflection, each form of vivisection, physiological, psychological, and moralizing, were part of a larger movement from the "no" saying and boundary setting of religious, moral, and later methodological forms of thought to the "yes" saying of knowledge, gay science, and *amor fati*.

While the curare arrow of knowledge provided insight at the cost of not being able to judge things in any absolute way, Nietzsche later claimed that: "I would like to know how to meet my

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[294] Anita Guerrini, *Experimenting with Humans and Animals: From Galen to Animal Rights* (Baltimore: The Johns Hopkins University Press, 2003), 80-1.
[295] Nietzsche, "On the Genealogy of Morals," 524.
[296] Friedrich Nietzsche, "*eKGWB/NF-1885, 2 [197] — Nachgelassene Fragmente Herbst 1885 — Herbst 1886*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1885,2[197].
[297] Friedrich Nietzsche, "*eKGWB/NF-1885, 2 [207] — Nachgelassene Fragmente Herbst 1885 — Herbst 1886*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1885,2[207]. See also: Friedrich Nietzsche, *The Will to Power*, ed. Walter Kaufmann, trans. Walter Kaufmann and R.J. Hollingdale (New York: Vintage Books, 1968), 105.

fate (vivisection) and my pain with the silent gaze of a dog."[298] In this note Nietzsche identified himself with the curare-paralyzed dog being experimented on to explore its nervous physiology. His self-identification with dogs, their relationship to vivisection and *amor fati* also helps to shed some light on the curious character of the leech, or the "the conscientious in spirit" in book four of *Thus Spoke Zarathustra* (1885). Van Tongeren has observed that the character of the leech is how Nietzsche presented the purely objective individual who abstained from, or ignored, their own personality to become a mirror of the world.[299] However, it is likely that the leech was a vivisector. In the scene Zarathustra compares himself and his interlocutor to both a leech and a dog. Both of these animals were charged symbols of the debates over vivisection. In his experiments that proved that curare was a paralytic and not an anesthetic, Bernard had employed leeches to show how the poison acted on the nervous system. This public demonstration was widely discussed in the periodical press.[300] This controversial paralysis that did not spare the subject from pain thus involved both leeches, who were used to demonstrate how curare functioned, and dogs, upon whom curare was used to investigate the inner workings of the nervous system. In *Thus Spoke Zarathustra* the character of the leech is described as a specialist on the brains of leeches and honest to the point of cruelty, qualities that could have just as well described a practicing physiologist and vivisector. Nietzsche also includes his own brand of psychological vivisection or dissection when he has the character of the leech comment that he had managed to catch Zarathustra "the great conscience-leech" with his blood.[301] Nietzsche extends the comparison between vivisectors, the paralysis of curare, leeches, and dogs, from the very first moment of the scene, when Zarathustra physically stumbles over the character of the leech and apologizes with an allegory about sleeping dogs. He compares both himself and the leech to dogs, and says that like dogs they were both in danger of senselessly fighting to the death. This is in keeping with Nietzsche's early public attacks on vivisection, as well as his latter support for it. Vivisectionists had to contend with both the animals in their laboratories, and the opprobrium and personal polemics of the antivivisectionist. When Zarathustra notices the blood

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[298] Friedrich Nietzsche, "*eKGWB/NF-1882, 4 [91] — Nachgelassene Fragmente November 1882 — Februar 1883*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1882,4[91].
[299] Paul J. M. van Tongeren, "Nietzsche's Symptomology of Skepticism," in *Nietzsche, Epistemology, and Philosophy of Science*, eds. Babette E. Babich and Robert S. Cohen (Boston: Kulwer Academic Publishers, 1999), 67.
[300] "Eclectic Department, and Spirit of the Medical Periodical Press. Lectures on General Physiology by Claude Bernard," *Buffalo Medical Journal and Monthly Review of Medical and Surgical Science* 8 (1854): 367-368.
[301] *Ibid.*, 218.

running down the leech's arm, he replies by saying: "It has gone badly, you poor wretch, in this life of yours: first the beast bit you, and then— the human stepped on you!"[302] Treating the character of the leech as a vivisector also sheds light on Zarathustra's response to seeing the leech, as he calls him a "torturer," and asks: "shall I, just like a dog, / Roll over for you? / So yielding, inspired beyond myself, / And— wag my love to you?"[303] Later the leech claims that it was Zarathustra's teaching that "[s]pirit is the life that itself cuts into life" that seduced him to his teaching.[304] Zarathustra was thus also something of a vivisector, but he was not paralyzed by the knowledge this gave him, nor did he stop vivisecting just at the level of the flesh.

Vivisection was central to the understanding of the sublimation of cruelty and the paralysis of moral evaluations that Nietzsche came to feel were inherent in the search for knowledge. His *Nachlass* shows that near the end of his productive life he related vivisection to his idea of *amor fati* and ability to will that the world be nothing other than what it is. He claimed that he had come to a turning point where he felt that he could appreciate the necessity of history and singled out the isolation he felt in his own life; the importance of the Germans, of Bismarck, of the revolutions of 1848, of Kant, and even of Martin Luther's Reformation. If to vivisect Wagner was to seek to understand the most instructive example of modern man, the ongoing vivisection of human history inherent in the past two thousand years was an experiment with life itself:

> The great cultural crimes of the Germans are justified in a higher economics of culture... I want nothing else, not even backwards, —I could want nothing else... *amor fati*... Even Christianity is necessary: the highest form, the most dangerous, the most tempting in the negation of life only provokes its highest affirmation— … What, finally, are these two millennia? Our most instructive experiment, a vivisection on life itself… merely two millennia![305]

After 1882 Nietzsche transformed the paralysis he felt in light of what he had earlier called "the curare arrow of knowledge" into the calmness and determination of *amor fati*.

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[302] Nietzsche, *Thus Spoke Zarathustra*, 217.
[303] Nietzsche, *Thus Spoke Zarathustra*, 221.
[304] *Ibid.*, 291.
[305] Friedrich Nietzsche, "*eKGWB/NF-1888, 25 [7] — Nachgelassene Fragmente Dezember 1888 — Anfang Januar 1889*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1888,25[7]. Compare with Nietzsche's about the centuries of experimentation required to allow every kind of heroism to find its satisfaction "centuries of experimentation that might eclipse all the great projects and sacrifices of history to date." Nietzsche, *The Gay Science*, 82.

## Conclusion

Vivisection played an important role in much of Nietzsche's thought. His later "genealogical" method was a continuation of the project he began with his psychological observations in *Human, All Too Human*. Small has highlighted the pains that Nietzsche went to later in life to disassociate his own project from that of his onetime friend Paul Rée.[306] Other scholars have observed the debt that Nietzsche's psychological observations also owed to French moralists such as François de La Rochefoucauld, Jean de La Bruyère, and Pierre Louis Maupertuis.[307] These moralists served as the inspiration for both Nietzsche's and Rée's early aphoristic works.[308] Nietzsche's interest in vivisection combined both of these lines of influence. In a section of his *Nachlass* from 1884, he observed that: "Maupertuis suggested that to investigate the essence of the soul, one would have to perform vivisections on Patagonians. Every really genuine moralist treats himself like a Patagonian."[309] While it is uncertain whether or not Nietzsche understood the moralists and acts of psychological observation in terms of vivisection in the 1870s, he certainly did so by the 1880s.

Nietzsche sought to refute and antagonize the antivivisectionists that he encountered throughout the 1870s. This context sheds a new light on some of his more controversial rhetorical choices, including: his discussion of the Inquisition, alchemy, torture, and witch hunts; necessity, vivisection, the relation between cruelty and knowledge, and his concern over what was at stake in the definition of science (*Wissenschaft*). In each case, he was responding to the antivivisectionist rhetoric and arguments made by Wagner, Weber, Zöllner, the Förster brothers, and others associated with the *Bayreuther Blätter*. Yet Nietzsche did not wish to merely antagonize antivivisectionists. He came to believe in the interconnected necessity of physiological, moralizing, and psychological vivisection, which taken together showed the interconnection and necessity of the human experience of the world. Pre-scientific moralizing vivisection led to the human suppression of drives and feelings; the "spiritualization" of the

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[306] Paul Rée, *Basic Writings*, ed. and trans. Robin Small (Urbana and Chicago: University of Illinois Press, 2003), xxxiv-xliii.
[307] Brendan Donnellan, "Nietzsche and La Rochefoucauld," *The German Quarterly* 52, 3 (1979): 303–18.
[308] See: Rée, *Basic Writings*, and Robin Small, *Nietzsche and Rée: A Star Friendship* (New York: Oxford University Press, 2005).
[309] Friedrich Nietzsche, "*eKGWB/NF-1884, 25 [519] — Nachgelassene Fragmente Frühjahr 1884*," *Nietzsche Source*, accessed November 5, http://www.nietzschesource.org/#eKGWB/NF-1884,25[519].

animal in the human that opened up a conceptual space for self-reflection and doubt. Even this form of vivisection was not lacking in cruelty, however, for it involved the self-righteous and vicarious enjoyment of self-suppression and of pity for others. Psychological vivisection, what Nietzsche often referred to as psychological observation, was moralizing vivisection made systematic and scientific, "beyond good and evil." However, it could not reach this level of sublimation and clarity without physiological vivisection, for physiological vivisection showed the basic components, or atoms, of perception, sensation, and feelings upon which psychological life depended.

The debates about the necessity of vivisection were also closely related to the question of whether or not life, or the study of life, could even be a form of *Wissenschaft*. Detractors claimed that life could never be studied systematically, or through reductionist methods, because it was a fundamentally living whole, not a mechanical collection of modular parts. While Nietzsche also shied away from mechanical reductionism, he increasingly came to believe that reductionism as such was one of the primary methods for understanding the natural and the human. Yet even here, his adherence to reductionism was predicated on a different understanding of holism than the one he had embraced as Wagner's propagandist. It was a non-dualistic holism of monistic origins, in which forces became differentiated through various kinds of sublimations in the universal process of becoming. One could not begin to understand the ways in which life could be creatively sublimated, however, without first understanding how it could be taken apart and reduced to its component parts.

This form of reductionism involved the important "no" saying of his critiques, and of physiological, moralizing, and psychological vivisection. These methods were invariably painful and not lacking in cruelty, but Nietzsche described this pain as the vital pain of birth, growth, or metamorphosis. Understanding these forms of vivisection allowed one access to the study of life itself, conceived as an organic, historical, and personal processes. Vivisection in all of its forms revealed the contingencies that lay behind the innocent necessities of life. Nietzsche came to believe in a very different definition of innocence than the one showcased by Wagner in the figure of Parsifal. Nietzsche's innocence was the playful, cruel, childlike innocence of necessity, which one could neither absolutely praise nor blame, but only seek to understand. This belief emerged from his encounter with the debates over vivisection, in which questions about the necessity of vivisection took central stage. Coming to terms with how one could understand the

seeming contingencies of life, and affirm them as necessary, became the basis of Nietzsche's *amor fati*. This understanding of necessity is what could lead to the "yes" saying of the gay science, *fröhliche Wissenschaft*, which was the creative end result and reward of the systematic exploration and "no" saying of *Wissenschaft*. The question for Nietzsche then became, how could such "yes" saying be taught to others, and what did it imply about the the nature of organic and psychological life?

## Chapter 3: A Vision of Self-Regulation

> *A vision* – [E]very day as it were a festival of attained and attainable dignity of human reason: a new and fuller efflorescence of the ideal of the teacher, in which the priest, the artist and the physician, the man of knowledge and the man of wisdom, are fused with one another, with a resultant fusion of their separate virtues into a single total virtue which would also be expressed in their teaching itself, in their delivery and their methods – this is my vision: it returns to me again and again, and I firmly believe that it lifts a corner of the veil of the future.[310]
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> ~Friedrich Nietzsche, *Human, All Too Human*, 1878.

Nietzsche did more in *Human, All Too Human* than argue that future educators would have to understand the physiological tendencies of their students in order best to help them learn. He also began to consider how education itself was a physiological process whose end goal was ultimately the freedom of the individual relative to their society. This line of thought would eventually lead him to the *Übermench*, and their freedom relative to the determinism of the cosmos; however, in the early stages of his thinking he focused on the relationship between how organisms attained a degree of relative freedom from their physical environment, and how an analogous process also took place in the way that free spirits were able to facilitate their own self-fashioning and education. Chapter one explored the historical trajectory of Nietzsche's critiques of Schopenhauer's and Wagner's visions of genius and the role that Nietzsche's interest in physiology played in these critiques. Chapter two positioned his criticism in the context of the vivisection debates of the late nineteenth century. This chapter will explore the alternative model of genius that Nietzsche developed after his break from Wagner, and how that vision consisted of a radicalization of many of the themes of education and dynamic self-regulation that could also be found in the writings of physiological thinkers and proponents of vivisection such as Justus von Liebig and Claude Bernard.

The new idea of the teacher that Nietzsche envisioned in 1878 took as its model priests, artists, and physicians because he felt that they were all manifestations of different forms of dynamic self-regulation; the emulation of which would allow students to become free to shape themselves, as well as the world around them. Nor was Nietzsche alone in this interest. Dynamic

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[310] Nietzsche, *Human, All Too Human*, 257.

self-regulation occupied the thoughts of many nineteenth-century commentators. In mechanics, the centrifugal governor that regulated the speed of steam engines became a driving symbol of this fascination. The governor that emerged in the context of the development of the first and second law of thermodynamics also served as a frequent metaphor for the regulation of life itself. In a paper that was read before the Linnean Society in 1858, Alfred Russel Wallace (1823-1913) observed that the evolutionary principle was, in effect, like "the centrifugal governor of the steam engine."[311] The physician and physiologist Carl Ludwig commented twelve years later that the centrifugal governor provided the first example of:

> a self-acting mechanism in which the interplay of forces took shape transparently enough to discern the connection between the heat generated and the motion produced. The great puzzle of the vital force was also immediately solved for the physiologist in that it became evident that it is more than a mere poetic comparison when one conceives of the coal as the food of the locomotive and the combustion as the basis for its life.[312]

Claude Bernard, in his *Introduction to the Study of Experimental Medicine* (1865) also observed that all living things were organic machines that could be understood as complex steam engines. Like self-regulating machines, living machines were: "created and constructed in such a way that, in perfecting themselves, they become freer and freer in the general cosmic environment."[313]

Vivisection was one of the only methods available to physiologists for studying the various mechanisms of self-regulation in living organism. This included the study of nutrition and digestion, the regulation of heat, the functions of the nervous system, and of sensation. It was also one of the practices that caused the most public outrage and demands that physiologists' "academic freedoms" be limited. Nietzsche was deeply embroiled in the debates over vivisection, necessity, and freedom, as well as over the definition and meaning of genius and the purpose of education. These interests all converged in the idea of dynamic self-regulation.

The chapter will begin with an overview of Nietzsche's interest in the idea of organic unity. He maintained that any abstract, or absolute unities were not possible because nature was

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[311] Alfred Russel Wallace, "On the Tendency of Varieties to Depart Indefinitely From the Original Type," *Proceedings of the Linnean Society of London* 3 (1858): 62.
[312] Carl Friedrich Wilhelm Ludwig, "*Leid und Freude in der Naturforschung*," *Die Gartenlaube* (1870): 359, cited in Kenneth L. Caneva, *Robert Mayer and the Conservation of Energy* (Princeton: Princeton University Press, 1993), 145.
[313] Claude Bernard, *An Introduction to the Study of Experimental Medicine*, trans. Henry Copley Greene. (New York: Dover Publications, 1957), 79.

in a constant state of flux. The idea of an absolute unity itself was symptomatic of the tyrannical excesses of the Wagnerian genius. However, the collective action of competing "wills" or parts of the organism did create the relative unity of the individual as they self-organized towards ever more elaborate forms of self-regulation. This is one reason why Nietzsche placed so much emphasis on the internal environment of an organism, as opposed to its external conditions. While this aspect of Nietzsche's thought borrowed much from non-Darwinian evolutionary thinkers such as William Rolph (1847-1883), Wilhelm Roux (1850-1924), and, Carl Nägeli (1817-1891), he was thinking about forms of dynamic self-regulation well before he ever came in contact with them.

Liebig and Bernard were exploring how organisms achieved their independence from their environments in the 1830s and 1840s. Both the organic chemist and the physiologist were also prominent public figures who were the subject of debates in the Wagner circle over the funding and methods of science. This included how funding was spent on the training and education of scientists. The focus of Nietzsche's interest in the purpose of education changed over time. He initially maintained that the goal of education was the eventual independence of the student. Later, under Wagner's influence, he renounced this position and argued that the purpose of education was to allow the student to appreciate the works of genius. Independence was an impediment to education. However, when he broke with Wagner, he returned to and developed his initial position. There are many parallels between how Nietzsche described how an individual achieved a state of independence from their culture, age, and society, and how Bernard described an organism achieved a state of independence from its cosmic environment.

While Nietzsche only made one direct reference to Bernard in his extant corpus, there are a number of striking similarities between the two thinkers. They both defended ideas of "meaningful freedom" within a deterministic framework, explored the limits of knowledge, the meaning of genius and freedom of mind (or spirit), and stressed the inevitability and importance of experimentation. There were also many parallels between their arguments about individual and organic independence. In some of his earliest published works, Nietzsche described education and the assimilation of culture by the individual as a process that turned what had been learned into "blood" that provided them a "limiting horizon" within which they could have greater freedom within their cultural context. His references to how an individual could arrive at a "transfigured *physis*" continued this line of thought, albeit in a form that downplayed its

similarities with the ideas of Bernard and other vivisectors throughout most of the 1870s, when he still wished to be part of Wagner's circle. After his break with Wagner, Nietzsche largely seems to have returned to his earlier ideas about education, and even expanded on them in his discussions of the free spirit.

The free spirit was Nietzsche's early answer to Wagner's idea of genius. Importantly, the free spirit was the product of their ability to steer the direction of their own education, as opposed to being the product of their inborn talents, as was the case with the Wagnerian genius. Nietzsche's emphasis on how an individual's philosophical worldview was inevitably an artefact of their own biographical and physiological histories meant that one free spirit could not directly teach another person how to become a free spirit. However, he did think that it was possible for one free spirit to perform or demonstrate how such a state of independence was achieved. Nietzsche understood himself as participating in this form of mutual education by exploring the various ways that it was possible to form a second nature out of one's given, or first natures, and how Nietzsche himself was involved in a process of self-fashioning. This process was not without its elements of hypocrisy and artifice, but it also involved an acknowledgment of one's own history and an affirmation that there were viable competing interpretations of the world. While Nietzsche distanced himself from Wagner and his circle, he also often referenced them as part of his own process of self-fashioning. This is one reason why Nietzsche was critical of the traditional understanding of "self-knowledge," since it assumed that the individual was static and unchanging. In contrast, Nietzsche argued that individuals became individuals by actively willing and experimenting with themselves, their limits, needs, and desires.

Both Bernard and Nietzsche argued for the importance of active intervention in life in order to understand the limits of knowledge, and how those limits could be used creatively to serve individual needs and goals. Experimentation was the activity that allowed humans to become ever freer relative to their own cosmic environment. This process was comparable to the ways in which organisms assimilated elements from their physical environments in order to preserve and expand the powers of their *milieux intérieurs*. Nietzsche explicitly made this comparison when he described the spirit as a stomach in *Beyond Good and Evil*. The spirit was a stomach that took in experiences from its environment and assimilated them into itself. In this way it allowed the individual to create a "limiting horizon" within which they gained greater forms of freedom relative to that environment. This freedom within limits took on many forms,

and Nietzsche often described it as a kind of travelling. At various points in his writings he described it as the freedom of spirit that was produced by travelling in terms of physical distance, cultures, and historical epochs. However, it also required more abstract forms of travel, including into different states of health and different philosophical systems. Bernard once speculated that it would someday be possible to experiment with good and evil themselves in an effort to promote good and subdue evil. Nietzsche took this a step further, arguing that the breaking of taboos, what societies tended to call evil, were necessary experiments if one wished to understand the limits of human knowledge, and give humans the freedom to become more humane no matter what stage of their journey they were in.

## Nietzsche, Organic Unity, and the Importance of the Internal Environment

While Nietzsche abandoned the idea of any absolute unities in nature when he split with Wagner, he nevertheless maintained a focus on the relative unity of individuals' "inner" experience and inner environments. However, it is not always clear what he thought constituted the individual. Given the shifting pressures of an individual's cultural, social, and physical surroundings, their individuality seemed to be in constant danger of being either an illusion, or a fluctuating and ephemeral epiphenomenon. Nietzsche came to accept the idea that the unities humans perceived in nature, and in themselves, were the very things that they projected into nature, as well as back onto themselves. In truth, neither the external environment nor the internal physiological or psychological environment were stable or whole. As he stated in a note found in his *Nachlass* there is always a "*mass of consciousness* and wills in every complex organic being."[314] These "wills" and the structure of society were reflections of each other insofar as the various cells, tissues, and organs, as well as instincts and drives of the human body existed in a hierarchically arranged state of tension. A person's individuality was the sum total of these fluctuating hierarchies.

Nietzsche was just as influenced by metaphors of cell states and social organisms as his contemporaries, such as Hertwig, Haeckel, and Virchow, and these broader assumptions came to play a role in how he thought about organic growth and development. In an organism certain complexes of drives and organic functions would come to predominate within the hierarchies

[314] Friedrich Nietzsche, cited in Moore, *Nietzsche, Biology and Metaphor*, 39.

that constituted the individual, and make their subordinate functions more consistently and subtly reflect the expressions of their own drives. This domination was the source of the apparent stability of the individual that Nietzsche characterized as the self-regulative capacity of the human being. There was no super-instinctual "I" that governed an individual's drives and passions. Even the aspect of the individual that sought to regulate the drives and passions was itself a drive, or collection of drives. Many of these regulating functions had been ingrained within the human organism through the process of evolution. Nietzsche described the brain and nervous system as the vast centralizing organ that was largely the byproduct of this process of self-regulation. Yet the brain and nervous system could only be understood through examining the moral and psychological instincts that revealed "the history of self-regulation and arrangement of functions within a whole."[315] Even the brain and nervous system were in a state of flux, and did not represent the "completion" of the processes of self-regulation, but only one stage in its continued development.

Nietzsche recognized that evolution was largely responsible for organisms' tendency to develop toward self-regulating systems. Yet he went to lengths to stress that the driving force of evolution was not the pressures of an organism's external environment. It was how the organism's internal environment actively employed material from its surrounding to further its own ends. Writing in 1886/7, he observed that: "Darwin overestimates the influence of 'external circumstances' to a ridiculous extent; what is essential in the vital process is precisely the tremendous shaping force which creates forms from within and which *utilizes*, *exploits* the 'external circumstances.'"[316] Stack and Moore have observed that Nietzsche's rejection of Darwinian evolution, but acceptance of evolution in general, was characteristic of the German response to the publication of *The Origin of Species* in 1859, and was part of what Bowler has described as the "non-Darwinian Revolution" in which Darwin was merely one among many evolutionary thinkers of the mid- to late-nineteenth century.[317]

Moore shows how as early as 1884 Nietzsche's rejection of Darwinian evolution drew from his readings of such works as the entomologist William Rolph's *Biological Problems* (1882), the

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[315] Friedrich Nietzsche, cited in Moore, *Nietzsche, Biology and Metaphor*, 79.
[316] Friedrich Nietzsche, "eKGWB/NF-1886,7[25] — *Nachgelassene Fragmente Ende 1886 — Frühjahr 1887*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1886,7[25].
[317] Stack, *Nietzsche and Lange*, 161. See also: Moore, *Nietzsche, Biology and Metaphor*, 24; and Peter J. Bowler, *The Non-Darwinian Revolution: Reinterpreting a Historical Myth* (Baltimore: Johns Hopkins University Press, 1992).

embryologist Wilhelm Roux's *The Struggle of the Parts in an Organism* (1881), and the botanist Carl Nägeli's *Mechanico-Physiological Theory of Descent* (1884).[318] Like Nietzsche, all of these authors espoused evolutionary principles that minimized the role of Darwinian natural selection in the evolutionary process. Nietzsche would go on to support Rolph's claim that Darwin's use of Malthusian scarcity had caused him to exaggerate the role of survival in evolution.[319] Instead, Rolph argued that scarcity was a rare condition that tended to favour average individuals and not exceptional ones. Even when not experiencing scarcity, organisms strove to assimilate far more resources from their environment than they could ever need for survival alone. The so-called instinct for self-preservation was actually a special instance of a much more important "principle of insatiability" or the drive for an intensification of life.[320] Roux held that Darwin and his supporters placed too great an emphasis on the external environment in which organisms found themselves. While external pressures did play a role in evolutionary change, the much more profound struggles took place within the organism itself. "The struggle for existence" actually tended towards the average, and tended to kill not the unfit, but the more complicated and differentiated organisms; the very organisms with the most potential to bring about a change in the species. Moore claims that Nietzsche's reception of Roux involved Nietzsche's wholesale absorption of Roux's ideas about self-regulation. While it is true that Nietzsche took up many diverse challenges to natural selection, it is also important to note that well before he read any of these authors he was already exploring many of the same ideas. This is particularly the case when one considers his interest in education and self-regulation in relation to Claude Bernard, and the role that Justus von Liebig's work played in supporting chemical education.

## Liebig, Bernard, and Nietzsche on Individual and Organic Independence

Much recent scholarship on Nietzsche has focused on his interest in the contingent and fluid unity of organic beings and how this unity was achieved by forces internal to the organism over and against those of its external environment. Nietzsche's exploration of self-regulation was part of a much broader nineteenth-century focus on how organic matter maintained its

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[318] Moore, *Nietzsche, Biology and Metaphor*, 55.
[319] Gregory Moore, "*Beiträge zur Quellenforschung*," *Nietzsche-Studien* 27 (1998): 535-51.
[320] William Rolph, *Biologische Probleme, zugleich als versuch einer rationellen Ethik* (Leipzig, W. Engelmann, 1882), 92, 94, 95, 222.

independence from its inorganic surroundings. This focus was in part spurred on by the public celebrity, and economic utility, of physiological and chemical researches into the specific mechanisms of organic self-regulation. For instance, Nietzsche's own environment was replete with references to figures such as Liebig and Bernard who publicly championed the idea of dynamic self-regulation.

In his 1844 *Familiar Letters on Chemistry* the German chemist Justus von Liebig commented that: "All living creatures, whose existence depends upon the absorption of oxygen, possess within themselves a source of heat, independent of surrounding objects."[321] Liebig became a household name thanks to the marketing of his beef extract in 1865.[322] In a note from 1877 Nietzsche prescribed himself a quarter teaspoon of Liebig's beef extract a day.[323] It is hard to imagine that Nietzsche was unfamiliar with Liebig's work, considering his general interest in chemistry, and the number of times he references Liebig, or, in particular, Liebig's beef extract, positively in his letters.[324] In a letter to his friend Franz Overbeck, Nietzsche observed that:

> We work too much: that is likely the reason why our machine must periodically break down. It crossed my mind these last few days that in three years I have written "Daybreak," "The Gay Science," and "Zarathustra": considering that this literature belongs under the head of "Liebig's Extract of Meat," I ought not be annoyed about my "health" – but rather amazed! And it is quite the same with your enormous industriousness.[325]

Nietzsche once wrote in a draft for "Why I Write Such Good Books" that unlike most philosophers, his writing had to be diluted instead of condensed in order not to upset his reader's

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[321] Justus von Liebig, F*amiliar Letters on Chemistry and its Relation to Commerce, Physiology, and Agriculture,* Second Edition, ed. John Gardner (London: The Chemical Society, 1844), 32.
[322] Mark R. Finlay, "Quakery and Cookery: Justus von Liebig's Extract of Meat and the Theory of Nutrition in the Victorian Age," *Bulletin of the History of Medicine*, 66:3 (1992): 404.
[323] Lesley Chamberlain, "A Spoonful of Dr. Liebig's Beef Extract," *Times Literary Supplement* 4871 (1996): 15.
[324] Friedrich Nietzsche, "eKGWB/NF-1870,4[1] — Nachgelassene Fragmente August — September 1870," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1870,4[1]; Friedrich Nietzsche, "eKGWB/NF-1870,4[5] — Nachgelassene Fragmente August — September 1870," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1870,4[5]; Friedrich Nietzsche, "eKGWB/BVN-1882,259 — Brief an Franziska Nietzsche von: 04/07/1882," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1882,259; and Friedrich Nietzsche, "eKGWB/BVN-1882,260 — Brief an Elisabeth Nietzsche von: 05/07/1882," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1882,260. While Liebig invented the extract of meat, he was not the one who marketed it under his name. However, the extract was publicly associated with him and his work as an organic chemist. Part of the advertized benefits of the extract was that it was good for those with weak stomachs and digestion; symptoms from which Nietzsche frequently suffered.
[325] Friedrich Nietzsche, "eKGWB/BVN-1884,497 — Brief an Franz Overbeck von: 28/03/1884," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1884,497.

digestion.[326] He likely had Liebig's extract of meat in mind when he made the comment. Moore has observed how Nietzsche's interest in physiology was connected to his interest in understanding and managing his own ailments.[327] While it may seem banal that Nietzsche used Liebig's extract of meat to try and settle his stomach issues, even this connected him to contemporary theories of both dynamic self-regulation and education. This included how Nietzsche sought to regulate himself, and to Liebig's own work in directing funding for education in Germany away from the arts and towards the chemical sciences.

Wagner's antipathy for chemistry and the funding that was being directed towards it in his attack on Nietzsche's *Human, All Too Human* takes on a new dimension when considered in light of institutions such as Liebig's teaching laboratories in Giessen and Munich. In his popular writings, Liebig went to great lengths to demonstrate the utility of chemistry, and chemical education, to natural philosophy, medicine, and agriculture, and the general wealth of the nations that pursued it. In this he enjoyed considerable success. His teaching laboratories were funded by Maximilian II of Bavaria (1811-1864). Maximilian II was the father of Wagner's main patron, Ludwig II (1845-1886), whom Liebig had tutored as a child. Wagner's attacks on atomistic reasoning reflected his attempts to stress the importance of his own, unifying, holistic and artistic approach to knowledge. Nietzsche's broader interest in chemistry cannot be understood without also understanding how the popular discourses surrounding the chemistry of his age was increasingly organic, and physiologically oriented. These discussions also stressed the importance of more and better funding for educational institutions to train future chemists and physiologists in the hopes that their labours would contribute to the prosperity and independence of the nation through the invention of novel products and medicines, and by decreasing the need to trade with foreign nations.[328] Despite his many successes, however, Liebig's celebrity was vastly eclipsed by Bernard later in the century.

Bernard is sometimes described as the Einstein of the nineteenth century because of his prominence in the intellectual and cultural life of his age.[329] During his career he became the

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[326] Friedrich Nietzsche, "Appendix," in *Basic Writings of Nietzsche*, ed. and trans. Walter Kaufmann (New York: The Modern Library, 2000), 796.
[327] See: Gregory Moore, "Nietzsche, Medicine and Meteorology," *Nietzsche and Science*, ed. Gregory Moore and Thomas H. Brobjer (Aldershot: Ashgate Publishing, 2004), 71-90.
[328] For more on Liebig's involvement in educational reform in Germany see: William H. Brock, *Justus von Liebig: The Chemical Gatekeeper* (Cambridge: Cambridge University Press, 2002).
[329] For more on Bernard's fame during his life see: Charles G. Gross, "Claude Bernard and the Constancy of the Internal Environment," *The Neuroscientist*, 4 (5) (1998): 381.

symbolic representation of the ideal scientist. He was referenced, directly or indirectly, in a range of popular works, including the writings of Émile Zola (1840-1902) and Fyodor Dostoyevsky (1821-1881). In 1889 the French realist painter Leon Augustin L'hermitte (1844-1925) painted "The Lesson of Claude Bernard (1813-78) Or, Session at the Vivisection Laboratory." Bernard's scientific prominence was also matched by his infamy in antivivisectionist circles. Bernard had studied physiology under François Magendie in Paris. He achieved his medical reputation for his description of how the liver secreted sugar into the blood regardless of whether or not the organism had consumed sugar, as well as his description of the role of the vaso-motor nerves in the regulation of body temperature. But it was his description and defence of the methods of science, contained in his *Introduction to the Study of Experimental Medicine* (1865), that brought him to the attention of a broader public. Today he is most celebrated for how he articulated the concept of the *milieu intérieur*, or how organisms possess dynamic inner environments that exist in a complicated state of independence and interdependence with their external environments.

"The Lesson of Claude Bernard (1813-78) Or, Session at the Vivisection Laboratory" (1889) by the French painter Leon Augustin L'hermitte (1844-1925). Accessed through the Wellcome Library, London.

Armin Wildermuth has recently argued that it is likely that Nietzsche encountered Bernard's "Lectures on the Phenomena of Life Common to Animals and Plants" when it was first published in 1878.[330] There is considerable circumstantial evidence linking Nietzsche with Bernard. There were ubiquitous references to Bernard in many of the physiological works that Nietzsche read in the late 1860s and 1870s, and, as indicated in Cosima Wagner's diaries for August 16th 1879, Bernard was a topic of conversation in the Wagner household.[331] Bernard was also much discussed in the antivivisectionist literature of the time. Zöllner mentioned him frequently in *On the Scientific Abuse of Vivisection* (1880) and provided a translation of a section from Frances Power Cobbes' essay "Bernard's Martyrs, a Comment on *Leçons de physiologie opératoire*" (1879) that featured a list of purported historical accounts of human beings being vivisected in Italy during the sixteenth century. While there is no direct evidence that Nietzsche read any of Bernard's major works, he is known to have been a reader of both the *Philosophical Journal of France and Abroad* and especially *The Review of the Two Worlds*, both of which featured references to, or articles by Bernard in which he presented arguments nearly identical, or similar to those he made in *The Introduction to the Study of Experimental Medicine*.[332]

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[330] Armin Wildermuth, "*Nietzsche und Wagner – über die Schwierigkeiten einer Kontroverse*" *Nietzsche und Wagner: Perspektiven ihrer Auseinandersetzung*, eds. Jutta Georg and Renate Reschke (Berlin: De Gruyter, 2016), 32.

[331] Wagner, *Cosima Wagner's Diaries*, Vol. II, 355.

[332] For Nietzsche's references to *La Revue des deux Mondes*, see: Friedrich Nietzsche, "eKGWB/BVN-1869,20 — Brief an Gustav Krug von: 04/08/1869," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1869,20; Friedrich Nietzsche, "eKGWB/BVN-1880,24 — Brief an Franziska Nietzsche von: 21/04/1880", *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1880,24; Friedrich Nietzsche, "eKGWB/NF-1886,5[91] — Nachgelassene Fragmente Sommer 1886 — Herbst 1887," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1886,5[91]; Friedrich Nietzsche, "eKGWB/BVN-1887,959 — Brief an Constantin Georg Naumann von: 25/11/1887," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1887,959; Friedrich Nietzsche, "eKGWB/BVN-1888,1109 — Brief an Constantin Georg Naumann von: 13/09/1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1109; Friedrich Nietzsche, "eKGWB/BVN-1888,1193 — Brief an Constantin Georg Naumann von: 17/12/1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1193; Friedrich Nietzsche, "eKGWB/BVN-1888,1197 — Brief an Helen Zimmer von: um den 17. Dezember 1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1197; Friedrich Nietzsche, "eKGWB/BVN-1888,1199 — Brief an August Strindberg von: 18/12/1888," *Nietzsche Source*, accessed November 5, 2015,

Despite the abundant circumstantial evidence of Nietzsche's familiarity with Bernard's work, however, there is only one extant reference to Bernard in Nietzsche's *Nachlass*. In a fragment from the Spring of 1888 he wrote:

> Heath and disease are not essentially different [...] Actually there exist between these two types of existence only differences of degree: the exaggeration, the disproportion, the disharmony of normal phenomena constitute the pathological condition. Claude Bernard.
>
> Just as *evil* may well be considered as exaggeration, disharmony, disproportion, so can *the good* be a dietary regiment against the danger of exaggeration, disharmony, and disproportion.[333]

Genius for Schopenhauer was a kind of hypertrophy and imbalance; Nietzsche came to conceptualize sickness in similar terms. This time, tellingly, he cited Bernard. Indeed, Bernard had many of the same interests as Nietzsche—from the limits of knowledge; through the role of determinism or fatalism in life, genius, freedom of the mind and opposition to systems; to the freedom of complex beings in their cosmic environment, and how it was the act of experimentation that allowed humans to become even freer within their environments.

Bernard's earliest interest in the relationship between an organism's internal and external environment is generally dated to a notebook entry from 1850-51 in which he wrote: "In physiology there are always two things to consider. 1. The organism, 2. The milieu."[334] As Holmes notes, however, Bernard was not the only physiologist thinking in these terms in the 1850s. His friend and colleague Charles Robin had already published the idea that organisms

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http://www.nietzschesource.org/#eKGWB/BVN-1888,1199; Friedrich Nietzsche, "eKGWB/BVN-1888,1207 — Brief an Andreas Heusler von: 22/12/1888," *Nietzsche Source*, http://www.nietzschesource.org/#eKGWB/BVN-1888,1207; Friedrich Nietzsche, "eKGWB/BVN-1888,1223 — Brief an Meta von Salis von: 29/12/1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1223; Friedrich Nietzsche, "eKGWB/BVN-1888,1226 — Brief an Andreas Heusler von: 30/12/1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1226; and Friedrich Nietzsche, "eKGWB/BVN-1888,1227 — Brief an Heinrich Köselitz von: 30/12/1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1888,1227. For the *Revue philosophique de la France et de l'étranger* see: Friedrich Nietzsche, "eKGWB/BVN-1877,643 — Brief an Paul Rée von: Anfang August 1877," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1877,643. Nietzsche was interested in many periodicals, particularly those in German and French. Another noteworthy French publication that Nietzsche expressed interest in was *La Nouvelle Revue*, which mentioned Bernard explicitly in an article by Edmond Perrier: Edmond Perrier, "*Charles Darwin et le Transformisme,*" *La Nouvelle Revue*, 16 (1882): 339.

[333] Friedrich Nietzsche, "eKGWB/NF-1888,14[65] — Nachgelassene Fragmente Frühjahr 1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1888,14[65].

[334] Claude Bernard, cited in Frederic L. Holmes, "Claude Bernard, the '*Milieu Intérieur*', and Regulatory Physiology," *History and Philosophy of the Life Sciences* 8, 1 (1986): 3-25, 7.

were divided into an internal and external environment in his 1853 *Treatise on Anatomical and Physiological Chemistry*. Bernard only later came to his developed idea of *milieu intérieur* by thinking about the parallels between the relationship of the tissues with their surrounding fluids and the relationship of the whole organism with its external environment. Cells and tissues could have direct contact with all of the elements required to sustain life. However, this was not the case for the organism as a whole. The various systems (digestive, circulatory, nervous, etc.) of an organism are all indirect means through which it maintains a distinction between its inner condition and that of its environment. In 1854 Bernard argued that blood was the primary point of contact between the organism and its environment, for it "contains all of the substances which surround the individual and which must nourish it" such as oxygen and the byproducts of digestion.[335] Instead of being an ineffable vital force, life was the result of the relationship between an organism and its environment. By 1859, thanks to talks he had given at the Sorbonne and at the *Collége de France*, Bernard's developed idea of the *milieu intérieur* and how it maintained the independence of the organism became increasingly widespread throughout physiological and public circles across Europe.[336]

## Connections Between Nietzsche and Bernard

Nietzsche's interest in dynamic self-regulation was reflected in the broader cultural attention given to figures such as Liebig and Bernard. Bernard in particular explored many of the same topics as Nietzsche in ways that Nietzsche would continue to develop as he moved further away from Wagner's circle. These topics included, but were not limited to: the role of independence and freedom in education and organic life, the belief that causal determinism was a necessary component of meaningful freedom, the necessity of epistemic limits and the inaccessibility of absolutes, the distrust of systematizers, an understanding of genius as a methodology, and the importance of experimentally intervening in the world and in oneself.

Liebig and Bernard both stressed the vital "independence" (*Selbständigkeit*, or *indépendance*) of living organisms, while also stressing the fundamental chemical similarities

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[335] Claude Bernard, "*Cours de physiologie generale de la Faculté des sciences*," *Le Moniteur des Hôpitaux*, 2 (1854): 450. As in: Holmes, "Claude Bernard," 9.
[336] Holmes, "Claude Bernard," 7-8, also 12-13.

between living and nonliving matter. Bernard increasingly identified this vital independence as a kind of freedom. Questions about the meaning of independence and freedom played a major role in debates surrounding the purpose of education at the end of the nineteenth century. They were ideas that Nietzsche attacked while acting as Wagner's propagandist. However, as with his writing in the *Untimely Meditations*, it is also possible to see evidence of the two Nietzsches in his early work *On the Future of our Educational Institutions* (1872).

On the surface, the image of education that Nietzsche presented in his lectures *On the Future of our Educational Institutions* was very much in keeping with Wagner's understanding of genius and how non-geniuses were supposed to relate to them. He presented the lectures in the form of a narrative featuring himself and a friend as they sought to fulfill a pact to meet at a specific point in time in a specific place to discuss their shared vision of education. However, they soon take to target practice, and end up disturbing an old philosopher, "a great man," and his student who had also made arrangements to meet someone at the very same place. Eventually, Nietzsche and his friend were allowed to listen in on the philosopher's conversation as he talked about how to reform German education. The philosopher's arguments caused them to abandon their earlier beliefs about education and accept that it should be structured around the "instinct to remain loyal to the sceptre of genius."[337]

The way in which Nietzsche characterized his earlier beliefs in *On the Future of our Educational Institutions* (1872) betrayed something of the "mutual education" and drive to independence that he would propose in *Human, All Too Human* seven years later. Nietzsche claimed:

> It even seems to me,' I said, 'that everything that you have surely rightly blamed on the Gymnasium is only the necessary means required to produce, at such a young age, a kind of independence [*Selbständigkeit*] and at least the belief in it. The teaching of German ought to be in the service of this independence: early on the individual must become glad of his plans and intentions in order to be able to go alone without crutches. […] In short, we believe that it may be the tendency of the Gymnasium to prepare the student and accustom him to thereafter live and learn independently, as he had to previously under the pressures of the Gymnasium's regime.

[337] Friedrich Nietzsche, "*Ueber die Zukunft unserer Bildungsanstalten,*" *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BA.

However after this his narrator is admonished by the "great man," who claimed that culture [*Bildung*] began with the opposite of academic freedom and independence.[338]

> The philosopher laughed at this, but not exactly good-naturedly and replied: 'Here you have just given me such a beautiful example [*Probe*] of this independence. And this very independence is what dismays me so, and makes the company of the student of the present always so unedifying for me. [...] Never was a time so rich in the most beautiful independences [*Selbständigkeiten*], never was every slavery so intensely hated, and of course even the slavery of education [*Erziehung*] and culture [*Bildung*].[339]

The purpose of education was not to produce independent individuals, nor should it be. The philosopher in the narrative admonishes Nietzsche and his friend, claiming that while much was made of independence, students were really just being taught how to listen to other people lecture. The philosopher would rather see students learn how to subject themselves to the tutelage of great men who could perceive the unity of things.

This argument about the importance of submitting to geniuses that could see the unity of nature also featured an antivivisectionist edge. As opposed to growing up in "metaphysical unity" with nature, the "great man" complained that youth were learning "how to subdue nature." This prevented them from seeing its unities and forced them to fight in the struggle for existence (*Lebenskampfe*), for the sake of utility: "Here every naive metaphysics comes to its end: and the physiology of plants and animals, geology, and inorganic chemistry forces their disciples into an entirely altered view of nature."[340] The fragmentary approach to knowledge typified by these disciplines had come to influence the historical style so much "that even the living body of language has been abandoned to anatomical studies: however right here is the beginning of culture (*Bildung*): that you understand how to treat the living as living."[341] Passages such as these in Nietzsche's early writing highlight the ways in which debates about physiology, vivisection, independence, self-development, education, and genius where thoroughly connected.[342] It also suggests that he would have more than a passing interest in Bernard's writings, which touched on all of these themes.

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[338] Keeping in mind that academic freedom was also often appealed to in order to defend physiological research and vivisection.
[339] Friedrich Nietzsche, "*Ueber die Zukunft unserer Bildungsanstalten. Sechs öffentliche Vorträge*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BA-V.
[340] *Ibid.*
[341] *Ibid.*
[342] This also helps to explain why the only place where Nietzsche mentions the physiologist Emil Du Bois-Reymond in his published work was to criticize him for his approach to the German language in "Schopenhauer as Educator."

Bernard argued that a belief in causal determinism was a precondition for knowledge of the natural world. Given the same causes the same effects must necessarily follow. This was why he resisted the application of statistical reasoning to medicine, for it only revealed the incompleteness of medical knowledge. Causal determinism also served as the basis for his criticism of vital forces, which would be a disruption of material causation. He accepted that many would resist the application of deterministic reasoning to the study of life because of its implications for the freedom of the will. However, he also stressed that determinism was different from fatalism. Deterministic reasoning was what allowed humans to make predictions and act in their environments trusting that cause will follow from effect, while fatalism was the belief in humanity's inability to meaningfully intervene in its surroundings.[343] A belief in causal determinism was required for individuals to be *meaningfully* free because it was causal determinism that allowed them to intervene in the course of their lives. This closely mirrored how Bernard understood the freedom of complex organisms relative to their environments. Holmes has explored the ways in which Bernard's popular articles reveal how he came to an understanding of the conditions under which the *milieu intérieur* maintained the "free and independent life" of complex organisms. Yet this freedom and independence was achieved in the context of the interdependence of the organism with its environment. In his 1878 article "Lessons on the phenomena of life common to animals and plants" Bernard observed that:

> The fixity of the milieu presupposes a perfection of the organism such that the external variations are at each instant compensated for and equilibriated. Consequently, far from being indifferent to the external world, the higher animal is, on the contrary, in a tight and informed relationship with it, of such a nature that its equilibrium results from continual and delicate compensation, established as if by the most sensitive balances.[344]

Bernard's emphasis on meaningfully intervening in one's surroundings in a deterministic framework was both a physiological and epistemic position. It had consequences for his understanding of the meaning of genius, education, and the limits of knowledge.

Bernard's understanding of living beings meant that there were epistemic limits to what an organism could and could not know about its environment. Since life was an emergent property of the relationship between an organism and its environment, there needed to be things outside of the organism in order for it to be alive in a meaningful sense. Complete, certain, or absolute

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[343] Bernard, *Introduction to the Study of Experimental Medicine*, 91, 219.
[344] Bernard, *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux,* as in Holmes, 22-3.

knowledge of any phenomena would require complete or absolute knowledge of the cosmos as a whole. Bernard held that such "absolute" knowledge of the organism would only be possible if there was nothing outside of that organism. However, this too was an impossibility, for that would mean that the conditions of absolute knowledge would rule out the very possibility of life itself, since organic life depended on its cosmic environment. The same also held true for any system of knowledge that claimed to be complete and finished, or presented an existential answer to "why" existence was one way instead of another. At best it was only possible through experimentation to have some sense of "how" the world worked, not why it worked in the way that it did. Bernard criticized his intellectual opponents such as Zöllner for their dogmatism and their "scholastic" claims about absolute knowledge:

> [K]nowledge of the inmost nature or the absolute, in the simplest phenomena, would demand knowledge of the whole universe; for every phenomenon of the universe is evidently a sort of radiation from that universe to whose harmony it contributes. In living bodies absolute truth would be still harder to attain; because, besides implying knowledge of the universe outside a living body, it would also demand complete knowledge of the organism which, as we have long been saying, is a little world (microcosm) in the great universe (macrocosm). Absolute knowledge could, therefore, leave nothing outside itself; and only on condition of knowing everything could man be granted its attainment. Man behaves as if he were destined to reach this absolute knowledge; and the incessant *why* which he puts to nature proves it.[345]

Yet while absolute knowledge was impossible, with the right experimental methods individuals could nevertheless find ever more nuanced ways to intervene in their environments and meaningfully increase their freedom to act within them. At this point Bernard's views on genius, freedom, and education start to align quite closely with Nietzsche's.

Nietzsche would come to champion the idea of the free spirit (*Freigeist*). One of the distinguishing characteristics of the free spirit was their distrust of philosophical systems. Writing in *Twilight of the Idols* in 1888 Nietzsche commented that: "I mistrust all systematisers and I avoid them. The will to system is a lack of integrity."[346] Bernard was cautioning his readers against the tendency to adhere too closely to philosophical systems much earlier than that, and also stressed the importance of a free mind/spirit (*liberté d'esprit*). He argued that experimental medicine was itself not a system of medicine, but the "negation of all systems," being merely the

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[345] Bernard, *Introduction to the Study of Experimental Medicine*, 81-2. See also, 27-8.
[346] Friedrich Nietzsche, "Twilight of the Idols," *The Portable Nietzsche*, ed. and trans. Walter Kaufmann (New York: Penguin Books, 1976), 470.

"regular and logical coordination of facts furnished by experience."[347] Bernard considered the experimental method to be the method that "proclaims the freedom of the mind and of thought" over and against the tyranny of fixed ideas (*Idée fixe*) and "the taste for systems."[348] Like Nietzsche, he claimed that "the best philosophic system consists in not having any."[349] This is because systems were not found in nature, "but only in the mind of man."[350] This position was diametrically opposed to the deductive science proposed by Zöllner and the Wagnerian detractors of vivisection.

Bernard's distrust of dogmatic systematizers and absolute truth claims meant that his vision of genius shared many similarities with Lange's vision of genius. While Lange's geniuses self-consciously created unities in nature in order to make possible the scientific method, Bernard's geniuses generated novel hypotheses, which they then tested against nature through experimentation.[351] Just as life was creation, the act of genius was the generation of a creative idea.[352] In this way Bernard inextricably linked genius with method and creativity, claiming that creative genius "may be diminished or even smothered by a poor method, while a good method may increase and develop it."[353] Appeals to authority, even the authority of a genius, could never replace a good method. Bernard stressed the dangers of "a mistaken respect for personal authority," for: "Great men, indeed, are precisely those who bring with them new ideas and destroy errors. They do not, therefore, respect the authority of their own predecessors, and they do not expect us to treat them otherwise."[354] Bernard held that even "great men" were inevitably creatures of their own particular environments and histories.[355] It was important to understand them, and appreciate them, in order to understand where the science of the present came from, but they were not to be slavishly followed.[356] Indeed, Nietzsche and Bernard would come to

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[347] Bernard, *Introduction to the Study of Experimental Medicine*, 218.
[348] *Ibid*., 34, 39, 37, 43.
[349] *Ibid*., 221. See also 223.
[350] *Ibid*.
[351] *Ibid*., 43.
[352] *Ibid*., 93, 33.
[353] *Ibid*., 35.
[354] *Ibid*., 41.
[355] *Ibid*., 41, 224.
[356] *Ibid*., 149.

agree on this point in particular: "Great men often teach us by their errors as much as by their discoveries."[357]

The philosopher in Nietzsche's *On the Future of our Educational Institutions* (1872) criticized the education system for only teaching students how to listen to lectures and read books, instead of how to live. Bernard similarly stressed that in order to teach the scientific method it was vital to teach students that active experimental science could only take place in laboratories, and could not be merely taught through readings and lectures.[358] In a telling passage Bernard laid out his vision of education:

> I think a teacher's role should be limited to clearly showing his pupil the goal that a science sets itself and to pointing out all possible means at his disposal for reaching it. But a teacher should then leave his pupil free to move about in his own way and, according to his own nature, to reach his goal, only coming to his aid if he sees that he is going astray. I believe, in a word, that the true scientific method confines the mind without suffocating it, leave it as far as possible face to face with itself, and guides it, while respecting the creative originality and the spontaneity which are its most precious qualities. Science goes forward only through new ideas and through creative or original power of thought. In education we must, therefore, take care that knowledge which should arm the mind does not overwhelm it by its weight, and that rules, intended to support weak parts of the mind, do not atrophy the strong and fertile parts. [In contrast] sciences submitting to [systems] would lose their fertility and would abandon the independence and freedom of mind [*liberté d'esprit*] essential to the progress of humanity.[359]

In each of its instantiations, from education and the experimental enterprise, to organic functioning, Bernard presented freedom as a form of dynamic self-regulation. Education was the process of giving students the means for regulating themselves, without limiting their creative abilities. This was not just limited to the freedom of the individual. More than this, with the experimental method humans could further their freedom well beyond that which was possible for other species.

In the *Introduction to the Study of Experimental Medicine* Bernard drew an analogy between living systems and the process of experiment. He argued that: "Living machines are

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[357] *Ibid*., 178. Consider also Nietzsche's remark in "Schopenhauer as Educator" that: "Schopenhauer can offer us a model is certain, all these scars and blemishes notwithstanding. One might say, indeed, that that in his nature which was imperfect and all too human brings us closer to him in a human sense, for it lets us see him as a fellow sufferer and not only in the remote heights of a genius." Nietzsche, "Schopenhauer as Educator," 143.
[358] Bernard, *Introduction to the Study of Experimental Medicine*, 145, 148.
[359] *Ibid*., 226.

[…] created and constructed in such a way that, in perfecting themselves, they become freer and freer in the general cosmic environment."[360] He argued that experimenters became freer in a strikingly similar fashion: "With the help of these active experimental sciences, man becomes an inventor of phenomena, a real foreman of creation; and under this head we cannot set limits to the power that he may gain over nature through future progress in the experimental sciences."[361] Experiment was inextricably linked with experience and trials. Bernard observed how the French word *expérience*, meant experiment, attempt, and experience, and defined an experimenter as: "a man who produces or induces, in definite conditions, observed facts, to derive from them the instruction which he wishes,— that is, experience."[362]

There were a range of practices that counted as experimentation in this expanded sense for Bernard. While morality forbade experimenters from doing harm, and actively demanded that they experiment on their fellow humans and themselves if it was to save a life, or cure a patient, "in everyday life men do nothing but experiment on one another."[363] A person's most banal activities, those that produced structured experience of the world, were all experiments. As long as they led to some kind of structured experience, there were never any unsuccessful experiments.[364] Only certainty could make an experiment unproductive, for doubt was the precondition of the experimenter's mastery: "The experimenter […] who always doubts and who does not believe that he possesses absolute certainty about anything, succeeds in mastering the phenomena that surround him and in extending his power over nature."[365] Whether it happened inside the laboratory or in daily life, nothing was outside of the experimental enterprise. Bernard makes this clearer in a section from his article on "The Problem of General Physiology" where, in a turn that sounds almost like Nietzsche, he observed that it was even desirable to experiment with good and evil:

> Modern civilization, by conquering the science of inorganic and organized nature, has found itself in entirely new conditions, unknown to ancient civilizations. This is why it is perhaps not always logical to invoke the history of ancient peoples to speculate on the destiny of new peoples. Today humanity seems to have realized that its aim is no longer passive contemplation, but process and action. These ideas penetrate more deeply into society, and the active role of the experimental sciences does not stop at the physico-

[360] *Ibid*., 79. See also, 59, 61, 62.
[361] *Ibid*., 18.
[362] *Ibid*., 21. See also 11.
[363] *Ibid*., 102. See also, 101.
[364] *Ibid*., 117.
[365] *Ibid*., 50.

> chemical and physiological sciences; it extends to the historical and moral sciences. One understands that it is not enough to remain a passive spectator of good and evil, enjoying one and preserving ourselves against the other. Modern morality aspires to a greater role: it investigates causes, wants to explain and act on them, it wants to dominate the words "good" and "evil", to give birth to one and develop it, to fight with the other to eradicate and destroy it. Therefore one can see, that it is a general trend and the modern scientific breath that animates physiology is its most eminent conqueror and ruler.[366]

In a review of the *Introduction* that ran in *The Review of the Two Worlds* in 1866, the author Paul Janet (1823-1899) took this implication a step further, describing the French Revolution as a vast social experiment that tried to establish a society based on the law of reason. Janet attributed the revolution's disastrous results to the comparative difficulty of experimenting on living societies, as opposed to living bodies or inorganic nature. Despite this, he reasoned that such things as the division of powers, free trade, and equal rights were experiments that society was running on itself, parallel to the work being done on steam, electricity, magnetism, or the chemical action of light.[367] This passage resonates with Nietzsche's reflections on the past two thousand years being an experiment, or vivisection of human history. For both Bernard and Nietzsche, these experiments had the effect of increasing human freedom (humanity's ability to regulate itself) within the deterministic system of nature.

## Hiding in the Realm of a Transfigured *Physis*

While Nietzsche's interest in dynamic self-regulation, education, and genius paralleled and reflected the work of such figures as Liebig, Bernard, and Lange, Nietzsche obscured these parallels up until the publication of *Human, All Too Human* in 1878. Throughout most of the 1870s he strove to maintain good relations with Wagner and his circle. Courting Wagner's good graces also meant that if he wanted to express any ideas that might be seen as sympathetic to physiologists or vivisection he had to do so in an oblique and coded manner. Yet this manner became more and more transparent over time. Examining Nietzsche's changing discussion of culture and of how education and genius involved the development of a second nature, or a "transfigured *physis*," throughout the 1870s shows this pattern of oblique references. Borrowing

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[366] Claude Bernard, "*Le problème de la physiologie générale,*" *La Revue des Deux Mondes* 72 (1867): 874-892. 878.
[367] Paul Janet, "*La Méthode expérimentale et la Physiologie à propos des travaux récens de M. Claude Bernard,*" *La Revue des Deux Mondes* 62 (1866): 908-936, 909.

the Aristotelian language of a transfigured *physis* allowed Nietzsche to explore ideas that would have been antithetical to Wagner or Schopenhauer without appearing to be directly contradicting them.

*Physis* was a consistent theme in Nietzsche's writing, especially when he dealt with the parallels between organic development, self-regulation, and education in the 1870s. In *The Gay Science* (1882), in the aphorism "Long Live Physics!," Nietzsche claimed that it was physics that allowed individuals to give laws to themselves, to become what they were, by giving them the materials they need to create their own tables of good and sense of taste.[368] The Nietzsche scholar Kaufmann was puzzled by Nietzsche's use of the term physics in this aphorism and vaguely gestured to some possible solution in the word's relationship to the Greek *physis*. Nietzsche's use of the term gains a new dimension when one considers the way in which Bernard sought to ultimately ground physiological research and education in physics through a common emphasis on causal determinism. Bernard claimed that understanding the relationship between physiology and physics was vital if the next generation of physiologists were going to contribute to how humans meaningfully acted in a causally determined natural world. Nor is this the only time when Nietzsche's use of the term *physis* echoed points found in Bernard's thought. Nietzsche's language of a transfigured *physis* largely articulated thoughts similar to Bernard's or Lange's in a kind of Aristotelian or classical language that was calculated to avoid alienating Wagner or the Wagnerian circle.

In *On the Use and Disadvantages of History for Life* (1874) Nietzsche explored the relationship between individuals and their contexts. While he was specifically referring to problems of education, history, and psychology, he did so with language that was highly reminiscent of Bernard's discussion of the increased refinement of organisms' *milieu intérieur*:

> The stronger the innermost roots of a man's nature, the more readily will he be able to assimilate [*aneignen*] and appropriate [*anzwingen*] the things of the past; and the most powerful and tremendous nature would be characterized by the fact that it would know no boundary at all at which the historical sense began to overwhelm it; it would draw to itself and incorporate into itself all the past, its own and that most foreign to it, and as it were transform it into blood.[369]

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[368] Nietzsche, *The Gay Science*, 263-266.
[369] Nietzsche, "On the Uses and Disadvantages of History for Life," 62-3.

In this early work, Nietzsche described the psychological and cultural equivalents of assimilation, digestion, excretion, healing, and growth as taking place within the *milieu extérieur* of history and experience. In this case the individual's strength and complexity was determined by their ability to employ these external circumstances to the advantage of their own *milieu intérieur* without being thrown off balance by the fluxuation of their surroundings. It is no accident that Nietzsche described this process as an individual's ability to take things that were most foreign to them and transform them "into blood." In Bernard's earlier writings, he described blood as the primary agent that maintained the dynamic equilibrium of organic life, and allowed warm-blooded organisms a much greater range of environmental freedoms than their cold-blooded counterparts. In Nietzsche's terminology, an individual's "horizon" played the role of a kind of psychological and cultural *milieu intérieur*. Like Bernard, here Nietzsche also highlighted the role of destruction, dis-assimilation, or forgetting as the vital predicates upon which organic or cultural life depended.[370]

In "Schopenhauer as Educator" (1874) Nietzsche offered a different definition of culture from his previous two meditations. Instead of defining culture as the inherent unity of a folk's artistic style, he claimed that culture was a kind of personal liberation.[371] The desire for culture emerged from "each individual's self-knowledge and dissatisfaction with himself," and had as its goal the production of geniuses from the longing each person had to be reborn as a genius.[372] Here Nietzsche was articulating a much more egalitarian alternative to Schopenhauer's vision of genius. Even non-geniuses could feel sympathy for the genius and recognize in nature the "immeasurable longing to become whole."[373] Notably, however, this longing did not necessarily correspond to an ability to objectively see into the deepest depths of objective reality, but a desire for the perfection of their own nature, and the achievement of a state of self-knowledge through the transfiguration of their *physis*.[374]

*Physis* is a term that appears most frequently in Nietzsche's published writings between 1870 and 1876. On the surface of it, it was the ancient Greek word for nature, from which English draws both physics and physiology. It also had connotations of growth and of essence.

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[370] Nietzsche, "On the Uses and Disadvantages of History for Life," 63-4
[371] Nietzsche, "Schopenhauer as Educator," 130.
[372] *Ibid.*, 142, 162, and 163.
[373] *Ibid.*, 163.
[374] *Ibid.*, 160-1.

Aristotle discussed *physis* in several places in his collected writings from his *Physics* and *Metaphysics* to his *Nicomachean Ethics* and *Politics*. Ward has commented on the various, and sometimes contradictory, ways in which Aristotle used the term *physis*. When he discussed physical nature, Aristotle used *physis* to distinguish between the motions of natural things from the motions of artifacts. Organic growth and decay, and the motion of the elements were due to the inner *telos*, or potential, in their nature becoming manifest, whereas artifacts and violent motion occurred when some external force acted upon something natural. This definition is echoed in some of his writings on human nature, when Aristotle described the hierarchy in which men, women, and slaves participated based on their inborn abilities to rule. However, in sections of the *Nicomachean Ethics* and *Politics* where he discusses education and virtue, he presents a far more plastic view of human nature, arguing that: "Neither by nature, then, nor contrary to nature do the virtues arise in us; rather we are adapted by nature to receive them, and are made perfect by habit."[375] In these texts Aristotle presented a view of human nature that was defined by how individuals re-defined themselves, and their first nature, into a second nature, through the process of education.[376] As Brobjer has shown, Nietzsche had a persistent interest in Aristotle's writings and purchased his collected works in 1868.[377] Nietzsche's use of *physis* was far more evocative of Aristotle's understanding of the relationship between education and ability than Schopenhauer's. Given the fact that for most of the 1870s his Wagnerian context would have made it very difficult for him to express ideas that could be considered sympathetic to Bernard and other vivisectors, the language of a transfigured *physis* also allowed him to appear to be supporting Wagner's views of nature and education, even while he was increasingly moving away from them.

During the mid-1870s Nietzsche described modern philosophers (and here it may be safe to include Bernard) as the mightiest promoters of life who argued for the importance of a "transfigured *physis*" or second nature. In doing so he also emphasized that life was a physical, time bound process.[378] It was only after this process of unification that one could truly be said to

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[375] Aristotle, "Nicomachean Ethics," in *The Basic Works of Aristotle*, ed. Richard McKeon (New York: The Modern Library, 2001), 952.
[376] Julie K. Ward, "Aristotle on Physis: Human Nature in the Ethics and Politics," *Polis: Journal of the Society for Greek Political Thought* 22 (2005): 287-308, 299.
[377] Brobjer, *Nietzsche's Philosophical Context*, 51, 57.
[378] Nietzsche, "Schopenhauer as Educator," 145.

become what one is. In "Schopenhauer as Educator" he argued that this was what Schopenhauer was supposed to have achieved:

> The longing for a stronger nature, for a healthier and simpler humanity, was in [Schopenhauer's] case a longing for himself; and when he had conquered his age in himself he beheld with astonished eyes the genius in himself. The secret of his being was now revealed to him, the intention of his stepmother age to conceal his genius from him was frustrated, the realm of transfigured *physis* was disclosed.[379]

Yet while Nietzsche claimed that he was describing Schopenhauer and the process whereby the philosopher became a genius in "Schopenhauer as Educator," what he was really doing was beginning to undermine the entire edifice of Schopenhauer's philosophy.

Even in 1874 Nietzsche presented a model of self-knowledge that was predicated upon paying attention to the little things of an individual's habits and context, including their friendships and enmities, their facial expressions and way of shaking hands, their memories and the things they wished to forget, their books and handwriting.[380] Even the genius could be understood by paying attention to such seemingly fragmentary details. Mirroring Schopenhauer's own metaphor of the painting, Nietzsche subverted its original meaning by claiming that "[t]o understand the pictures one must divine the painter."[381] While here he apparently echoed Schopenhauer in complaining about the tendency of the whole "guild of the sciences" to busy itself uselessly with "the canvas and the paint" of genius, he also made it clear that in divining the origin and works of the genius "painter" it was necessary to understand the biographical process of self-formation which the genius underwent. This was the very thing that Schopenhauer had derided as "attending only to the style of [the] frame" of genius. Nietzsche was actually presenting an argument about how genius was defined by the individual's ability to make a harmonious whole out of the heterogeneous elements of their psychological, cultural, and physiological circumstances, even as he claimed that he was defending Schopenhauer's views.

Nietzsche cited the Italian Renaissance polymath and autobiographical writer Benvenuto Cellini (1500-1571) as an example of this kind of genius in "Schopenhauer as Educator."[382] He

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[379] *Ibid.*, 145-6.
[380] *Ibid.*, 129. Nietzsche also expressed interest in the daily lives of the ancient Greeks as well as using context to explain how Kant's philosophy was a by-product of his habits of life. See: Nietzsche, "Schopenhauer as Educator," 137.
[381] *Ibid.*, 141.
[382] Nietzsche's choice of example was likely a nod to his appreciation of the writings of his friend and colleague Jacob Burckhardt (1818-1897), and Burckhardt's work on self-fashioning in the Renaissance.

described Cellini as a "harmonious whole" who arrived at his inner harmony from the "simultaneous sounding of many voices in one nature." Nietzsche claims that he was an individual "in whom everything, knowledge, desire, love, hate, [strove] towards a central point, a root force, and where a harmonious system [was] constructed through the compelling domination of this living centre."[383] In emulation of Cellini, Nietzsche argued that understanding the "higher laws of motion" of the individual would allow the educating philosopher to understand how their pupils' heterogeneous natures could be transformed into harmonious wholes akin to a living solar and planetary system in a state of dynamic equilibrium.[384] This is why Nietzsche placed such importance on the fashioning of a second nature or transfigured *physis* in "Schopenhauer as Educator."

Nietzsche's accounts of genius as a form of self-consciously transfigured *physis* more closely resembles Lange's creative and self-aware genius, as well as Bernard's experimental vision of education, than it resembled Schopenhauer's arguments about genius and education. Nietzsche expressed his hopes that the philosopher could derive an organic and historical method for unifying the disparate parts of the human mind and body while also lending the contingencies of life greater purpose and meaning. Instead of being able to see into the depths of the thing-in-itself, Nietzsche explicitly presented the genius as a creative and social individual who could shape contingencies into unities that did not exist outside of their shaping of them:

> [T]he striving after [normally] valued things acquired meaning only through an exalted and transfiguring overall goal: to acquire power so as to aid the evolution of the *physis* and to be for a while the corrector of its follies and ineptitudes. At first only for yourself, to be sure; but through yourself in the end for everyone.[385]

Nietzsche's discussion of a transfigured *physis* was a re-articulation of the "second nature" that he described in "On the Uses and Disadvantages" (1874). This time he presented the idea with an even more explicit emphasis on the human being as an active creator and regulator of itself and its values. In a statement that would not have been out of place in *Human, All Too Human*, he even claimed that: "it is only an illusion that a spirit can be free and independent if this achieved unlimitedness –which is at bottom creative self-limitation– is not demonstrated anew from morn

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[383] *Ibid.*, 131.
[384] *Ibid.*
[385] *Ibid.*, 142.

till night through every glance and every gesture."[386] Genius was a process of recognizing one's limitations and creatively setting limitations on one's self that helped one create new values and goals.

Nietzsche would continue to develop and reflect on these relationships between genius, education, freedom, and physiology until the end of his productive career. It is worthwhile to explore how his work came to perform the very processes of self-fashioning that he was attempting to teach his readers. When he finally broke from Wagner in 1878, he became even more explicit about this alternative form of education.

## The Free Spirit's Mutual Education

Nietzsche began openly contradicting Wagner in *Human, All Too Human* (1878). What he had previous expressed obliquely in the language of a second nature or transfigured *physis* he began to explicitly describe as his own vision of genius and education. Nietzsche's alternative genius required an alternative educational trajectory than that which Nietzsche had defended as Wagner's propagandist in *On The Future of Our Educational Institutions* (1872). He returned to his earlier notion of education as a form of mutual education; a process that he tried to exemplify as he described his own attempts to fashion himself. It was a development that may have started out as hypocrisy, but became the basis of personal growth and transformation. In 1878 Nietzsche claimed to be seeking the genius of humanity as a whole, a state in which the health of a culture was determined by the diverse number of free spirits, or experimenters, that it could support. He attributed qualities to the free spirit that were directly opposed to Wagner's or Schopenhauer's models of genius. Whenever he spoke positively of genius in *Human, All Too Human*, he also attributed different qualities to it that set it apart from Wagner's ideal. When he critiqued genius and great men as tyrannical, unhealthy, or destructive, however, he did so with Wagner specifically in mind.

The free spirit was a subspecies of genius, but it was a particularly liberatory model of genius. The aphorism "The Glory of the Great" typifies this point. In it Nietzsche claimed that: "Of what account is genius if it does not communicate to him who contemplates and reveres it such freedom and elevation of feeling that he no longer had need of genius! - *Rendering*

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[386] *Ibid.*, 137.

*themselves superfluous* – that is the glory of all great men."[387] In a number of passages in *Human, All Too Human* he presented a very different sense of genius than Wagner's or Schopenhauer's. Yet this family resemblance can be seen in the relationship between the free spirit and tradition, similar to, but also notably different from, that of Schopenhauer's genius:

> Compared with him who has tradition on his side and required no reasons for his actions, the free spirit is always weak, especially in actions for he is aware of too many motives and points of view and therefore possesses an uncertain and unpracticed hand. What means are there of nonetheless rendering him *relatively strong*, so that he shall at least make his way and not ineffectually perish? How does the strong spirit […] come into being? This is in the individual case the question how genius is produced.[388]

The free spirit was created from themselves without negating their awareness of the multiplicity of "points of view" that could be brought to bear on any given subject, and they did not seek to destroy their own history, but only overcome it. Nietzsche clarified: "The term 'free spirit' here is not to be understood in any other sense; it means a spirit that has *become free*, that has again taken possession of itself."[389] The reflective or retroactive moment of self-recognition that characterized the free spirit constituted both an acknowledgement of history and an overcoming of it, not by rejecting its necessities, but by crafting their appearance and the effects they produced. By not simply acknowledging, but by embracing their origins and limitations, the free spirit overcame the tendency to see themselves as an end or final product. Unlike Wagner's or Schopenhauer's genius, a free spirit recognized the value of alternatives and the resistances they faced in their own process of development. They thus required a greater store of energy than those thinkers who found themselves grounded in traditions, whether they were imitating, destroying, or outdoing those traditions. The free spirit, much like Bernard's experimenter, was a genius with a history, with an awareness of their own inevitable partial-perspective. They were capable of rejoicing in alternatives and in their capacity to help produce alternatives.

Nietzsche argued that the coercive and dogmatic educational system as it existed in the nineteenth century was not equipped to bring about free spirits. Like Bernard, Nietzsche was concerned with how many educators seemed only capable of producing students and followers, not geniuses, and free-spirited educators. In the aphorism "Girls as Grammar-School Pupils," he

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[387] Nietzsche, *Human, All Too Human*, 298.
[388] *Ibid.*, 110.
[389] Nietzsche, "Ecce Homo," 739.

warned: "For heaven's sake don't let us transmit our grammar-school education to girls! An education that so often takes spirited, knowledge-thirsty, passionate young people and makes of them – images of their teachers!"[390] In a particularly moving passage from *Thus Spoke Zarathustra* (1883-1885), which he later quoted verbatim in *Ecce Homo* (1888) as an example of how he wished to be read, he cautioned his readers from following any teacher too closely, for: "Perhaps he has deceived you. / […] One repays a teacher badly if one remains only a pupil. […] You had not yet sought yourselves when you found me. […] Now I bid you lose me and find yourselves; and only when you have all denied me will I return to you."[391] In many cases the recalcitrance of a student was what demonstrated their value, and their ability to derive new values for themselves. He expressed this thought in "Disloyalty, Condition of Mastership" that "every master has only one pupil – and he becomes disloyal to him – for he too is destined for mastership."[392] In "Joy in Recalcitrance" he argued that it was an awareness of what was human, all too human, in an educator that allowed them to take joy in the obstinacy of their pupils: "A good educator knows cases in which he is proud of the fact that his pupil remains true to himself *in opposition to him*: in those cases, that is to say, in which the youth ought not to understand the man or would be harmed if he did understand him."[393] Nietzsche would later expand upon this idea when he described the ways in which a philosopher's system was a conceptual mirror of their own physiological and personal history.

"Gradually it has become clear to me," Nietzsche wrote in 1886 at the beginning of "Beyond Good and Evil," "what every great philosophy so far has been: namely, the personal confession of its author and a kind of involuntary and unconscious memoir."[394] Philosophical systems could only claim to be universal systems because of this bad consciousness about their own origins. They were always grounded in the given drives and moral pretensions of their creators. Even the drive to have one's philosophical system taken to be a universal truth was merely a fragmentary aspect of the individual philosopher that sought to present themselves as the whole person. Just like the tyrannical genius every single one of a person's drives, "would like only too well to represent just *itself* as the ultimate purpose of existence and the legitimate

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[390] Nietzsche, *Human, All Too Human*, 153.
[391] Friedrich Nietzsche, *Thus Spoke Zarathustra*, trans. R.J. Hollingdale (New York: Penguin Books, 2003), 103.
[392] Nietzsche, *Human, All Too Human*, 293.
[393] *Ibid.*, 277.
[394] Friedrich Nietzsche, "Beyond Good and Evil: Prelude to a Philosophy of the Future," In *Basic Writings of Nietzsche*, trans. Walter Kaufmann (New York: The Modern Library, 2000), 203.

*master* of all the other drives[,] and it attempts to philosophize in *that spirit*."[395] Thus there was nothing impersonal about philosophy. The philosopher's "morality bears decided and decisive witness to *who he is*—that is, in what order of rank the innermost drives of his nature stand in relation to each other."[396] This means that while philosophers might be able to develop systems that were vital for their life and wellbeing, these systems were likely to harm others who sought to emulate them too closely. A more libratory approach to education would involve the student understanding something about the human, all too human, qualities of the people from which they hoped to learn and how their own philosophies emerged from their attempts to refashion themselves.

The approach to the "little things" of a philosopher's person was vital, Nietzsche argued in *Ecce Homo* (1888), for: "All the problems of politics, of social organization, and of education have been falsified through and through because one mistook the most harmful men for great men—because one learned to despite 'little' things, which means the basic concerns of life itself."[397] In this we hear a definite echo of his critiques of the cult of genius and education's role in the perpetuation of the cult. Instead: "these small things – nutrition, place, climate, recreation, the whole casuistry of selfishness—are inconceivably more important than everything one has taken to be important so far. Precisely here one must begin to *relearn*."[398] Nietzsche's ideal of the free spirit brought with it an alternative sense of the meaning and purpose of education. It was one that imparted to the student the capacity to resist the freedom quashing aspects of education, and resist it in ever more creative and challenging ways.

Nietzsche suggested in *Human, All Too Human* that the solution to the normalizing and coercive tendencies of education was to break down the student/teacher relationship into a kind of mutually instructive friendships:

> Now that self-education and fraternal education are becoming more general, the teacher must, in the form he now normally assumes, become almost redundant. Friends anxious to learn who want to acquire knowledge of something together can find in our age of books a shorter and more natural way than 'school' and 'teacher' are.[399]

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[395] *Ibid*.
[396] Nietzsche, "Beyond Good and Evil," 203-4.
[397] Nietzsche, "Ecce Homo," 712.
[398] *Ibid*.
[399] Nietzsche, *Human, All Too Human*, 353.

Importantly, this mutual education was exactly the same idea that Nietzsche and his friend were supposedly discussing in *On The Future of Our Educational Institutions* (1872) before being converted to the "great man's" Wagnerian educational philosophy, as noted above. This form of education implied a challenge to the cult of genius with its top-down approach to learning and offered instead a process of collaborative self-fashioning through texts and conversation. Nietzsche would only slightly complicate this image of education later on with his assertion that "there are no educators." However, he did so with much the same narrative direction:

> As a thinker one should speak only of self-education. The education of youth by others is either an experiment carried out on an as yet unknown and unknowable subject, or a leveling on principle with the object of *making* the new being, whatever it may be, conform to the customs and habits then prevailing: in both cases therefore something unworthy of the thinker […]. – One day, when one has long since been educated as the world understands it, one *discovers oneself*: here begins the task of the thinker; now the time has come to call on him for assistance- not as an educator but as one who has educated himself and who thus knows how it is done.[400]

This is part of the self-referential aspect of Nietzsche's emerging understanding of education. One free spirit could further the education of another. However, it was not through teaching them their own systems of thought and ways of living, but by sharing with them how they arrived at those things for themselves. Nietzsche was arguing that the personalization of philosophy served an important didactic purpose. Beginning with the text *Human, All Too Human*, he sought to enter into a different kind of relationship with his "students" as a friend who could benefit from understanding how Nietzsche himself was attempting to become free. This effort was not without its artifice, however, and it is sometimes difficult to tell where Nietzsche was trying to fashion himself and where he was merely trying to distance himself from his ties to Wagner and his circle. His arguments about the cult of genius, of the non-universality of music, and even his caution that when approaching any idea "the little word 'probably' does us good, because it breaks the personally burdensome tyranny of the unconditional" were all in the service of this goal.[401]

Nietzsche's account of his own self-fashioning and the "genius" against whom he positioned himself thus served a didactic purpose. In the *Gay Science*, published in 1882 and

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[400] *Ibid.*, 374.
[401] *Ibid.*, 253, 219. One can compare this with the comments in Bernard about the role of doubt and his resistance to the absolute.

significantly expanded in 1887, Nietzsche acknowledged his own history and relationship to Wagner in an aphorism entitled "Schopenhauer's Followers." In it he discussed the genealogical connection of how the free spirit emerged out of his ideas of genius as well as the role Wagner played in helping him to come to an understanding of the educator as a fellow self-fashioner. Nietzsche also explicitly identified himself as a "disciple" of Wagner:

> Let us remain faithful to Wagner in what is *true* and authentic in him—and especially in this, that we, as his disciples, remain faithful to ourselves in what is true and authentic in us. Let him have his intellectual tempers and cramps. Let us, in all fairness, ask what strange nourishments and needs an art like this may require to be able to live and grow. It does not matter that as a thinker he is so often wrong; justice and patience are not for *him*. Enough that his life is justified before itself and remains justified--- this life which shouts at everyone of us: 'Be a man and do not follow me—but yourself! But yourself!' *Our* life, too, shall remain justified in our own eyes![402]

This acknowledgement echoed Zarathustra's message to his disciples in *Thus Spoke Zarathustra*. It was also one way that Nietzsche performed what he had earlier said in *Human, All Too Human* about the free spirit's capacity to affirm competing schools of thought, to take joy in them and recognize how they too contributed to their strength and ability to flourish. Nietzsche identified the ability to coexist with competing viewpoints as one of the features that defined the health of the free spirit. He also associated it with the health of society itself.

In *Human, All Too Human*, Nietzsche contrasted the cult of genius to what he called the cult of culture. The cult of culture was the commitment to a culture that could recognize the needs of a healthy, intellectually diverse society just as Nietzsche claimed that individuals required diversity, and a diversity of challenges, for their own wellbeing and growth. He argued:

> For the system of all that which humanity has need of for its continued existence is so comprehensive, and lays claim to so many and such varying forces, that humanity as a whole would have to pay heavily for any *onesided* [sic] preference, whether it be science or the state or art or trade, to which these individuals [geniuses] would entice it. It has always been the greatest fatality for culture when men have been worshipped […] – Next to the cult of the genius and his force there must always be placed, as its complement and palliative, the cult of culture: which knows how to accord the material, humble, base, misunderstood, weak, imperfect, onesided [sic], incomplete, untrue, merely apparent,

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[402] Nietzsche, *The Gay Science*, 155-6. While Nietzsche concluded this passage with a reference to Goethe's *The Sorrows of Young Werther* and the older poet's appeals to stop the spate of suicides that followed the book's publication in 1774, the fact that Nietzsche was claiming that Wagner's life was what shouted this likely indicated that he meant that Nietzsche sought to follow Wagner by choosing his own path in life, not the one Wagner had in mind for him.

> indeed to the evil and dreadful, a proper degree of understanding and the admission *that all this is necessary*; for the harmonious endurance of all that is human.[403]

He reinforced this position four years later in *The Gay Science*, where he observed in the aphorism "The Failure of Reformations" that: "we may always infer that a civilization is really high when powerful and domineering natures have little influence and create only sects."[404] The source of this "height" came from the diversity of natures able to thrive in a given culture. Failed wholesale reformations of a society were one of the most effective ways of judging the diversity and health of that society; the number of free spirits, as opposed to geniuses it is able to support. He drew this conclusion from a consideration of ancient Greek religious and philosophical practices; those of the Pythagoreans, Platonists, Aristotelians, Epicureans, Stoics, Cynics, and others, in comparison to Christianity:

> Among the Greeks several attempts to found new Greek religions failed—which speaks for the higher civilization of the Greeks even in rather early times. It suggests that there must have been in Greece at an early time large numbers of diverse individuals whose diverse needs and miseries could not be taken care of with a single prescription of faith and hope.[405]

Nietzsche's emphasis on the diversity of needs and sources of sufferings in a society reflected his larger concern about the relationship between an individual's physiological responses and ability to regulate themselves and how this was reflected in larger political and philosophical systems. If the health of a culture or society could be measured in terms of the diversity of the needs and miseries present within in, then the fact that "Luther's Reformation" was able to claim most of northern Europe was a sign of the north's declining health in contrast to the south. The north was more susceptible to the cult of genius, and less able to tolerate diversity. In this particular passage Nietzsche named the event after its founder, implying that in a freer and healthier cultural context that is what it would be called, not the "Protestant Reformation." Nietzsche attributed the widespread acceptance of Christianity to the degeneration of Europe into an essentially homogenous entity with only a limited number of "needs and miseries." Seen in this light, as an organized religion Christianity itself behaved and thrived in much the same way as the cult of genius. Nietzsche drew a much larger critique of western civilization out of an

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[403] Nietzsche, *Human, All Too Human*, 259.
[404] Nietzsche, *The Gay Science*, 195.
[405] *Ibid.*, 194-5.

autobiographical reflection on his relationship to Wagner. It was not the only alternative that he sought to provide during this time.

Despite Nietzsche's claims about the autobiographical nature of philosophy in "Beyond Good and Evil" (1886), he expressed a contrary sentiment in *Ecce Homo* (1888). He wrote there: "I am one thing, my writings are another matter."[406] This apparent inconsistency stems from the interaction of the autobiographical with the autodidactic elements of Nietzsche's work. There was an element of self-regulation in his writings that led to a persistent dissonance between Nietzsche, the author, and Nietzsche the person who was trying to shape himself through his works. He wrote in order to become what he was. His interest in hypocrisy as a necessary stage of self-regulation and self-fashioning stemmed from this dissonance.

Nietzsche argued that consistent hypocrisy was an early stage of conscious self-fashioning. He first made this argument in the aphorism "How Appearance Becomes Being" (1878) in relationship to how one trains for a profession:

> The hypocrite who always plays one and the same role finally ceases to be a hypocrite; for example priests, who as young men are usually conscious or unconscious hypocrites, finally become natural and then really are priests without any affectation […]. The profession of almost every man, even that of the artist, begins with hypocrisy, with an imitation from without, with a copying of what is most effective.[407]

In the preface to the second book of *Human, All Too Human*, Nietzsche laid out how the origin of his project of self-fashioning was grounded in a kind of hypocrisy. He was acutely aware of this, writing that in the first book of the text:

> I spoke only of things that had nothing to do with me but did so as though they had something to do with me. It was then I learned the art of *appearing* cheerful, objective, inquisitive, above all healthy and malicious – and this, it seems to me, constitutes 'good taste' on the part of an invalid. A subtler eye and empathy will nonetheless not fail to see what perhaps constitutes the charm of this writing – that here a sufferer and self-denier speaks as though he were *not* a sufferer and self-denier.[408]

Just as Zarathustra would caution his disciples to leave him, so that they may find him, here Nietzsche described his own process of leaving himself, so that he could "*become* what he *is*: which means to discharge it in works and actions."[409] As he concluded the preface he mentioned

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[406] Nietzsche, "Ecce Homo," 715.
[407] Nietzsche, *Human, All Too Human*, 39.
[408] *Ibid.*, 212.
[409] *Ibid.*, 125.

the paradoxical reward of self-fashioning, for through such measures and attention to appearances: "our reward is the greatest of life's gifts, perhaps the greatest thing it is able to give of any kind – we are given our *task* back."[410]

Nietzsche described the retroactive process of getting one's task back in organic terms. In the aphorism "Dissimulation as Duty" in *Daybreak*, he wrote how even the virtues of honesty and goodness that society most values emerged from hereditary aristocracies in which the: "long-standing practice of dissimulation [turned] into, at last, *nature*: in the end dissimulation [canceled] itself out, and organs and instincts [were] the hardly anticipated fruits in the garden of hypocrisy."[411] This was evocative of the very first aphorism from *Human, All Too Human*, where he described the "Chemistry of the History of the Moral." Likewise, in the aphorism "What We Are Free to Do," he returned to the same metaphor of the garden:

> One can handle one's drives like a gardener and, though few know it, cultivate the shoots of one's anger, pity, musing, vanity as fruitfully and advantageously as beautiful fruit on espaliers; […] We are free to do all this: but how many actually know that they are free to do this? Don't most people *believe* in *themselves* as completed, *fully grown facts*? Haven't great philosophers, with their doctrine of the immutability of character, pressed their seal of approval on this presumption?[412]

Whether Nietzsche employed the educational metaphors of treating the self as a work, as a consistent hypocrite, or as a garden that needed self-conscious tending, one of the most puzzling necessities was how drives and values tended to emerge from their opposites in the process of becoming what they were. What Nietzsche called his "chemistry of the history of the moral" was part of his attempt to answer the question of how human passions and institutions could emerge from their opposites. Just as he would look for the origins of reason in unreason and selflessness in selfishness, he often described the origin of the individual in terms of its emergence from the "baseness" of hypocrisy into a state of conscious self-fashioning. Just as in Lange and Bernard, the individual crafted the unity of their own character, it was not given. This chemistry of the history of the moral was also part of Nietzsche critique of absolutes, unchanging organisms, cultures, and individuals. For instance, in the aphorism "Will a Self," he critiqued the finality of traditional statements of self-knowledge:

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[410] *Ibid.*, 213.
[411] Nietzsche, *Daybreak*, 173.
[412] *Ibid.*, 278.

> Active, successful natures act, not according to the dictum "know thyself," but as if there hovered before them the commandment: *will* a self and thou shalt *become* a self. – Fate seems to have left the choice still up to them; whereas the inactive and contemplative cogitate on what they *have* chosen, on *one* occasion when they entered into life.[413]

Nietzsche saw in the standard approach to self-knowledge a kind of passivity, a weariness and desire to only engage with things that promised to be conclusive, absolute, and final. This emphasis on activity, and activity as a remedy for absolutist thinking, was very much in keeping with Bernard's account of experimental knowledge and training, and served as the basis of Nietzsche's interest in the idea of experimentation.

## Nietzsche and Experimentation

Nietzsche began his public work on new models of genius and education in *Human, All Too Human* (1878). He felt that his growing awareness of the importance of mutual education and self-fashioning revealed the diverse needs of humanity as a whole and the ways in which the free spirit could become free through a self-reflective process of dynamic self-fashioning. In order to do this, however, they would have to continually experiment with and test themselves and their relationship to their individual contexts. Both Bernard and Nietzsche argued that experimentation led humans to meaningful independence and the freedom. Experimentation allowed people to both recognize their own limitations while also providing them with the ability to act creatively within those limitations. Bernard largely had in mind the limitations of an organisms' physical environment. However, Nietzsche's philosophy of experimentation also included how society and history were part of the free spirit's limitations. Understanding and experimenting with these broader cultural and personal constraints required that any potential free spirits had a robust sense of themselves. This kind of philosophical experimentation required that they travel through many different cultures (both historical and contemporary), moral systems, states of health, and philosophies. In this way the free spirit could increasingly take control of their own life paths with a greater understanding of the diversity of possible ways of being active in the world and ability to fashion themselves in relation to them.

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[413] Nietzsche, *Human, All Too Human*, 294.

Nietzsche explicitly linked philosophy and experimentation in "Beyond Good and Evil" (1886), claiming that:

> A new species of philosophers is coming up: I venture to baptize them with a name that is not free of danger. As I unriddle them, insofar as they allow themselves to be unriddled- for it belongs to their nature to *want* to remain riddles at some point— these philosophers of the future may have a right— it might also be a wrong— to be called *attempters* [*Versucher*]. The name itself is in the end a mere attempt [*Versuch*] and, if you will, a temptation [*Versuchung*].[414]

*Versuch* also means experimentation or to try something out and preserves the ambiguity of Bernard's own word play with the French *expérience* and the relationship between experimentation and experience. One of Nietzsche concerns in "Beyond Good and Evil" was to "experiment" with the extent to which truth could "endure incorporation" in order to test the limits of knowledge.[415] Like Lange, Helmholtz, and du Bois-Reymond, Bernard was concerned with the limits of knowledge and the role that experimentation played in determining these limits.[416] Bernard critiqued any sort of fatalistic skepticism that simply stopped at the limits of knowledge, in favour of the kind of skepticism that was active and creative and which united experience and experimentation. In the aphorism "Truthfulness," Nietzsche stressed that he favoured: "any *skepsis* to which I may reply: 'Let us try it!' But I no longer wish to hear anything of all those things and questions that do not permit any experiment. This is the limit of my 'truthfulness'; for there courage has lost its right."[417] This statement echoes Bernard's distinction between doubt and skepticism, and how the skeptic merely stopped at believing in nothing.[418]

Understanding Nietzsche's relationship to Bernard also helps elucidate the way that Nietzsche united experimentation and discovery with evil and the breaking of taboos, even while he claimed that such taboo breaking could help make humans more humane. Nietzsche came to see a close association between knowledge and cruelty, and, as was shown in chapter two, this is best understood in relationship to his connection to the vivisection debates of the 1870s and

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[414] Nietzsche, "Beyond Good and Evil," 242.
[415] *Ibid.*, 171.
[416] Bernard, *Introduction to the Study of Experimental Medicine*, 80-82.
[417] Nietzsche, "Beyond Good and Evil," 115.
[418] Bernard, *Introduction to the Study of Experimental Medicine*, 52-3.

1880s. This was not just limited to physiological experimentation. In *Daybreak*, in an aphorism entitled "Research and Experimenters," he claimed that:

> There is no one and only scientific method that leads to knowledge! We must proceed experimentally with things, be sometimes angry, sometimes affectionate towards them and allow justice, passion, and coldness toward them to follow one upon the other. One person converses with things like a policeman, another as father confessor, a third as a wanderer and curiosity seeker. Sometimes one wrings something from them through sympathy, sometimes through violent force; reverence for their mysteries leads one person forward and eventually to insight, whereas another employs indiscretion and roguery in the explanation of secrets. Like all conquerors, discoverers, navigators, adventurers, we researchers are of a daring morality and have to put up with being considered, on the whole, evil.[419]

In "Beyond Good and Evil" Nietzsche explicitly related this kind of experimental breaking of taboos to vivisection, the taboo that Bernard was so often accused of breaking.[420] Nietzsche also acknowledged Dionysus as the god of experimenters (or tempters), whose "genius of the heart" made "people stronger, more evil, more profound, more beautiful, more humane."[421] Testing the limits of knowledge also involved testing the limits of what was socially acceptable. Nietzsche seems to have shared Bernard's sentiment that experimentation was inevitable, and that the diversity of human actions could all be understood as experimental case studies. This experimental view of life itself informed how human beings could make more self-conscious experiments out of their own individual lives. This took on an increasingly central role in Nietzsche's philosophy. It unified his interests in genius, education, freedom, physiology, morality, society and culture, and revealed the ways that a kind of *milieu intérieur* existed at each level of human experience.

Nietzsche explored the experimental and organic dimensions of his philosophy in "Beyond Good and Evil." He described the "spirit" as an organism or organ, more specifically like a stomach, that assimilated experiences, grew, and, importantly, made a distinction between itself and the world via a "limiting horizon."[422] While the text was first published in 1886, Nietzsche made many claims in it that recalled the ways in which he talked about horizons as early as "On the Uses and Disadvantages" (1874) and *Human, All Too Human* (1878).[423] Both Nietzsche and

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[419] Nietzsche, *Daybreak*, 224-5.
[420] Nietzsche, "Beyond Good and Evil," 327.
[421] *Ibid.*, 423-426.
[422] *Ibid.*, 349-50.
[423] Nietzsche, "On the Uses and Disadvantages of History for Life," 62-3. Nietzsche, *Human, All Too Human*, 245.

Bernard stressed that experimentation led humanity to an understanding of its limitations, and yet also of its freedoms. However, Nietzsche emphasized the importance of self-experimentation as a form of growth and individual development. In *Daybreak* (1881) he claimed that: "We are experiments: let us also want to be such!"[424] In *The Gay Science* (1882) he reaffirmed that: "We ourselves wish to be our experiments and guinea pigs [*Versuchs-Thiere*]."[425] By the time Nietzsche wrote "Beyond Good and Evil" in 1886 self-experimentation had become one of the main agents of self-fashioning in his larger educational agenda.

> One has to test [*Proben*] oneself to see that one is destined for independence and command— and do it at the right time. One should not dodge one's tests, though they may be the most dangerous game one could play and are tests that are taken in the end before no witness or judge but ourselves. Not to remain stuck to a person— not even the most loved— every person is a prison, also a nook. Not to remain stuck to a fatherland— not even if it suffers most and needs help most— it is less difficult to sever one's heart from a victorious fatherland. Not to remain stuck to some pity— not even for higher men into whose rare torture and helplessness some accident allowed us to look. Not to remain stuck to a science— even if it should lure us with the most precious finds that seem to have been saved up precisely for us. Not to remain stuck to one's own detachment, to that voluptuous remoteness and strangeness of the bird who flees ever higher to see ever more below him— the danger of the flier. Not to remain stuck to our own virtues and become as a whole the victim of some detail in us, such as our hospitality, which is the danger of dangers for superior and rich souls who spend themselves lavishly, almost indifferently, and exaggerate the virtue of generosity into a vice. One must know how to *conserve oneself*: the hardest test of independence.[426]

As has already been shown, this emphasis on independence unites Nietzsche's educational concerns with Bernard's thinking about education, freedom, and the organic *milieu intérieur*. This remained Nietzsche's public position until the end of his productive life. Writing in *Twilight of the Idols* in 1888, he described the freedom of the free spirit as the will to assume responsibility for oneself, to maintain "the distance which separates," and to have gained an independence from one's environment.[427] The multiple forms of independence also serves as the background of many of Nietzsche's metaphors surrounding comparison, travel, and travellers.

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Nietzsche also describes the spirit itself as an experiment in *Thus Spoke Zarathustra*. Nietzsche, *Thus Spoke Zarathustra*, 67. See also, 99, 185.

[424] Nietzsche, *Daybreak*, 232. See also, 249.

[425] Nietzsche, *The Gay Science*, 253. See also, 108, 255.

[426] Nietzsche, "Beyond Good and Evil," 241-2.

[427] Nietzsche, "Twilight of the Idols," 542. Compare this to Nietzsche's note in his *Nachlass*: "Insight which lacks the 'free spirit:' the same discipline, which only strengthens a strong nature and makes them capable of great things, breaks and stunts the mediocre nature: doubt: the strength of heart [*la largeur <de cœur>*]: the experiment: the

Emden has observed that: "the comparative methods that lie at the heart of much nineteenth-century anthropology, linguistics and psychology turn out to be a prominent feature of Nietzsche's own genealogical approach."[428] Nietzsche's own ideas emerged in the context of the works of those like Bernard, Lange, and even those of the British utilitarian John Stuart Mill. Bernard's geniuses were adept at comparison. For Bernard comparison was a fundamental element of experimental medicine. Experimental judgment was fundamentally based on "the comparative method," either through the comparison of normal with abnormal bodies, or of the effects of substances within, and on, the normal or abnormal body.[429] Active comparative experimentation allowed the researcher to reduce even the most complex investigation into a conceptual "unity."[430] Comparison was also important to the first generation of neo-Kantians, like Lange, particularly when it came to his interdisciplinary approach to epistemology, and interest in the comparative anatomy and physiology of the sense organs, nervous system, and muscle reflexes.[431] In 1831 Mill published a series of essays on "The Spirit of the Age." In them he concluded that that spirit of the nineteenth century was the spirit of comparison: "The idea of comparing one's own age with former ages, or with our notion of those which are yet to come, had occurred to philosophers; but it never before was itself the dominant idea of any age."[432] Nietzsche echoed this sentiment in 1878.

Nietzsche argued in the aphorism "Age of Comparison" in *Human, All Too Human* that the increased ability to travel in space, brought about my modern technology, and time, brought about by modern scholarship, was loosening the hold that the idea of a fixed folk or homeland had on the cultures of Europe:

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independence." Friedrich Nietzsche, "eKGWB/NF-1887,11[151] — Nachgelassene Fragmente November 1887 — März 1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1887,11[151].

[428] Christian J. Emden, *Friedrich Nietzsche and the Politics of History* (Cambridge: Cambridge University Press, 2011), 190.

[429] Bernard, *Introduction to the Study of Experimental Medicine*, 9-10. See also, 2, 12, 17, and 126.

[430] *Ibid.*, 127.

[431] Christian J. Emden, *Nietzsche's Naturalism: Philosophy and the Life Sciences in the Nineteenth Century* (Cambridge: Cambridge University Press, 2014), 22.

[432] John Stuart Mill, "Spirit of the Age," in *Collected Works of John Stuart Mill, Vol. 22: Newspaper Writings by John Stuart Mill, December 1822-July 1831*, ed. A. P. Robson (London: Routledge, 1996), 228. While Nietzsche seldom had flattering words for Mill, the studies done by Brobjer show that he was in dialogue with him. Brobjer, *Nietzsche's Philosophical Context*, 235. It is also worthwhile to point out that Mill's ideas about the need for, and education of "eccentrics" bears many remarkable similarities to how Nietzsche thought about geniuses and free spirits. See, for instance: Victoria Carroll, *Science and Eccentricity: Collecting, Writing and Performing Science for Early Nineteenth-Century Audiences* (Brookfield: Pickering & Chatto, 2008), 18; and John Stuart Mill, *On Liberty* (London: Longmans, Green, and Company, 1865), 39.

> Such an age acquires its significance through the fact that in it the various different philosophies of life, customs, cultures can be compared and experienced side by side; which in earlier ages, when, just as all artistic genres were attached to a particular place and time, so every culture still enjoyed only a localized domination, was not possible.[433]

In *The Gay Science* Nietzsche referenced the spirit of the age, or the "sixth sense" of the nineteenth century, as the historical sense. This ability to quickly determine "the order of rank of the valuations according to which a people, a society, a human being has lived" was cultivated in Europe through the "semi-barbaric mixing of classes and races."[434] This mixing meant that certain aesthetic forms would not be able to survive in the new age of comparison, yet they would not die out entirely, since they would still form the basis of how individuals would experiment with, or "live through" a range of aesthetic sensibilities before they could pass judgment on them. Nietzsche stressed that this was not comparison for its own sake, but for the sake of selecting. One had to experience in order to choose and affirm, as well as deny. In this way the ability to compare was both the source of the age's good fortune, as well as of its suffering.[435] This sentiment was not limited to *Human, All Too Human*. Earlier Nietzsche had noted that: "The advantage of our culture is the ability to compare. We bring together the most diverse products from older cultures and evaluate them; to do this well is our task. Our strength should reveal itself in how we choose; we should be judges."[436] He would also continue this line of thought in *Daybreak* and *The Gay Science*. In *Daybreak* he stressed the importance of "living through" evaluations in order "to have the *right* to let them fall through the sieve."[437] Even without the intention to experiment, the impatience of the age, its polemical swinging between the extremes of ideology and climate, would have a similar effect as a measured comparison of experiences. Nietzsche called this tendency to err extravagantly and to wander a character flaw that nevertheless became "a school for genius."[438]

Just as Bernard stressed the relative freedom of organisms with complicated *milieux intérieurs* as they acted within their larger cosmic environment, Nietzsche described travellers in similar, homeostatic terms. In the aphorism "Grades of Traveller," he observed that there were

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[433] Nietzsche, *Human, All Too Human*, 24.
[434] Nietzsche, *The Gay Science*, 341.
[435] *Ibid.*, 257, 24.
[436] Friedrich Nietzsche, "*eKGWB/NF-1876,23[85] — Nachgelassene Fragmente Ende 1876 — Sommer 1877*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1876,23[85].
[437] Nietzsche, *Daybreak*, 45.
[438] *Ibid.*, 231.

five species of traveller, ranging in complexity from those who were "purely passive" to those who absorbed and reshaped all of their experiences:

> The fourth [species] absorb into themselves what they have experience and bear it away with them; lastly there are a few men of the highest energy who, after they have experienced and absorbed all they have seen, necessarily have to body it forth again out of themselves in works and actions as soon as they have returned home. - It is like these five species of traveller that all men travel through the whole journey of life, the lowest purely passive, the highest those who transform into action and exhaust everything they experience.[439]

The highest species of traveller also had implications for the future of discrete nation states. Nietzsche observed that in their travels Europeans were becoming increasingly detached from the conditions under which they originated (such as race, climate, and class). This travelling was making them "increasingly independent of any *determinate* milieu [*bestimmten milieu*]." "Thus an essentially supra-national and nomadic type of man is gradually coming up, a type that possesses, physiologically speaking, a maximum of the art and power of adaptation as its typical distinction."[440] Nietzsche claimed that this was a physiological process, and indeed, that the "most comprehensive men" or free spirits of his century were preparing the way for it and anticipating "experimentally the European of the future."[441] Philosophers travelled through different kinds of relationships with the societies in which they were born, and ultimately freed themselves from them to a greater or lesser extent. In a section of his *Nachlass* from 1881 Nietzsche described how strong and free "experimental individuals" (*Versuchs-Individuen*) could come about historically from individuals who were originally merely organs or functions of their larger society. Eventually, they acquired key organic functions of their own, those of self-regulation, superabundant reserves of energy and metabolic force, a refined ability to assimilate and excrete, and the ability to regenerate as individuals, as opposed to as merely component parts of a society. Like the free spirit, Nietzsche stressed that this was a process, and that these people were "*freigewordener Mensch*," or those who have become free to create and choose values.[442] This freedom also reflected the health of the individual.

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[439] Nietzsche, *Human, All Too Human*, 271-272.
[440] Nietzsche, "Beyond Good and Evil," 366. See also Nietzsche comments about human beings trying to adapt to an ever broader range of climates in his *Nachlass* for 1881. Friedrich Nietzsche, "NF-1881, 11 [274]," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1881,11[274].
[441] Nietzsche, "Beyond Good and Evil," 386.
[442] Friedrich Nietzsche, "11 = M III 1. Frühjahr–Herbst 1881," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1881,11[182]. Nietzsche would repeat this point at length in:

The philosopher also travelled through several states of health and transfigured these states into philosophies. In his preface to the second edition of *The Gay Science*, which appeared in 1887, he observed that:

> A philosopher who has traversed many kinds of health, and keeps traversing them, has passed through an equal number of philosophies; he simply *cannot* keep from transposing his states every time into the most spiritual form and distance: this art of transfiguration *is* philosophy. […] We are not thinking frogs, nor objectifying and registering mechanisms with their innards removed: we constantly give birth to our thoughts out of our pain.[443]

Philosophy was the practice of transfiguring physiological states into philosophical systems by which individuals created a distinction between themselves and the world. It also facilitated their activities within that same world. Since physiological states varied over time, so too would these systems. Indeed, it was possible to review and compare the varied systems produced by these differing physiological states. The relationship between thought and suffering was open to psychological or physiological experimentation.[444] These comments about physiology and philosophy echoed Nietzsche's early reflections on the relationship between physiological rates of life and the philosophical tendency to view either being or becoming as primary in nature. They also highlight the ways in which he linked experimental practice with freedom and physiology. The distinction he made between the philosopher and "thinking frogs" or "registering mechanism" also hints at the physiological underpinnings of this idea. Bernard called the frog, "the Job of physiology," the animal most "maltreated by experimenters," but also the one most closely associated with their "labors and their scientific glory."[445] Instead of being detached from the experimental subject, setup, and recording, philosophers were simultaneously experiment and observer.

Nietzsche reflected in a letter to Elizabeth Förster-Nietzsche shortly before she moved to Paraguay in 1886 that all of life was an experiment, regardless of what individuals wanted from it.[446] One would have experiences, or experiments, whether one willed them or not. This speaks to the close relationship Nietzsche saw between experimentation and *amor fati*. The best

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Nietzsche, "Beyond Good and Evil," 325-6.
[443] Nietzsche, *The Gay Science*, 35.
[444] *Ibid.*, 34.
[445] Bernard, *Introduction to the Study of Experimental Medicine,* 115.
[446] Friedrich Nietzsche, "eKGWB/BVN-1886,669 — Brief an Elisabeth Förster von: 07/02/1886," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1886,669.

travellers were those who could make their lives into self-conscious experiments, rather than accidental ones, and fashion their past errors and contingencies into sources of knowledge, energy, and direction. Nietzsche had already laid down this pattern of thought in *Human, All Too Human*, where he told the reader:

> You have it in your hands to achieve the absorption of all you experience - your experiments, errors, faults, delusions, passions, your love and your hope - into your goal without remainder. This goal is yourself to become a necessary chain of rings of culture and from this necessity to recognize the necessity inherent in the course of culture in general.[447]

Like Bernard's approach to the relationship between determinism and experimentation in science, Nietzsche stressed that experimentation revealed the necessities of existence while also revealing what people were able to do in the face of those necessities. Actively engaging with these limits was the basis of individual growth, independence, and freedom.

## Conclusion

One of the most rewarding and challenging aspects of reading Nietzsche is how almost nothing in his thinking is pure; almost nothing is unmixed or unqualified. The epigram of *Human, All Too Human* as "a book for free spirits" can be read equally as a statement of its suggested audience as a well as marking it off as an attempt towards a new kind of educational manual and vision for education. Despite his aristocratic tendencies, there is a strong sense of community in Nietzsche's writings, a sense of himself and his audience, yet not of himself or his audience as they currently are, but as they could be. The experimental dimensions of Nietzsche's philosophy are best understood in the context of nineteenth-century concerns about dynamic self-regulation, and in particular Bernard's contributions to these discussions. The relationship between independence and dynamic self-regulation also helps to reveal the common thread linking Nietzsche's interest in a wide array of topics. His changing relationship to the question of how to facilitate an individual's independence, whether from an environment, culture, contingency, or history, unites his concerns about genius, education, freedom, physiology, and morality.

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[447] Nietzsche, *Human, All Too Human*, 135.

Moore is right to highlight the influences of non-Darwinian evolutionary thinkers such as Roux, Rolph, and Nägeli on Nietzsche's post 1880s approach to how organisms regulate themselves into a coherent unity from what would otherwise be a state of cellular chaos. However, Nietzsche's interest in self-regulation as a broader principle goes back to at least the late 1860s. Considering Nietzsche's many connections to the vivisection debates, it is likely that his interest in physiology more generally, and his interest in figures like Bernard, Liebig, and Lange, influenced how he understood dynamic self-regulation as the process by which organisms and individuals achieved a state of independence relative to their environment. It is thus likely that the one mention that Bernard receives in Nietzsche's *Nachlass* under-represents the influence that the physiologist had on him. There were many works written by and about Bernard in *The Review of the Two Worlds*, as well as the antivivisectionist literature with which Nietzsche was familiar.

The role that Nietzsche gives to the educational importance of forgetting and of maintaining one's horizon closely echoes broader discussions about the role of organic self-regulation discussed by Liebig and Bernard. It is also likely that Nietzsche's focus on what he called the "transfigured *physis*" served as an Aristotelian cipher for ideas about education and genius that were in fact far more in keeping with Lange's and Bernard's understanding of self-regulation, genius, and organic development than with Schopenhauer's or Wagner's. This is particularly prominent in Nietzsche's discussion of *physis* in "Schopenhauer as Educator."

Bernard drew parallels between how the complexity of an organism's *milieu intérieur* dictated how free it was in relation to its environment and how through experimentation humans also became freer in relationship to their own cosmic environments. Nietzsche radicalized Bernard's arguments about the relationship between experimentation and self-regulation. All forms of independence, whether they were philosophical, psychological, or physiological, were arrived at through processes analogous to experimentation. Nietzsche's concern with self-fashioning, mutual education, and tending the "garden of hypocrisy" from 1878 to around 1885 is grounded in his performative attempt to experiment with and regulate himself.

The relationship between independence and dynamic self-regulation as a process that involved both the organic and human worlds is a keystone of much of Nietzsche's thought. As Moore has observed, the process of progressive individuation that emerges from self-regulation

"culminates […] in the shadowy figure of the *Übermensch*."[448] Nietzsche considered his own philosophy to be a kind of experimental method more so than a philosophical system, and strongly implied that the creative freedom of the *Übermensch* was the freedom that followed from a more refined form of dynamic self-regulation that was only achievable through self-experimentation. However, even this freedom was only a kind of relative freedom. It involved the individual's ability to engage creatively with their own physiological and environmental limitations in order to determine their own goals and systems of meaning.

[448] Moore, *Nietzsche, Biology and Metaphor*, 71-2.

## Chapter 4: Physio-aesthetic Epistemology and the Freedom of the *Übermensch*

> And you say to me, friends, there is no disputing over taste and tasting? But all of life is a dispute over taste and tasting! […] Taste: that is weight and at the same time scales and weigher; and woe to anything living that would live without disputes over weight and scales and weighers![449]
>
> ~Nietzsche, Thus Spoke Zarathustra, 1883

Nietzsche's interest in the intersection of physiology and aesthetics connected him to two parallel traditions that have been identified by the scholarly literature. The tradition of physiological or evolutionary aesthetics focused on the conflicting forces that drove the biological evolution of aesthetic and moral judgments. While these forces were often in conflict, the sum total of their interactions tended to bring about the establishment of contingent, hierarchical, dynamic self-regulating systems, such as those seen in the organic life of living beings, the psychological life of individuals, and the collective life of societies. While this tradition gets its name from Grant Allen's (1848-1899) 1877 work *Physiological Aesthetics*, it was also representative of a range of evolutionary thinkers that Nietzsche was familiar with, including Paul Rée, William Rolph, Carl Nägeli, and Wilhelm Roux.

However, there was another tradition that was also influential for Nietzsche. For want of a better term, this tradition of neo-Kantian "physio-aesthetic epistemology" sought to ground epistemic judgments in the physiological limitations set on perception by the organization of the human brain and nervous system. Yet because of this grounding, epistemic judgments were themselves the byproduct of aesthetic sensibilities that were relative to the physiological organization of the individual. While "matters of taste" were individual, they were far from arbitrary, and were based upon the physiological organization of the individual. While evolutionary thinking was a part of this tradition, it was not its driving force to the same extent as in Grant Allen's physiological aesthetics. Some of the more influential thinkers in this tradition for Nietzsche included Schopenhauer, the physiologist Johann Nepomuk Czermak, Zöllner, the philosopher and psychologist Gustav Fechner, Helmholtz, the physicist and philosopher Ernst

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[449] Nietzsche, *Thus Spoke Zarathustra*, 101.

Mach, and the philosopher Harald Høffding. These thinkers were particularly interested in what physiological illusions taught about the limits of perception, and the role that experience played in perception. This line of thought also explored notions of physiological relativism and dynamic self-regulation, for the limits of perception were regulating and structuring limits. Some of these limits were inborn while others were learned. Nietzsche became particularly interested in how the limits of perception were creative limitations. Indeed, he came to believe that creativity within limitations was what characterized life itself. In this context the greatest acts of creativity involved the acceptance of the greatest limitations of all: the acceptance of the relativity of knowledge, the eternal return, and necessity of all things.

Nietzsche's physio-aesthetic epistemology emerged from his early interest in the physiological dimensions of genius. Following Lange, the genius was able to create relative unities by perceiving them in nature. These unities could only be subjective, not objective. Yet the question remained of how the genius created these unities. In part, genius participated in a process of creativity within limitations that was common to all living things; organisms were themselves relative unities formed from out of the chaotic material of their environment and their perceptions and sensations already imposed structure and unity on their experience of the external world. The education of genius, the free spirit, and *Übermensch* represented further refinements of this process. Ideas, beliefs, and other aesthetic judgments were built up from the way individuals consciously and unconsciously compared, selected, experimented with, and assimilated their experiences. A consequence of this was that while there was no one path to genius, or the *Übermensch*, there were certain common features, particularly related to how individuals created their own unities. This line of thinking ultimately culminated in how Nietzsche described the relationship between the *Übermensch* and the eternal return of the same.

This chapter will begin with an attempt to separate out what has been called Nietzsche's physiological aesthetics from his "physio-aesthetic epistemology" and show how this aspect of his thought was influenced by his encounters with Schopenhauer, Czermak, Zöllner, and especially Helmholtz. Helmholtz sought to strike a balance between what aspects of perception were learned, but deeply ingrained through the process of unconscious experimentation, and those that were innate. He employed metaphors of reading that were very much like those that Nietzsche would later use.

The second section of this chapter will explore how Nietzsche came to define both learning and creativity as increasingly self-imposed limitations. Artistic skills and conventions as well as scientific and scholarly methodologies were all refinements that lent the individual greater freedom to achieve certain specific goals in the world even as these methods limited their avenues to these goals. Nietzsche's early reflection on Chladni sand figures had him thinking of how seemingly free and aesthetically pleasing images could nevertheless be produced by law-bound natural processes. This was also the case with the actions of human beings. Importantly though, the physiological limits of human beings could change over time, showing the ways in which different kind of limits produced different, not necessarily better or worse, results. In this context innovation did not consist of doing away with limitations, but in mastering new ones that opened up new ways of acting in and evaluating the world.

The third section will explore an intriguing line of thought that Nietzsche followed in Høffding, in which the Danish philosopher considered the role of perception in the psychological and physiological dynamic self-regulation of the human organism. For Høffding ideas were like blood. Just as blood was the main medium that helped organisms maintain their relative independence from their environment, ideas were the medium that helped consciousness maintain its independence from being lost in external perceptions and sensations. Nietzsche described a very similar process through which an organism's ideas of the world emerged from and then were changed and projected back out into that organism's experience of the world around it. In both cases education and experimentation served as a sentient being's conceptual diet and sustenance, and provided the material for its independent life relative to its surroundings.

The necessity of all things was the most rarified and complicated limitation. The final section of this chapter will provide an overview of the origin of the *Übermensch* from Nietzsche's earlier thinking about genius, education, self-fashioning, and dynamic self-regulation. It will then show how the *Übermensch*'s relationship with the eternal return of the same made them the most rarified example of the idea of "independence through interdependence" that Nietzsche drew from his encounter with physiological research and the educational debates of the 1870s and 1880s. The way that Nietzsche described the *Übermensch* mastering contingency by willing the necessity of all things was the culmination of his thinking about dynamic self-regulation as it played out on a cosmic scale.

## Nietzsche on Perception: Physiological Aesthetics and Physio-aesthetic Epistemology

The study of aesthetics has been bound up with the study of perception and sensation since Alexander Baumgarten (1714-1762) changed the meaning of the term in his 1750 work *Aesthetica*. Before this time aesthetics was largely a synonym for sensation, but Baumgarten redefined it to its present usage as a way of talking about the philosophy of taste and beauty. This was the sense in which Kant employed it in his *Critique of Pure Reason* in 1781. Aesthetics as "matters of taste" involved both value judgments of the beautiful and the ugly, or pleasant and painful, and considerations of what the perceiving subject brought to the object of their aesthetic judgments. This trend persisted throughout the nineteenth century, and became increasingly based in the physiology of perception and sensation.

Robert Brain has recently explored the rise of physiological aesthetics. It was a rise that saw experimental physiology become one of the most high profile, prestigious, and well-funded disciplines of the late-nineteenth century.[450] Physiology's rising authority brought with it both great promise and great anxiety. While major proponents of physiological research such as Claude Bernard sought to make a distinction between art and science with his claim that "art is I, science is we," physiology also contributed to the blurring of the two.[451] This blurring was brought about by the efforts of physiologists and artists to translate the practice, culture, results, and experimental systems of physiological laboratories into the studios and lofts of artists and writers. The anxieties came from concerns about just what effect the artistic works produced by this union would have upon science, society, and the individuals within it. While he does not study Nietzsche exhaustively, Brain points out that the philosopher was well ahead of this curve, writing: "Nietzsche immediately grasped that the new physiological studies of art might give many contemporary artists stronger purchase on their Wagnerian ambitions to shape society with their work."[452]

There has been a growing interest in Nietzsche's physiological aesthetics in the past twenty years. Yet it is important to keep in mind that Nietzsche never used the term physiological

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[450] Robert Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin de Siècle Europe* (Seattle and London: University of Washington Press, 2015), xv.
[451] Claude Bernard, as in Brain, *The Pulse of Modernism*, xiii
[452] Brain, *The Pulse of Modernism*, xix.

aesthetics in his own writing. He not only did not use the term "*physiologische Ästhetik*," he seldom even commented on the "*Physiologie der Kunst*." The "physiology of art" appears only eight times in his collected writings and *Nachlass*, and even then it appears first as a possible chapter title for his unfinished *Will to Power* between 1886 and 1887, and then as the header for a list of judgments passed on a series of composers that included Wagner. In contrast, in his notes for 1888 the physiology of art is listed alongside more epistemic concerns such as "the criteria for truth," and "why truth?"[453] Indeed, while Nietzsche mentions the relationship between physiology and art often in his corpus, the term "the physiology of art," appears only once in his published works, in "The Case of Wagner." There, Nietzsche promised his readers a chapter in an upcoming (never completed) project that was going to be called "Toward a Physiology of Art." In this discussion he described Wagner as a "perfect decadent," and in that way a genius who represented "an innovation in principles" and "crisis in taste." Nietzsche's goal in that chapter would be: "To show in more detail how this over-all change of art into histrionics is no less an expression of physiological degeneration (more precisely a form of hystericism) than every single corruption and infirmity of the art inaugurated by Wagner."[454] Nietzsche was evoking the physiology of art when he used Wagner as a case study of degeneration and decadence.

Moore does an excellent job of situating Nietzsche's understanding of decadence in the context of late nineteenth-century fears of evolutionary degeneration. These fears also revolved around the intersection of aesthetics, physiology, and society. Moore situates Nietzsche's thought within the context of nineteenth-century attempts to ground the origin and function of art in terms of evolutionary biology. He explores Nietzsche's understanding of moral self-regulation, and his view of the ego as a nexus of often competing drives, in particular how: "The interior world of our instincts and their relationship to one another is a microcosm of the relationship between the parts of the social organism."[455] Both society and the organism arrive at a kind of dynamic equilibrium through the contentious process of establishing orders of rank and hierarchies. Nietzsche's physiological aesthetics also played an important role in how he

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[453] Friedrich Nietzsche, "*eKGWB/NF-1888,16[73] — Nachgelassene Fragmente Frühjahr–Sommer 1888*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1888,16[73]; and Friedrich Nietzsche, "*eKGWB/NF-1888,16[86] — Nachgelassene Fragmente Frühjahr–Sommer* 1888," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1888,16[86].
[454] Nietzsche, "The Case of Wagner," 625-6.
[455] Moore, *Nietzsche, Biology and Metaphor*, 76.

understood this process, and here Moore points to the work of Grant Allen as a historical precursor to Nietzsche's thought.

Allen was a Canadian-born British popularizer of science and disciple of the evolutionary naturalist and philosopher Herbert Spencer (1820-1903). Allen's *Physiological Aesthetics* (1877) examined the evolutionary underpinnings of aesthetic sensibilities. He sought to explain the human sense of the beautiful and the ugly in terms of the pleasures and pains most likely to bring about the health and evolutionary fitness of the organism. Basing his work on Spencer's evolutionary philosophy, Allen's work contributed to a boom of interest in physiological aesthetics that spanned the turn of the century. Moore suggests that Nietzsche probably did not know about Allen's *Physiological Aesthetics*; however, there are a number of points that indicate that he may have had at least a passing familiarity with the text.[456]

Nietzsche made the acquaintance of George Croom Robertson, the editor of the journal *Mind*, while he was in Rosenlauibad in Switzerland in 1877. Nietzsche was quite taken with the conversation that the two had during their stay.[457] Scholars have already observed that it was likely during this meeting that Nietzsche became aware that he was going to be mentioned in Wundt's October 1877 article in *Mind*.[458] Allen's *Physiological Aesthetics* was published that same year. The July 1877 issue of *Mind* ran a review of *Physiological Aesthetics* written by the British psychologist James Sully (1842-1923). Sully had trained under such prominent German physiologists as Hermann Lotze (1817-1881), du Bois-Reymond, and Helmholtz. He gave the work a mixed review. Sully was critical of Allen's lack of empirical examples and how he seemed to sidestep how pain could be the result of unfulfilled desires. He concluded by suggesting that Allen should have paid more attention to Helmholtz's work on *Physiological Optics*.[459] Based on a letter he wrote to Paul Rée in August of 1877, it is likely that Nietzsche encountered Sully's review shortly after it appeared. Nietzsche praised *Mind* in his letter to Rée

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[456] *Ibid*., 88.

[457] Friedrich Nietzsche, "*eKGWB/BVN-1877,643 — Brief AN Paul Rée: Anfang August 1877*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1877,643; Friedrich Nietzsche, "*eKGWB/BVN-1877,644 — Brief AN Malwida von Meysenbug: 04/08/1877*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1877,644; and Friedrich Nietzsche, "*eKGWB/BVN-1877,646 — Brief AN Elisabeth Nietzsche: 07/08/1877*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1877,646.

[458] Brobjer observes that Robertson mentioned Wundt's article in a letter he wrote to Nietzsche that year, and that it is fair to assume that Nietzsche either read the article, or had it translated for him. Brobjer, *Nietzsche's Philosophical Context*, 111.

[459] James Sully, "Physiological Aesthetics," in *Mind* 2, 7 (July 1877): 387-392.

and lamented that while France had the *Philosophical Review*, there was nothing quite like it in Germany. He also spoke very highly of Darwin's "A Biographical Sketch of an Infant" and specifically stated that it was in the seventh (July 1877) issue of the journal. This was the same issue that ran the review of Allen's *Physiological Aesthetics*. Furthermore, if Nietzsche did not encounter Allen's work in 1877, there was a reference to it on an annotated page of Harald Høffding's *Psychology Defined on the Basis of Experience* that Nietzsche likely read in 1887 (though the annotation does not relate directly to Allen's text).[460]

Moore observes that Nietzsche's interest in the relationship between physiology, aesthetics, and epistemology goes back much earlier than the appearance of Allen's text. This is important to keep in mind. While it is valuable to situate Nietzsche's thinking within the broader culture of physiological aesthetics, an over-close attention to Allen's work and language prevents us from asking larger questions about the origin and direction of Nietzsche's engagement with the epistemic dimensions of physiology and aesthetics. There is an important evolutionary dimension to Nietzsche's understanding of physiology and aesthetics. However, the prehistory of his engagement with this tradition emerged from the importance that Schopenhauer, Lange, Helmholtz, Bernard, and others gave to the active and creative dimensions of perception, that were at once physiological, aesthetic, and epistemic. Nietzsche's evolutionary aesthetics may be more appropriately juxtaposed to his relativistic physio-aesthetic epistemology.

Crary has noted that an important change took place in what it meant to be an observer in the early nineteenth century. He describes this change as the movement from an understanding of observation that went from having the camera obscura as its primary metaphor to one that was more characterized by the stereoscope. In the eighteenth century observation was conceptualized as a kind of ideal spectatorship in which there was a clearly delineated inside and outside of the theatre of observation. Following Newton, light was largely understood as an external force moving in straight lines that set up a stable sensorium or backdrop of vision in which objects were situated. In contrast, following the work of such figures as Johannes Müller, Maine de Biran (1766-1824), Goethe, Schopenhauer, and Helmholtz, nineteenth-century discussions of vision and observation became increasingly dominated by accounts of "subjective vision." This understanding of observation changed the focus of vision from a detached observation to an

[460] See Nietzsche's annotated copy of Harald Høffding, *Psychologie in Umrissen Auf Grundlage der Erfahrung* (Leipzig: Fues's Verlag, 1887), 345.

embodied organic process. This change in understanding also began to break down the previously stable boundaries between the observer and the observed. The stereoscope's principle of design was based upon an understanding of how the sense of binocular vision was processed by the brain.[461] This understanding of the body as the site of observation, and therefore of knowledge extended to the physiological study of all the senses and had important philosophical implications. In Crary's words it was nothing short of: "the discovery that knowledge was conditioned by the physical and anatomical functioning of the body."[462] While Daston and Galison have traced out a somewhat different trajectory for the history of objectivity in the nineteenth century, they too characterize the period as one that was increasingly concerned with what the observer brought, physiologically and psychologically, to the act of observation. Not only did the body condition knowledge, but there was also an element of arbitrariness about how the body conditioned it, specifically, in the arbitrary relationship between stimulus and perception.

Müller provided evidence for the existence of specific nerve energies [*spezifische Sinnesenergien*] in his 1833 *Handbook of Human Physiology*. When stimulated, sensory nerves could only produce one specific kind of sensation, with optic nerves producing visual sensation, cochlear nerves auditory sensation, and so on. This was of great importance because it demonstrated how a uniform cause, in this case the electricity or nervous energy of organic processes, could produce radically different sensations regardless of any external referent or source of sensation: "It is an account of a body with an innate capacity […] to *misperceive* — of an eye [or ear, or hand] that renders differences equivalent."[463] This discovery brought with it a range of skeptical and relativistic implications that would only be somewhat tempered with physiologists' appeals to unconscious inferences that reasserted a somewhat arbitrary, but still stable and coherent, epistemic grounding for sensory impressions.[464] This is the context from which Nietzsche's physio-aesthetic epistemology emerged. In order to understand how it differs from what has been called his evolutionary aesthetics, it will be helpful to consider Nietzsche's interest in Schopenhauer's colour theory.

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[461] Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: The MIT Press, 1990), 116-131.
[462] *Ibid.*, 79.
[463] *Ibid.*, 90.
[464] *Ibid.*, 91.

Schopenhauer claimed that his theory of colours was based on Goethe's *Theory of Colours*, which was first published in 1810. While Goethe considered it to be the crowning achievement of his intellectual career, the work's anti-Newtonian tone and subjective analysis of colour led many commentators to dismiss it as romantic speculation rather than as a substantial contribution to the science of light or colour. Goethe considered the chemical, physical, and physiological aspects of colour. His study of such phenomenon as afterimages, the density of coloured liquids, the effect of light and darkness on the perception of colour, as well as colour contrasts and boundary colours played into his larger project of showing the importance of experimentation as the mediator between object and subject. Goethe claimed nothing happened that was not connected to the whole of nature in some way. The experimenter had to perform many different experiments on both the phenomenon they wished to study and the phenomena that were immediately connected and related to it if they wished to understand it. An important adjacent phenomenon to any object of study was the experimenter themselves, and thus experimenting on the external world also involved the study and testing of the self.[465]

Schopenhauer first met Goethe through the salons that his mother, Johanna Schopenhauer, frequently hosted in her home.[466] In 1813 the two became better acquainted and Goethe urged the young Schopenhauer to take up his theory of colours. They corresponded frequently on the topic for several years until the appearance of Schopenhauer's own work *On Vision and Colours* in 1816. Schopenhauer repeatedly revised it up until his death, and the final version only appeared in 1870. Yet before its original release, there was already a great deal of evidence to show that Goethe was not comfortable with the intellectual trajectory taken by his young protégé.

Goethe felt that it was important to understand the physiological dimensions of the perception of colour, but he wanted to be a realist about colour's objective existence in the external world. However, for Schopenhauer colour was only the physiological perception of colour. It was not a quality of existence, but a quality of perception. Schopenhauer did not see himself as beholden to Goethe's original theory of colours. In a letter dated November 11th 1815, he wrote to Goethe claiming that: "I am absolutely certain that I have produced the first true

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[465] Johann Wolfgang von Goethe, "The Experiment as Mediator Between Object and Subject," *Scientific Studies, Goethe: The Collected Works*, Vol. 12, trans and ed. Douglas Miller (Princeton: Princeton University Press, 1995), 57.

[466] David Cartwright, *Historical Dictionary of Schopenhauer's Philosophy* (Lanham: Scarecrow Press, 2004), 66.

theory of the colors, the first in the history of science. If I compare your theory to a pyramid, then my theory is its topmost point."[467] Goethe was not impressed by this. In light of Nietzsche's later meditations on the relationship between students and teachers, it is noteworthy that Schopenhauer published the poetic aphorism that Goethe wrote to express his dissatisfaction with his young protégé in a later edition of *On Vision and Colour*. In the aphorism Goethe lamented: "I would like to bear the teacher's burden still longer, / If only students would not become at once teachers."[468] Nietzsche would later describe Goethe's contributions to colour theory as one of the "fundamental errors" of the older philosopher's life, but he expressed a persistent interest in Schopenhauer's self-described "improvement" on Goethe's colour theory.[469]

Schopenhauer considered the focus of his treatise *On Vision and Colour* to be physiology; however, he also stressed that he considered the physiology of colour to be an important component of a broader theory of the faculty of cognition and of epistemology.[470] He argued that the study of physiology demonstrated the subjective and active nature, not only of the perception of colour, but of all perception. This study also refuted the "clumsiest form of realism" arrived at by contemporary chemists and physiologists, reminding them that: "between them and the real nature of things stands their brain."[471] Schopenhauer's theory of colours was in keeping with his larger philosophical project. In the second half of the last edition of *The World as Will and Representation* (1859) he reaffirmed that knowledge itself was an act of representation, and representation was: "A very complicated *physiological* occurrence in an animal's brain, whose result is the consciousness of a *picture* or *image*."[472] Just as the human body served as the intersection of the objective thing-in-itself and subjective experience, colour was the qualitative side of the quantitative partitioning of the retina's activity. This activity, in both its qualitative and quantitative facets was mediated through the understanding of the brain. Among other examples, Schopenhauer cited inverted and binocular vision to demonstrate that all perception was intellectual.[473] It was not merely given to the senses, but structured by the brain and intellect

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[467] Schopenhauer, as in Robert A. Crone, "Schopenhauer on Vision and the Colors," *Documenta Ophthalmologica* (1997): 93, 1-2, 61.
[468] Arthur Schopenhauer, "On Vision and Color," *On Vision and Color and Color Sphere*, trans. Georg Stahl (New York: Princeton Architectural Press, 2010), 46.
[469] Nietzsche, *Human, All Too Human*, 271.
[470] Schopenhauer, "On Vision and Color," 46.
[471] *Ibid.*, 38-9.
[472] Schopenhauer, *The World as Will and Representation, Vol 2.*, 191.
[473] Schopenhauer also made this claim about phantom limb pain and binocular and inverted vision. *Ibid.*, 23-4.

before it even reached conscious awareness. In both inverted and binocular vision the unities and forms that humans perceive in nature, seeing one image when they have two eyes and an erect form when what they see is actually inverted, are brought about by the intellect's, or brain's, structuring of perception in terms of cause and effect, time, and space.[474]

Schopenhauer acknowledged that these "laws of understanding" that structured perception could adapt to pathological conditions. This could happen in the case of those who were cross-eyed for an extended period of time, in which case: "the understanding tries to correct its apprehension through a correct interpretation of the external cause, and tries to produce an agreement between the perception along different ways, such as between seeing and touching."[475] However, despite this limited ability to correct for pathological conditions, the majority of physiological illusions, such as seeing a stick broken in water, the size of the moon on the horizon, or the illusion of depth in painting, were inescapable. This is why he made a distinction between illusion, which was a deception of the understanding and its relationship to reality, and error, which was a deception of reason and its relationship to truth. Importantly, while errors could be eliminated, illusions could not, for they were artifacts of the intellectual nature of perception.[476] Nietzsche would echo this statement in "Twilight of the Idols," where he asserted that the senses never lie: "What we *make* of their testimony, that alone introduces lies; for example, the lie of unity, the lie of thinghood, of substance, of permanence."[477] For Schopenhauer, the inescapability of these illusions served as further proof of his theory of perception, for they showed the ways in which sense perceptions were never entirely passive, but instead acted upon and structured the human experience of stimuli.[478]

There was also a creative and aesthetic dimension to Schopenhauer's view of knowledge. Like perception more broadly, aesthetic observations were also about "how the brain relates to the object."[479] The form and size, texture, irritability, and blood flow of the brain could influence the aesthetic appeal of observations. Aesthetic appreciation, like artistic abilities, were relative, even when the eyes of the observers were equally keen.[480] Yet Schopenhauer argued that not all

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[474] Schopenhauer, "On Vision and Color," 51-2. See also 57.
[475] *Ibid.*, 55.
[476] *Ibid.*, 54-5.
[477] Nietzsche, "Twilight of the Idols," 480.
[478] Schopenhauer, "On Vision and Color," 60, 84. He also cites Aristotle and Erasmus Darwin to support his claims.
[479] *Ibid.*, 24.
[480] *Ibid.*, 24-5.

aesthetic observations were equally valid. The objectively beautiful was also what was objectively true for the species. This objectivity was only accessible to genius:

> The highest degree [of perception] is *genius*, in which the comprehension of the external world becomes so pure and objective that to it even more is directly revealed in the individual things than these things themselves, namely the true nature of their whole *species* […]. This is conditioned by the fact that the will here vanishes entirely from consciousness. This is the point where the present consideration, starting from physiological foundations, is connected with […] the metaphysics of the beautiful. Really aesthetic comprehension, in the higher degree peculiar only to genius, is fully considered there as the state or condition of pure, that is to say wholly will-less, knowledge, which on this account is completely objective.[481]

While not what Kant had intended, Schopenhauer claimed that he was in fact corroborating Kant's transcendental aesthetic by grounding it in physiology.[482] Crary has commented that before Schopenhauer: "Never has an idealist been so immersed in the details of corporeality or alluded to such a large range of texts about human physiology, repeatedly situating his most central ideas in relation to the specific anatomy of the brain, the nervous system, and the spinal cord."[483] This also helps to explain why physiologists were so interested in Schopenhauer's philosophy.

Nietzsche does not directly refer to Schopenhauer's treatise on vision and colour in his extant *Nachlass*. Yet on April 12th 1870, he sent the Wagners a copy of the physiologist Johann Nepomuk Czermak's "On Schopenhauer's Theory of Colour: A Contribution to the History of the Theory of Colours" which he was excited about because it claimed that Schopenhauer had "philosophically" discovered the Young-Helmholtz theory of colour vision in 1816.[484] The Young-Helmholtz theory of colour vision was independently discovered by the British physiologist Thomas Young in 1802 before being re-discovered and developed by Helmholtz in 1850. It established that the retina of the eyes contained three different kinds of light receptors for different wavelengths of light: red, green, and blue. The excitation or suppression of these receptors could account for all the colours humans perceive. Czermak was a student of the experimental physiologists Carl Ludwig and Ernst Brücke, who were part of Helmholtz's circle

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[481] *Ibid.*, 291.
[482] *Ibid.*, 23.
[483] Crary, *Techniques of the Observer*, 75.
[484] Friedrich Nietzsche, "*111. An Carl von Gersdorff in Frankreich (Feldpostbrief) Basel 12 Dez. <1870>*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/BVN-1870,111. See also: Wagner, *Cosima Wagner's Diaries*, Vol. 1, 302-3.

and were defenders of vivisection. Weber would later condemn Czermak for his experiments on the nervous physiology of dogs in *Torture Chambers of Science* (1879); however, Nietzsche had already expressed positive interest in Czermak and his work in 1870.[485]

Czermak began "On Schopenhauer's Theory of Colour" by stressing the uniqueness of Schopenhauer's theory. The physiologist cited the same aphorism by Goethe that Schopenhauer referenced in "On Vision and Color" about the troubled relationship between student and teacher. He did this to argue that while Schopenhauer thought of himself as Goethe's closest and most trusted student, Goethe did not think that this was the case. Goethe was right.[486] Schopenhauer's colour theory was his own. Czermak then excused his colleagues for their lack of attention to Schopenhauer. It was understandable, given the philosopher's tendency to dismiss whole swaths of scientific research out of hand, such as the discovery of Fraunhofer lines.[487] He nevertheless applauded Schopenhauer's contributions to epistemology and the physiological theory of colour, claiming that he was the most powerful thinker since Kant, who had "philosophically anticipated" the Young-Helmholtz theory of colour that would only be empirically demonstrated decades later.[488] His essay quotes Schopenhauer at length, and argued that despite Schopenhauer's anti-Newtonian furor, his theory was compatible with Newtonian optics more broadly. Nietzsche discovered Czermak before his 1872-74 reading of Zöllner's *On the Nature of Comets* where the astrophysicist cited Czermak's essay to highlight the novelty of Schopenhauer's colour theory. Zöllner drew up a schematic list of the points in Schopenhauer's and Helmholtz's works on colour and perception to corroborate Czermak's claims for the novelty of Schopenhauer's colour theory, and to argue for the older philosopher's priority in the discovery of the "Young-Helmholtz theory of colour."[489] Nietzsche's continued interest in Zöllner was partly due to his continued interest in Schopenhauer's physio-aesthetic epistemology.

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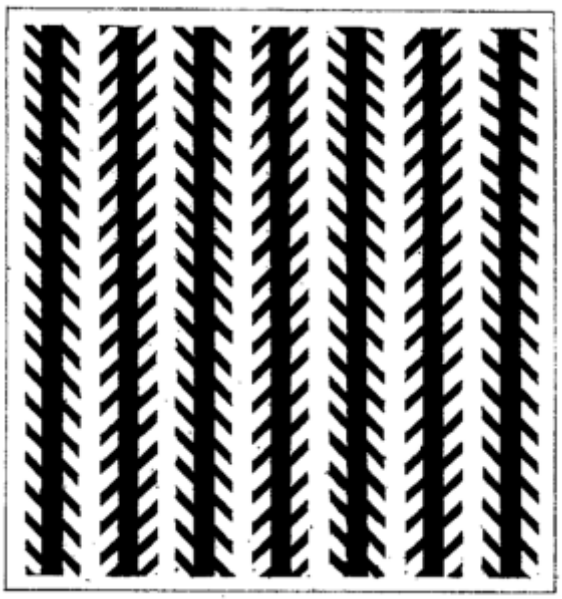
[485] Weber, *Die Folterkammern der Wissenschaft*, 21.
[486] Johannes N. Czermak, "*Ueber Schopenhauer's Theorie der Farbe: Ein Beitrag zur Geschichte der Farbenlehre*" in *Gesammelte Schriften, Vol I, II. Abtheilung, Wissenschaftliche Abhandlungen* (Leipzig: Wilhelm Engelmann, 1879), 804.
[487] *Ibid.*, 805. Fraunhofer lines are the slight dark bands observable in the spectrum of solar light. They were discovered by the English chemist William Hyde Wollaston in 1802 and independently by the German physicist Joseph von Fraunehofer in 1814. Schopenhauer had denied their existence.
[488] *Ibid.*, 817, 806.
[489] Zöllner, *Über die Natur der Cometen*, 345, 354.

In his 1860 article "On a New Kind of Pseudoscopy and its Relationship to the Movement Phenomenon Described by Plateau and Oppel," Zöllner introduced the optical illusion (*Gesichtsbetrug*) that would come to be called the Zöllner Illusion, or Zöllner Lines. In this illusion lines that are parallel are made to look non-parallel by the inclusion of shorter lines crossing the parallel lines at an oblique angle. Zöllner's discussion of this illusion served to support Schopenhauer's argument about the nature of perception. The ideas (*Vorstellungen*) of rest and motion were relative, and based on the constancy or change in the distance between two points.[490] While it seemed at first glance that the comparisons that made such judgments possible were established by external spatial relationships, Zöllner argued that the two points being compared were ultimately within the mind of the individual making the observations. Likewise, in the case of parallel or non-parallel lines, the impression of stability or motion was indirectly created through the movement of an imagined line connecting the distance of any two points along their lengths by which they were compared.[491] This act of perception was a fully embodied process. An observer's body was always in a kind of motion, and their eyes moved in relation to their bodies.



Zöllner lines. Friedrich Zöllner, *Annalen der Physik*, 675.

[490] Friedrich Zöllner, "*Ueber eine neue Art von Pseudoskopie und ihre Beziehungen zu den von Plateau und Oppel beschriebenen Bewegungsphänomenen*," in *Annalen der Physik* (1860): 186, 7, 508.
[491] *Ibid.*, 522. Also, 519.

Zöllner argued that comparison was vital to perception, and yet simultaneous comparison was not possible. There could only be successive comparisons. The illusion of the Zöllner Lines was caused by the eye rapidity trying to process what it was seeing as it moved around the image.[492] This was because the comparative activity of the understanding took place at the level of unconscious inferences as they pieced together discrete sensory impressions:

> The idea [*Vorstellungen*] of parallelism or non-parallelism of two straight lines, on the one hand, and of the rest or motion of a body, on the other, are not the results of immediate sensory perception, but instead result from the logical conclusions, which we derive through the given observational data of the eye with the help of the reflective or comparative activity of our understanding. Only the great speeds of these mental operations following one another in rapid succession prevents them from individually coming to consciousness.[493]

Zöllner stressed that the illusion was "purely" the result of the psychological/physiological organization of the viewer, as their brain made an unconscious calculation from effect to cause of the movement of objects in space.[494] This was in the same class of physiological illusions as the size of the moon seeming larger on the horizon, or the forced perspective of seeing insects up close.[495] Nietzsche employed this line of thinking in *The Gay Science* to argue for the primacy of description over explanation in science, writing that: "we perceive motion only as isolated points and then infer it without ever actually seeing it."[496] What human's perceive has only an apparent unity that is constructed by their brain and nervous system out of unconscious inferences working with fragmentary sense impressions. While the relationships of these apparent unities can be described, their apparent effects, relationships, dimensions, etc., they cannot be explained, for their apparent causes are wrapped up in how they are perceived by the human organism. Zöllner would continue exploring how unconscious inferences created the unities of perception in *On the Nature of Comets*, particularly where he explored its application to facial perception.

Nietzsche's interest in figures such as Zöllner, Czermak, and Schopenhauer cannot be divorced from his broader interest in the intersection of experience or education, unconscious inferences, and the physiology of perception.[497] This is particularly the case with

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[492] *Ibid*.
[493] *Ibid*., 509.
[494] *Ibid*., 517.
[495] *Ibid*., 503.
[496] Nietzsche, *The Gay Science*, 172-3.
[497] Zöllner, *Über die Natur der Cometen*, 378.

Nietzsche's interest in Helmholtz. Nietzsche is known to have read Helmholtz's essay "On the Interaction of Natural Forces" and borrowed his *Treaties on Physiological Optics* in 1873. He also had many opportunities to read about Helmholtz's work in the writings of Lange and Zöllner. Helmholtz's concerns in his debates with the physiologist Ewald Hering (1834-1918) over the empiricist and nativist models of vision were relevant to Nietzsche, for they raised the question: Given that everything that humans perceived was a consequence of their physiological organization, what was the relationship between perception and education?[498] Humans may take from nature exactly what they put into it, but they could not put just anything into nature, and even this practice of "putting in" was different for different individuals. Helmholtz sought to answer this question by clarifying the distinction between simple sensations and perceptions (*Anschauungen*). In doing so he argued that while simple sensations were innate limitations on experience, perceptions (such as spatial perceptions) were learned. Perceptions were readily apparent to the conscious mind, and yet they were made up of simple sensations that were much more difficult to isolate. In one example Helmholtz described the perception of wetness being produced by a unity of the simple sensations of cold and smooth. Yet while perceptions were made up of simple sensations, experience actually made it more difficult to recognize what was or was not a simple sensation.[499] This difficulty is caused by the fact that simple sensations are unified into perceptions through unconscious inferences. Helmholtz explained that these inferences were not different in kind from conscious conclusions drawn from induction and analogy.[500] However, unlike conscious conclusions, once established they could not simply be dismissed by an act of will or through a clearer understanding of their origins.[501] This was because memories and perceptions blur into each other to form the bulk of human experience, and they do so more seamlessly the more frequently a person is subject to a given experience.[502] This blurring could be disrupted in ways, for instance, when a person started wearing glasses for the first time, or when someone who was born blind had their vision restored through an operation.[503] It could also be disrupted by a change of perspective that placed the observer's

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[498] For more on the debates between Helmholtz and Herring, see: R. Steven Turner, *In the Eye's Mind: Vision and the Helmholtz-Hering Controversy* (Princeton: Princeton University Press, 1994).
[499] Herman von Helmholtz, *Helmholtz's Treaties on Physiological Optics*, Vol. III, ed. James P. C. Southhall (New York: Dover Publications, 1962), 9.
[500] *Ibid.*, 4, 27.
[501] *Ibid.*, 5.
[502] *Ibid.*, 11.
[503] *Ibid.*, 3.

sensory organs in an unusual orientation.[504] These considerations led Helmholtz to conclude that: "Whatever […] can be overcome by factors of experience, we must consider as being itself the product of experience and training."[505] This greatly expanded the range of what kinds of experiences could be understood as being composites of simpler sensations. It also made experience identical to an act of unconscious scientific experimentation:

> It is only by voluntarily bringing our organs of sense in various relations to the objects that we learn to be sure as to our judgments of the causes of our sensations. This kind of experimentation begins in earliest youth and continues all through life without interruption.[506]

Experimentation was an organic process. Just as it was a function of the eye to see light, it was a function of the intellect to consciously and unconsciously experiment and form a growing reserve of general conceptions about the appearance of causal connections drawn from experience. Indeed, as Helmholtz observed: "The law of sufficient reason is really nothing more than the urge of our intellect to bring all our perceptions under its own control. It is not a law of nature."[507] This could have been written by Nietzsche.

However, since this "urge of the intellect" was not a law of nature per se, but of understanding, the connections formed by it did have something arbitrary about them. For Helmholtz, all perceptions were not essentially different from the "illusions of the senses" that Schopenhauer described in "On Vision and Colors." Yet while illusions were a false idea produced by perception, Helmholtz argued that even "true" perceptions were only "practically true."[508] Their practical truth was intimately tied to their relationship with action, experimentation, and self-regulation:

> Our ideas of things *cannot* be anything but symbols, natural signs for things which we learn how to use in order to regulate our movements and actions. Having learned correctly how to read those symbols, we are enabled by their help to adjust our actions so as to bring about the desired result; that is, so that the expected new sensations will arise.[509]

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[504] *Ibid.*, 10.
[505] *Ibid.*, 13.
[506] *Ibid.*, 31.
[507] *Ibid.*, 34.
[508] *Ibid.*, 3.
[509] *Ibid.*, 19.

While the natural signs for things did not have a necessary relationship to the world outside of the observer (as Helmholtz argued in his discussion of colour vision and colour blindness) what mattered was how the symbols were then compared and related to each other in such a way that they could serve as the basis of action. Helmholtz likened this process to reading and writing:

> A writing is correct when he who knows how to read it forms correct ideas by it. And so the idea of a thing is correct for him who knows how to determine correctly from it in advance what sense-impressions he will get from the thing when he places himself in definite external relations to it.[510]

As a former philologist Nietzsche also understood the relationship between experience, perception, and the "true world" to be like a kind of reading whose rules were both arbitrary and yet necessary for an understanding of the anthropocentric "text" of nature. Like with Bernard's understanding of experimentation, this form of literacy allowed individuals greater relative freedom to act upon and within their environments, even as they built up more elaborate—though in some ways arbitrary—conceptual lexicons. Recognizing the arbitrary quality of perception and yet also how the internal consistency of perceptions nevertheless made action possible was also reflected in Nietzsche's thinking about the relationship between self-imposed creative limitations and meaningful freedom.

## The Dancer: Nietzsche on the Physiological Dimensions of Creative Limitations

From Schopenhauer to Helmholtz, Nietzsche encountered several thinkers who claimed that perception not only modified and structured experience, but that experience could likewise modify and structure perception. If the limits of perception were regulating limits then self-consciously experimenting with and choosing one's own experiences was a way to creatively regulate one's self, mirroring in a conscious way what the brain already did unconsciously. For Nietzsche this was a physiological, aesthetic, and educational principle that showed how meaningful freedom required not only an acceptance of limitations, but that it was defined by the ability to self-consciously choose one's individual limits.

While in his early support for Wagner Nietzsche defended the idea that absolute freedom was the precondition of creativity, he later argued that there could be no creativity without limits

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[510] *Ibid.*, 23.

that were either externally or internally imposed. In *Human, All Too Human* he described this artistic process. In the aphorism "The Revolution in Poetry" he argued against the tendency to rebel against all limitations, and compared such seemingly diverse topics as French drama, Goethe's creative output, and Greek rhetoric as examples of art brought to a state of relative perfection through the apparent mastery of "self-imposed fetters" that made themselves appear to be "the supreme outcome of a necessary evolution in art."[511] "Experimentation" within and on one's limits, making them appear to be no limits at all, taught people to take pleasure in life and "regard human life as a piece of nature, as the object of a regular evolution."[512] In the second book of *Human, All Too Human*, Nietzsche described this process as learning the art of "dancing in chains," and claimed that it was the talent of ancient Greek poets to create within the metrical and narrative constraints that were handed down to them, while also creating new constraints for themselves: "For that which we call 'invention' […] is always a self-imposed fetter."[513] Nor is this form of invention unique to the arts. Shortly after mentioning dancing in chains, Nietzsche went on to discuss what he called the "employees of science [*Wissenschaft*]." The training of young scholars [*Gelehrten*] also consisted of learning to act within certain limits, or methods. It involved memorizing pre-established facts while also becoming more familiar with what areas of knowledge still needed to be expanded upon. While Nietzsche is less approving of scholars than he is of Homer and the Greek poets, he did argue that there were some scholars who also innovated based on setting new limitations for themselves. These figures are: "characterized by a *narrow limitedness* foreign to [employees of science], on account of which it is impossible to appoint them to a post or see in them usable instruments - they can live only *in their own atmosphere* and on their own soil."[514] Earlier Nietzsche had commented that this practice helped humans begin to understand themselves as part of natural processes, and that the "scientific man" was "the further evolution of the artistic."[515] It is likely that he had in mind both scholars and natural scientists. Creativity and freedom for artists, scholars, or scientists revolved around the same processes of dynamic self-regulation that predominated in the rest of the natural world, and

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[511] *Ibid.*, 102.
[512] *Ibid.*, 105.
[513] *Ibid.*, 343.
[514] *Ibid.*, 350-1.
[515] *Ibid.*, 105.

once again bore a striking resemblance to Bernard's understanding of the meaning of freedom as a matter of independence achieved through interdependence.

In *Daybreak* Nietzsche stressed the close relationship between interdependence and coming to understand one's own boundaries and limitations. The ancient dictum to "know thyself,' for instance, was really a call to learn everything, for: "Only when the human being has finally attained knowledge of all things will he have known himself. For things are merely the boundaries of the human being."[516] Likewise, the empathetic understanding of the lives of others was a projection based on their effects upon the individual. People could only see each other's boundaries and the ways in which their own boundaries press up against those around them:

> In accordance with our knowledge of ourselves, we mould [our neighbour] into a satellite of our own system: and when he shines for us or grows dark, and in either case we are the ultimate cause—we nonetheless believe the opposite! World of phantoms in which we live! Inverted, topsy-turvy, empty world, dreamed *full* and *upright* nonetheless.[517]

It is telling that Nietzsche likening this process of experiencing boundaries to the experience of inverted vision. In both instances there were creative, though unconscious physiological process at play that structured human experience.

Nietzsche's interest in the sand figures produced by the German physicist and musician Ernst Chladni (1756-1827) bore a relationship to his interest in the role played by limits in creative acts. Chladni is sometimes called the "founder of experimental acoustics" for his work on visualizing different frequencies of sound. In this work he employed acoustic plates that used the motion of sand or other fine particles on rigid surfaces to show the nodal patterns produced by different resonance frequencies of sound when a bow or other instrument was run over their edges.[518] Nietzsche made a note in 1872 that "[w]ith the *organic* the *artistic* also *beings*," yet in the same note he stressed that this artistry was always bound within physiological limits, for: "[t]o think of an artistic process without a brain is a severe anthropomorphism."[519] His early reflections on Chladni Figures linked them with the aesthetically pleasing and seemingly free aspects of what were in the end fundamentally law-bound natural processes.

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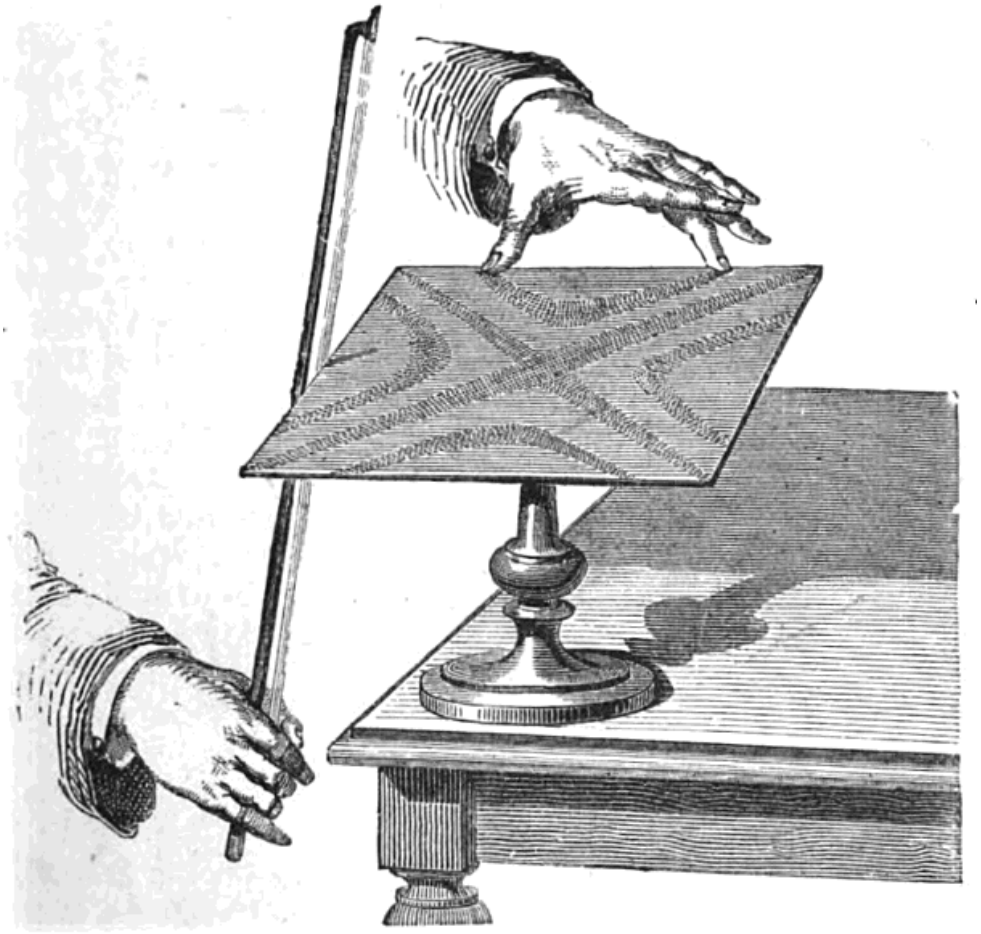
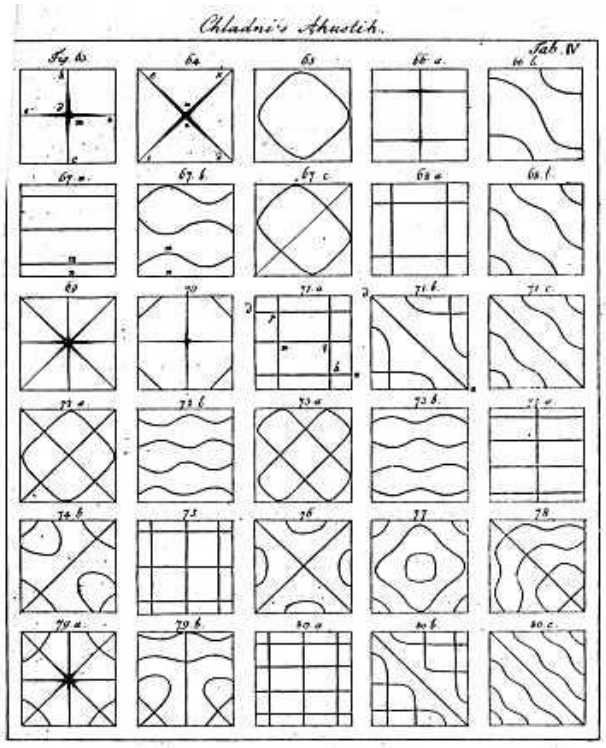
[516] Nietzsche, *Daybreak*, 38.
[517] *Ibid.*, 88.
[518] For more on Chladni see: Myles W. Jackson 2006. *Harmonious Triads: Physicists, Musicians, and Instrument Makers in Nineteenth-Century Germany* (Cambridge, MA: MIT Press, 2006).
[519] Friedrich Nietzsche, "*eKGWB/NF-1872,19[50] — Nachgelassene Fragmente Sommer 1872 — Anfang 1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1872,19[50].



A depiction of Chladni figures from: William Henry Stone, *Elementary Lessons on Sound* (London: Macmillan and Co., 1879), 26.




An example of a range of Chladni figures from: Ernst Chladni, *Die Akustik* (Leipzig: Breitkopf & Härtel, 1802).

The first recorded reference to Chladni in Nietzsche's *Nachlass* appears around the summer of 1872, in which he wrote that the creativity of the dreaming mind demonstrates that in cognition there is a "twofold artistic process […]: that which produces images and that which chooses among them."[520] Production, comparison, and selection were all creative activities, however:

> it is obvious that here too there is no totally free artistic invention - for that would be something arbitrary and hence impossible. Instead, these images are the finest emanations of nervous activity as it is viewed on a surface. The images are related to the underlying nervous activity which agitates them in the same way that Chladni's acoustical figures are to the sound itself. […] Considered physiologically, the artistic process is absolutely determined and necessary.[521]

Thought and perception were creative and organic processes that were simultaneously necessary and limited by the nervous organization of the individual. The creativity and necessity of thought

[520] Friedrich Nietzsche, "*eKGWB/NF-1872,19[79] — Nachgelassene Fragmente Sommer 1872 — Anfang 1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1872,19[79].
[521] *Ibid.*

and perception had the same relationship as Chladni's aesthetically pleasing sand figures had to the unseen sound waves that produced them. While thinking and creativity seemed to be as arbitrary (*willkürlich*) and free as an individual's tastes (*Belieben*), this was because people did not perceive the endless activity of their own nervous systems. For instance, notions of time and space did not make sense outside of a sentient being. Humans could only think in terms of aesthetic and metaphorical forms, and the concept of form belonged to the very essence of subjective experience: This "relationship is something like that between Chladni sound figures to the vibration."[522] Physiologically speaking, creativity and necessity were not actually opposites. Indeed, creativity was necessary for life. The necessary limits of knowledge were part of what made thought and perception creative, that made humans project, or create, "forms" into the natural world. In other notes from 1872 Nietzsche wrote:

> Surely, we live in a perpetual illusion brought about by the superficiality of our intellect: that is to say, we need art at every moment in order to live. Our eye holds us fast to the forms. But if it is we ourselves who have gradually cultivated this eye, then we see an artistic force at work in ourselves. Thus we see in nature itself mechanisms that oppose absolute knowledge: 'we need art' and 'we require only a part of knowledge.'[523]

Nietzsche later reinforced this idea in "Beyond Good and Evil" where he wrote that: "[w]e make up large parts of experience and cannot be other than part of its inventors."[524] There may be beings with organs better suited to knowledge, though human perception was not without its advantages.[525]

Nietzsche argued that the necessary physiological processes underlying aesthetics were themselves mutable. This had important metaphysical implications about how human beings understood their relationship to the natural world. For instance, with his break from Wagner Nietzsche turned against Schopenhauer's and Wagner's claims about the universality of music. In *Human, All Too Human* he claimed that music was not universal and could not even be tied to nationalities or folk.[526] Musical tastes were not only culturally contingent, but how humans

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[522] Friedrich Nietzsche, "*eKGWB/NF-1872,19[140] — Nachgelassene Fragmente Sommer 1872 — Anfang 1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1872,19[140].
[523] Friedrich Nietzsche, "*eKGWB/NF-1872,19[49] — Nachgelassene Fragmente Sommer 1872 — Anfang 1873*," *Nietzsche Source*, accessed November 5, 2015, http://www.nietzschesource.org/#eKGWB/NF-1872,19[49].
[524] Nietzsche, "Beyond Good and Evil," 294-5.
[525] Nietzsche, *Daybreak*, 87-88, 98-91. See also 243.
[526] Nietzsche, *Human, All Too Human*, 253.

actually heard sound changed over time.[527] In *Daybreak* Nietzsche speculated that colour vision was not only physiologically mediated and dependent on the physical context in which colours were seen, but that it was also historically and culturally contingent. In his aphorism "Colour-Blindness of Thinkers" he observed that the ancient Greeks used one word to describe the colour of dark hair, cornflowers, and the Mediterranean, and one word to describe green plants, human skin, honey, and yellow resin. This implied that their eyes actually saw blues as deep browns, and greens as yellows. A consequence of this was that the colour of human beings was also the colour that predominated in nature. The Greeks and their gods and demigods felt closer to nature in part because they actually perceived more similarities between the natural and the human than subsequent generations.[528] This was merely a more dramatic example of a common thought process. Since human beings were not constituted so as to be able to see the world-in-itself, any kind of coherent thought about an object was to paint it "with fewer colours than there actually were." This limitation was the precondition for diverse perspectives and forms of colour, or conceptual, harmonies. Different ways of perceiving the world brought with them different ways of evaluating it, and: "even now many an individual works from a particular color-blindness out into a richer form of seeing and differentiating: whereby he not only finds new pleasures but also *must give up and lose* several of the earlier ones."[529] This was the benefit, and the cost, of working through one's limitations in order to "dance in chains."

## Høffding and the Inner World

The way that creatively self-imposed limitations opened up new forms of perception articulated through Nietzsche's image of "dancing in chains" was yet another way that he described the processes of dynamic self-regulation, or "independence through interdependence" that was common throughout nature, from the nutrition and heat regulation of living organisms, to the cultural freedom and independence of the philosophical traveller, to how the individual psyche itself used ideas as an actual form of nutrition. Like Nietzsche, the Danish philosopher Harald Høffding felt that the human psyche was a rarefied *milieu intérieur* that functioned in a

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[527] *Ibid.*, 13-4.
[528] Nietzsche, *Daybreak*, 221-222.
[529] *Ibid.*

process analogous to the more immediately physiological *milieu intérieur* described by Bernard. In this model of the *milieu intérieur* ideas were the nourishment of the psyche that helped the individual maintain and regulate the unity of their psychic life against the ever changing environment of their perceptions and sensations. In this way experiences and learning not only acted on individuals in ways that they were consciously aware of, but also in ways that were not immediately apparent to conscious life.

While little known today, the German edition of Høffding's *Psychology Defined on the Basis of Experience* (1887) is a heavily annotated work in Nietzsche's extant library and notably influenced his later writings. Brobjer has already identified several key passages in *The Genealogy of Morals* that show how Nietzsche likely referenced Høffding without citing him.[530] Nietzsche's discussions of how interpretations produced physiological responses, and physiological responses instigated the formation of interpretations, his critiques of English psychology and physiology, and his discussion of how the laws of forgetting were part of the physiological laws of psychic life (what Nietzsche called "inpsychation" or the incorporation of psychical nourishment) all have parallels in Høffding that Nietzsche annotated in his copy of the Danish philosopher's work.[531] In the preface to *The Genealogy of Morals* Nietzsche claimed that his engagement with the ideas he was exploring were "much older" than his notes for *Human, All Too Human* from 1876-77.[532] What I wish to show here is how Nietzsche's highlighting of key passages in Høffding's work bears witness to his continued interest in the *milieu intérieur* and how psychological and perceptual dynamic self-regulation proceeded in a manner that was analogous with that of other organic processes.

In *Psychology Defined* Høffding argued that the inner secrets of the organization and development of all organic and inorganic matter depended on a theory that could unify two particular principles of nineteenth-century science: the conservation of energy and evolution's apparent tendency to produce ever more specialized and complex organisms. Helmholtz, du Bois-Reymond and many nineteenth-century scientists invoked the conservation of energy to argue that miracles were by definition impossible, since any miraculous event would involve a

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[530] Thomas Brobjer, "*Nachweise aus Höffding, Harald: Psychologie in Umrissen u.a*," in *Nietzsche-Studien: Internationales Jahrbuch für die Nietzsche-Forschung*, Vol. 30, eds. Günter Abel, Josef Simon, and Werner Stegmaier (Berlin and New York: Walter de Gruyter, 2001): 418-21.
[531] Nietzsche, "The Genealogy of Morals," 493.
[532] Nietzsche, "The Genealogy of Morals," 452.

creation of energy where there was none. This also had consequences for the existence of free will, since in order to not be determined by their history and physiology, individuals' choices would have to be, in some sense, uncaused and miraculous. Høffding understood these two principles to be fundamentally connected because the conservation of energy placed limits on how nature could be organized and evolutionary development was how living beings worked within those limits. Høffding drew from both Bernard's idea of the *milieu intérieur*, as well as du Bois-Reymond's discussion of the relationship between the conservation of energy and organic life when he made this argument in *Psychology Defined*.[533] He felt that these connections were already half-evident in the ways in which natural scientists were increasingly showing how life was a nested series of systems that tended towards greater forms of individualization. In a passage that Nietzsche highlighted, Høffding wrote: "Everywhere [the process of individualization] forms in nature smaller totalities within the greater, eternal totality."[534] This series of nested totalities extended to the universe as a whole, and reached its most rarified form of individualization within the human mind. While his understanding of consciousness was very similar to Helmholtz's, Høffding's emphasis on how life consisted of ever more rarified and nested sets of self-regulating systems led him to some different conclusions that were particularly appealing to Nietzsche.

Like Helmholtz, Høffding described perception as an act of unconscious comparison (*unwillkürliches Vergleichen*) whose content was incorporated into consciousness. A consequence of this was that: "*There is no absolutely passive sensory perception* [emphasis Nietzsche's]."[535] Høffding also used the example of reading to describe the relationship between experience, perception, and the external world. Unlike Helmholtz, however, he used this analogy to highlight what he saw as a tension that existed between them. In reading, the individual sensations of lines on a page become subsumed by the feelings and ideas that those lines produced in the reader. This does not go against Helmholtz's interpretation of experience, since Helmholtz admitted that greater familiarity makes it harder to once again experience a sensation as its composite parts. For Helmholtz unconscious conclusions, or experimentation, provided consciousness with a repository of experiences and comparisons that furnish the means for future

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[533] Høffding, *Psychologie in Umrissen auf Grundlage der Erfahrung*, 42, 103.
[534] *Ibid.*, 106. The German used is "*Individualisierung*."
[535] *Ibid.*, 161. Numerous segments of this passage have been highlighted by Nietzsche, including Høffding's reference to "*unwillkürliches Vergleichen*," unconscious comparison.

action. Yet for Høffding consciousness could almost be said to actually hunger for ideas and experience, which provide it with the means not just to act, but also grow and impose itself on the individual's sensations and perceptions.

Høffding described a sort of push and pull between the inner world of memory and the outer world of sensation and perception in which each vied for primacy in consciousness. Ideas helped memory to maintain its independence from being lost in the immediacy of its fragmentary perceptions and sensations. While memory could never entirely overcome the influence of sensations, it could radically reshape their interpretation.[536] Høffding repeatedly referred to the role that the "world of memory" played in the independence (variously *Selbständigkeit* or *Unabhängigkeit* in Nietzsche's translation) of ideas, in the face of which sensations played only the role of "triggering forces."[537] Ideas did for mental life what blood did for physical life. They served as the dynamic medium that helped to maintain an organism's independence and interdependence with its environment. Høffding explicitly relates this to Bernard's understanding of the *milieu intérieur*:

> Consciousness now has at its command a content that to some extent makes it 'independent of the influences of the moment'; it can let itself be driven by a life in memories, a life of thought [underlined by Nietzsche], not only a life of sensation or perception. One has aptly compared the circulation of ideas [*Vorstellungskreis*] with blood. In the blood, which is formed out of the nourishment that is taken in from the outside world, the organism sustains an inner world [underlined by Nietzsche] (*milieu intérieur*, vgl. II, 3) that makes it to a certain extent independent of the outer world. Likewise consciousness has an inner medium [underlined by Nietzsche] in its free association of ideas, that is formed out of earlier sensations, and it is the same medium which enables it to lead its own life, even when the influx of newer sensations diminishes.[538]

The inner life of consciousness, just like the inner life of an organism, was relatively independent of its environment. The more complicated the organism, the more pronounced this independence was likely to be.

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[536] *Ibid.*, 158. See also 160.
[537] Høffding, *Psychologie in Umrissen auf Grundlage der Erfahrung*, 157. These terms are underlined here in Nietzsche's copy, as are Høffding's references to independence.
[538] *Ibid.*, 157-8. It is also worthwhile to consider Nietzsche's often-heated rhetoric around blood in light of this analogy.

Nietzsche was already exploring ideas similar to Høffding's in 1874 when he described how stronger individuals were more readily able to transform their own pasts "into blood."[539] When he compared the spirit to a stomach around 1885 and 1886, he was again likely thinking of ideas as part of a physiological process.[540] In "Beyond Good and Evil" he wrote that the spirit [*Geist*] had needs and capacities that were "the same as those which physiologists posit for everything that lives, grows, and multiplies:"

> it involuntarily emphasizes certain features and lines in what is foreign, in every piece of the 'external world,' retouching and falsifying the whole to suit itself. Its intent in all this is to incorporate new 'experiences,' to file new things in old files— growth, in a word— or, more precisely, the *feeling* of growth, the feeling of increased power.[541]

Experience was a kind of nourishment. In light of this education changed the individual in two important ways. Firstly, it facilitated the individual's ability to consciously and dynamically regulate themselves in relationship to their cultural and historical environments. Secondly however, it also facilitated their unconscious processes of psychological self-regulation. While there were certain elements of the human organism that were "unteachable," because of its evolutionary history, Nietzsche acknowledged that: "Learning changes us; it does what all nourishment does which also does not merely 'preserve'— as physiologists know."[542] Education was a physiological process through which the assimilation of experiences and ideas provided nutritional material that furthered individuals' freedom relative to their cultural and perceptual environments. As was seen in chapter three, this was partly a self-conscious process of self-determination. Yet Høffding and Nietzsche further argued that this was also an important process governing individuals' unconscious and perceptual lives as well. Dynamic self-regulation was a physiological process that played out at every level of organic life. For Høffding, this was part of the universal process of individualization. For Nietzsche, however, this processes culminated in a more self-conscious kind of individualization in which the individual reached the pinnacle of independence through interdependence by embracing how the height of meaningful freedom was the ability to embrace creatively how they were completely determined by their environments. This was the task of the *Übermensch*.

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[539] Nietzsche, "On the Uses and Disadvantages of History for Life," 62-3.
[540] Nietzsche, "Beyond Good and Evil," 230. See also: Nietzsche, *Thus Spoke Zarathustra*, 179.
[541] Nietzsche, "Beyond Good and Evil," 350.
[542] *Ibid.*, 352.

The *Übermensch*

Nietzsche's understanding of education as a physiological process, his many parallels with Bernard, and his highlights in Høffding's work all reflect his interest in how existence could be understood as being composed of "smaller totalities" that were reflective of, and interdependent with, the "greater, eternal totality" of existence as a whole. Different levels of organization were characterized by different forms of dynamic self-regulation; however, the relative freedom afforded at each level involved the ability to creatively fashion new limits for the individual where none had been before. It was not just the ancient Greeks; all of nature danced in chains. The *Übermensch* was the cumulative result of Nietzsche's thinking about dynamic self-regulation and its relationship to the genius-as-chain-dancer who secured meaningful freedom by creatively willing the limitations of the totality of their own existence. The *Übermensch*'s "environment" was the eternal return of the same, which was Nietzsche's understanding of the unity of human existence as a whole. This relationship was prefigured in Nietzsche's writing in his discussions about the origin and meaning of genius as well as in his earlier thoughts about dynamic self-regulation. This can further be seen in the way that Nietzsche described the *Übermensch*'s relationship to contingency in *Thus Spoke Zarathustra*.

The seeds of the *Übermensch* existed long before Nietzsche explicitly used that term to describe his educational ideal. Writing to his friend Peter Gast (1854-1918) in 1883, he reflected on his work up to that point, commenting: "It is curious: I wrote the commentary prior to the text! Everything was already promised in Schopenhauer as [E]ducator. But there was still a long way to go from 'Human, All Too Human' to the '[*Übermensch*].'"[543] Nietzsche had realized the tensions between his own thought in "Schopenhauer as Educator" and Schopenhauer's actual philosophy. He claimed as much in a letter to Cosima Wagner dated December 29th 1876. In it he stated that his difference with Schopenhauer had been growing unconsciously since he wrote "Schopenhauer as Educator," explaining the work by saying that: "since I am removed from all dogmatic principles, the entire affair concerned only the human being, as I have already written

[543] Friedrich Nietzsche, "Letter to Peter Gast, 21 April 1883," as in *Untimely Meditations*, ed. Daniel Breazeale. trans. R.J. Hollingdale. (Cambridge: Cambridge University Press, 1997), xxviii.

concerning Schopenhauer."[544] In that text his emphasis on the human being allowed him to describe Schopenhauer's "physiological" influence on him, rhetorically excusing himself from actually talking about Schopenhauer so that he could instead explore his broader interest in education and self-fashioning.[545] As has already been shown in chapter one, many of the themes that carried through from "Schopenhauer as Educator" to *Human, All Too Human* related to notions of genius, education, self-fashioning, and physiology. The free spirit of *Human, All Too Human* developed out of Nietzsche's attempt to redefine the meaning and nature of genius, just as the *Übermensch* and their relationship to the eternal return of the same developed out of the free spirit's relationship to necessity and contingency.

The eternal return of the same was the culmination of Nietzsche's thinking about necessity and what it meant for individuals to be meaningfully free. Not only was the individual entirely contingent upon their physiological and psychological contexts, this relationship did not even end in death since existence repeated itself exactly as it had been for all eternity. The ability to affirm the value and importance of one's life and one's necessary relationship to everything else in the cosmos that has existed or will exist was one of the hallmarks of the *Übermensch*. However, there has been some hesitancy in the scholarly literature surrounding whether or not it is even desirable to contextualize Nietzsche's arguments about the eternal return in terms of his engagement with the natural sciences. George Stack stressed that it was the idea of the eternal return that was the "acid test" of the *Übermensch*, and that as a cosmological possibility it had little other value.[546] Babich prefers to see it as a development of the Kantian "what if?" in which "the thinking of the [e]ternal [r]eturn of the same is directed against the seekers of the future, the men of the future, the last men."[547] In her view, the "(impossible) possibility [of seeing the eternal recurrence as a physical phenomenon] is not the point. And stylistically, it is inevitably beside the point."[548] In this regard she closely follows the interpretation of Heidegger, for whom the idea was primarily an existential thought, albeit a very powerful one.[549] Yet to treat the

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[544] Nietzsche, as in: Mazzino Montinari, *Reading Nietzsche*, trans. Greg Whitlock (Champaign: University of Illinois Press, 2003), 37. See also: Wagner, *Cosima Wagner's Diary*, Vol II, 938.
[545] Nietzsche, "Schopenhauer as Educator," 136.
[546] Stack, *Lange and Nietzsche*, 32.
[547] Babette E. Babich, *Nietzsche's Philosophy of Science: Reflecting Science on the Ground of Art and Life* (Albany: State University of New York Press, 1994), 287.
[548] Babich, *Nietzsche's Philosophy of Science,* 285.
[549] Martin Heiddeger, *Nietzsche, Volume II: The Eternal Recurrence of the Same*, trans. David Farrell Krell (San Francisco: Harper & Row, 1984), 13.

eternal return as a kind of existential thought experiment is to largely ignore Nietzsche's own admission that it was the "most scientific hypothesis." Babich goes as far as to say that Nietzsche's apparently honest efforts to discover if the eternal return could actually describe a cosmic process was a kind of posthumous act of misdirection which he placed in his unpublished notes.[550] Believing this prevents us from seeing some important developments in Nietzsche's thought and from appreciating the full scope of his synthesis of the scientific ideas of his age.

The relationship between the *Übermensch* and the eternal return of the same was prefigured in Nietzsche's earlier writing about how geniuses participated in their own self-fashioning or dynamic self-regulation out of the contingent material of their environment, history, and culture. This can be seen, for instance, in a passage from *Human, All Too Human*, where Nietzsche wrote:

> And by your desiring with all your strength to see ahead how the knot of the future is going to be tied, your own life will acquire the value of an instrument and means of knowledge. You have it in your hands to achieve the absorption of all you experience — your experiments, errors, faults, delusions, passions, your love and your hope— into your goal without remainder. This goal is yourself to become a necessary chain of rings of culture and from this necessity to recognize the necessity inherent in the course of culture in general.[551]

While the eternal return of the same has often been considered as an existential, or cosmological, doctrine, the persistence of Nietzsche's thoughts about the relationship between genius and dynamic self-regulation also position it as a profoundly physiological ideal.

In the context of Nietzsche's persistent interest in the physiological dynamics of self-regulation and genius, it seems likely that the relationship between the *Übermensch* and the eternal return of the same is best understood as the largest, cosmic instantiation of dynamic self-regulation. Nietzsche claimed that Zarathustra, by teaching the *Übermensch* and the eternal return of the same, was "the redeemer of coincidence," who had taught "Lord Contingency" to "*Dance* on the feet of chance."[552] The scene in *Thus Spoke Zarathustra* that featured the tightrope walker (literally "rope dancer," *Seiltänzer*) and Nietzsche's discussion of dancing in chains from *Human, All Too Human* are productively read side by side, for they both highlight how artistic and intellectual limitations (contingencies) were inextricably linked with meaningful

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[550] Babich, *Nietzsche's Philosophy of Science*, 263.
[551] Nietzsche, *Human, All Too Human*, 135.
[552] Nietzsche, *Thus Spoke Zarathustra*, 121, 143. See also, 172.

freedom and creativity. Nietzsche's interest in the role of ideas as the blood of conscious self-fashioning and dynamic self-regulation, and the idea that the spirit was a stomach were both points that he reiterated in *Thus Spoke Zarathustra*. He described contingency as the food of the spirit, writing: "I am Zarathustra, the Godless: I still cook up every chance event in *my* pot. And only when it is quite cooked do I bid it welcome, as *my* food."[553] For physiologists like Liebig, Bernard, du Bois-Reymond, and Helmholtz, the freedom and independence of organic life was actually maintained through ever more complex and subtle forms of interdependence between the organism and the necessities of its environment. Likewise, for physiologically inspired philosophers such as Lange, Høffding, and Nietzsche himself, psychological or perceptual independence was brought about by a similar, social, cultural, and intellectual form of "independence through interdependence" that was arrived at through ideas, travel, and education. With their ability to compare, select, and will everything that was necessary about the natural world, and not just once, but for all eternity, Nietzsche's *Übermenschen* stand at the pinnacle of this model of "independence through interdependence." Meaningful freedom, or independence, manifested itself differently in different contexts and at different scales. In a physical, or biological context, the independence of an organism was defined in terms of its ability to dynamically self-regulate relative to its physical environment. In a cultural or psychological context, the independence of an individual was defined in terms of their ability to dynamically self-regulate relative to their cultural, historical, and perceptual environments. However, in a cosmic context, the independence of an individual could only be defined in terms of their ability to dynamically self-regulate relative to the totality of existence. Physiology and cosmology blur depending on how one defines what constitutes an organism's environment. Nietzsche's understanding of this required unconventional notions of freedom, creativity, and independence. In this case, all of existence in its totality was the *Übermensch*'s environment, and their creative incorporation or assimilation of it was their actively willing it in its entirety.[554] In this they

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[553] *Ibid.*, 148.

[554] *Ibid.*, 75, 179. This distinction between what constituted independence in different contexts also helps to explain the distinction Nietzsche made between willing what is, and merely accepting what is. At the level of the individual, comparison and selection were necessary elements of independent living within the interdependence of one's cultural context. This is why Nietzsche attacked those who seemed to "take in" everything with indifference, commenting: "I respect the rebellious selective tongues and stomachs, that have learned to say 'I' and 'Yes' and 'No.'" Nietzsche, *Thus Spoke Zarathustra*, 168. The disinclination or inability to say yes or no, to make value claims, was the psychological equivalent of the physiological inability to regulate one's own temperature in relationship to the ambient environment.

simultaneously accepted their finitude and contingency, even as they embraced their connection to eternity.

## Conclusion

Making a distinction between Nietzsche's interest in physiological aesthetics (following Grant Allen) on the one hand, and "physio-aesthetic epistemology" on the other, helps show how he came to his physiological relativism from a stance that was initially within Schopenhauer's philosophical system. Schopenhauer's understanding of perception as an activity of the intellect required a twofold aesthetic component to experience: what perceptions attracted the mind, and how the mind creatively sought out and structured those perceptions. Schopenhauer used examples of physiological illusions as well as inverted and binocular vision to demonstrate this point. Yet in the absence of Schopenhauer's transcendental view of the objective world, these same observations proved valuable material for Nietzsche's physiological relativism. It also helps to explain his persistent interest in Helmholtz, who also held that much of human perception was projected into nature. Helmholtz, lacking Schopenhauer's heady commitment to being able to experience the thing-in-itself, nevertheless grounded the reliability of perception in relation to how it furnished the material for being able to successfully act on and interact with the phenomenal world. This also had important consequences for what constituted learning. Experimentation and education could not allow one to learn about the objective world, or the thing-in-itself. Instead, for Helmholtz, learning was the process whereby the mind, largely through unconscious conclusions and comparisons, collected together and interrelated arbitrary perceptions into a useful whole in order to regulate an organism's movements and actions. This was similar to the arbitrary qualities of language that nevertheless, when understood together, could be used to express complex thoughts and ideas. Learning, and learning about the limits of action, was thus an important part of dynamic self-regulation. Nietzsche's predilection for understanding existence as a text with an unknown, and likely unknowable referent, is best understood in this context. Helmholtz's stance on perception and learning (together with other physiological thinkers such as Bernard, Lange, and Høffding) also served as the context in which Nietzsche came to see that creativity within limits was what constituted the independence and dynamic self-regulation of life itself.

Nietzsche's understanding of independence was defined by limitations, for while learning and growth were arrived at thorough experimentation and comparison, the consequences of this growth was to provide individuals with novel and more complicated ways to limit themselves. Nietzsche used the metaphors of learning and developing artistic skills and conventions, as well as of scholarly and scientific methods, to demonstrate how productive and vital these forms of self-limitation could be. However, he went beyond these metaphors to describe how in nature seemingly free, spontaneous, and aesthetically pleasing creative acts still depended upon law-bound natural processes. This was also the case with human beings. Instead of raging against the laws of nature, Nietzsche encouraged his readers to see how innovation, creativity, and independence required mastering new limitations, for it was the mastering of new ones that opened up other ways of acting in and evaluating the world. No one person could know everything, but individuals could make themselves into diverse "little worlds" within the larger world of the cosmos as a whole.

Bernard described the organism as a microcosm, or little world, that existed within, was insulated against, and yet was also reflective of the macrocosm, or larger cosmos. Its processes of dynamic self-regulation were reflective of larger processes. Nietzsche took a complementary approach when he described how the relationship between ideas and perception existed in a similar relationship as that between food and an organism's *milieu intérieur*, converting both into the "blood" that was necessary to maintain a division between one's self and one's surroundings. Nietzsche found in Høffding another account of ideas as the blood of consciousness, and how experiences were the food that consciousness converted into ideas in order to help buffer it against the changing immediacy of every passing perception and sensation in its environment. Høffding's work was not the cause of Nietzsche's association between blood and ideas, and how dynamic self-regulation was more than just the definition of organic life but also psychological life. However, the attention Nietzsche gave to the Danish philosopher does highlight his persistent interest in the subject. Throughout his career, Nietzsche's use of metaphors of the stomach and digestion were explicitly related to actual physiological studies of nutrition and blood as the primary domains of dynamic self-regulation. Nietzsche's interest in the active and creative dimensions of perception related to his thoughts about ideas and education as the sustenance of consciousness. In this view, unconscious comparison was an active part of how conscious organisms "sought out" material to assimilate, or digest, that furthered their own

independence. There was also a conscious element to this process. The individual's cultural diet was partly determined by their aesthetic sensibilities, and their "taste" for different kinds of ideas and media. Accepting everything that one's culture presented one with could be just as deleterious to the organism as going hungry. Through education and self-fashioning individuals could grow into their independence through processes that were fundamentally tied to other forms of dynamic self-regulation.

Finally, Nietzsche's *Übermenschen* stand at the pinnacle of this model of "independence through interdependence" that he first arrived at through his interest in the relationship between genius and physiological research. Dynamic self-regulation, and the definition of independence, becomes more rarified and complicated the more complicated the organism becomes, from the level of physical qualities for the living organism, to cultural and perceptual qualities for the conscious individual, until at last one considers the organism in relationship to its entire environment: the cosmos itself. In this context instead of conventional nutrition, or ideas, serving as the food that sustains the growth and dynamic self-regulation of living things, it is contingency itself. The way that Nietzsche described the *Übermensch* mastering contingency by willing the necessity of all things was the culmination of his thinking about dynamic self-regulation as it played out on a cosmic scale. The eternal return of the same was the *Übermensch*'s environment, and meaningful freedom within this extreme context was the creative willing of exactly that context. Importantly, however, the *amor fati* of the *Übermensch* did not preclude the kinds of comparisons and selection that made value judgments possible. Experimenting and working through many states, learning about the world and its interconnections, was the very precondition of coming to understand the necessity of the *Übermensch*, but also the need for, and existence of many paths to a diverse and startling array of *Übermenschen*.

## Conclusion

It is true to Nietzsche to pay attention to the "little things" of his biography. When his father died on July 30th 1849 he left a hole in his child's education that Nietzsche would spend the rest of his life trying to fill; first with others, and then with himself. Nietzsche eagerly sought out a series of idols and role models, and latched on to the idea of the genius as the greatest idol of all. Yet the more he read about genius the more his early views became untenable. This was not in spite of Schopenhauer's influence, but because of the way that the older philosopher grounded the qualities of genius in the physiological organization of the individual. Whatever else Wagner was to Nietzsche, the composer was once his "flesh and blood" embodiment of Schopenhauer's ideal genius. Increasingly, however, it became an ideal that Nietzsche could no longer believe in. It was a belief that he made public with the 1878 publication of *Human, All Too Human*, however, he had had doubts about Wagner's genius since the beginning of their relationship. Nietzsche's emphasis on the importance of particulars, and the ability to "take things apart" in order to understand them was partially a response to his observations of the excesses and inconsistencies of the antivivisectionists in Wagner's circle. It was also partly a deconstruction of Wagner's superficially holistic, static, and absolutist understanding of genius, and genius' relationship to knowledge, morality, and creativity. His familiarity with the debates surrounding vivisection played an important role in his understanding of the meaning of necessity and the role it had to play in definitions of cruelty, knowledge, and creativity. These meditations on necessity would later coalesce into his ideal of *amor fati*, or the love of fate, and its relationship to the eternal return of the same.

Drawing from the physiological literature surrounding dynamic self-regulation Nietzsche began to define genius as dynamic, contingent, and diverse. Genius was a matter of education, conscious and creative self-fashioning, experimentation, and self-limiting that furthered the individual's ability to act freely within the confines of their particular contexts. His vision of self-regulation and education bore striking resemblances to the thought of physiological thinkers such as Bernard. The idea of the *Übermensch* developed out of Nietzsche's physiological understanding of the origin of geniuses and free spirits and the relationship they had with their historical and cultural environments. Experimentally living through and comparing different worldviews, philosophies, states of health, and physical locations gave the free spirit the freedom

to evaluate their surroundings, select from what they had experienced, and use it to refashion themselves. The free spirit achieved a state of independence through interdependence that paralleled the way in which organic beings achieved their free conditions of life relative to their physical environments. The casually interconnected necessities of nature meant that even cosmological concerns like the eternal return of the same were part of the physiological and psychological life of the individual. The *Übermensch*, as a conceptual descendant of the genius and free spirit also existed in a state of dynamic equilibrium with their environment. Yet instead of being merely a physical environment, or even a cultural, historical, or psychological environment, the *Übermensch*'s milieu was the eternal return of the same: the "environment" of the cosmos along with all of the necessities that this entailed. The freedom that Nietzsche ascribed to the *Übermensch* was not the ability to arbitrarily express their will, but of active rejoicing, and participating in their own interdependence with the cosmos.

There is a growing body of literature surrounding Nietzsche and physiology, and it promises to help reframe and re-contextualize a great deal of his life and philosophy. I hope to have contributed to this body of literature by showing how Nietzsche's relationship to physiological thought helps to reveal the connections between his interest in topics as diverse as aesthetics and vivisection, education and cosmology. Despite its importance to his thought, existing scholarship has made almost no mention of the role played by vivisection in his writing or in his cultural context. This context helps to explain the violence of Nietzsche's rhetoric of cruelty, knowledge, and necessity. One further consequences of this lacuna is that it has hampered scholars' ability to analyze Nietzsche's relationship to the idea of genius.

The literature produced by scholars has often uncritically accepted "genius" as an uncontested category, or took at face value the definitions employed by historical actors such as Wagner or Schopenhauer. Nietzsche's own early longing to find "great men," to mentor him and scholars who accept that Nietzsche himself was a "genius," have often influenced these studies. However, genius was not a stable or uncontested idea, and even Nietzsche's definition changed substantially over the course of his life. Historically, this tendency to accept uncritically ideas about genius has also led to a scholarly emphasis on Nietzsche's relationship to "serious thinkers," and "great men" such as Kant or Hegel, at the expense of less well known authors such as Lange, Zöllner, Høffding, scientific popularizations, and the periodical press. A great deal of Nietzsche's cultural critiques came from his encounter with popular literature and other

"ephemera" that was not preserved by his estate. There is still much work to be done to explore the role played by these resources in Nietzsche's worldview.

While there have been a number of valuable scholarly works that position Nietzsche's idea of the eternal return of the same in the context of nineteenth-century debates about thermodynamics, probability, and atomic theory, none have explored the relationship between the *Übermensch* and the eternal return of the same in terms of their connect to Nietzsche's physiological interests. This relationship has been partly obscured by an overly close emphasis on Grant Allen's role in coining the term physiological aesthetics. This has prevented scholars from seeing that there were a number of physiological traditions that related physiology, epistemology, and aesthetics that Nietzsche was participating in long before the 1877 publication of Allen's text. What I have called Nietzsche's physio-aesthetic epistemology had its origins in his earliest encounters with Schopenhauer and Lange and was augmented by his encounters with other physiologically inspired philosophers such as Helmholtz and Høffding. The view of the dynamic relationship between perception and experience that he drew from such thinkers contributed to how Nietzsche related the education of the *Übermensch* to the cosmological principles of the eternal return of the same.

History of science and STS scholarship has also begun to converge on the cultural and scientific importance of the intersection between physiology and aesthetics. Robert Brain's work on physiological aesthetics is only the beginning of what promises to be a very rich field of exploration that serves as a bridge between nineteenth-century concerns about the relationship between art and science and the forms these concerns took in the twentieth century. If we include physio-aesthetic epistemology in this discussion it would help us explore the cultural and intellectual paths taken by Enlightenment discourses on aesthetics, physiology, and epistemology and how they contributed to relativistic twentieth-century movements as diverse as Einsteinian physics and Lovecraftian occultism.

Nietzsche's exploration of the relationship between education and freedom may have been grounded in nineteenth-century concerns, but it is just as relevant today as it was then. Twenty-first century scholarship has been characterized by the growing neoliberalization of the university as a site of research, education, corporate management, and administrative control. It represents a massive shift of expenses that were once paid for by corporations and employers for the training and retention of their employees onto publicly funded universities that are

themselves increasingly beholden to private interests. Combined with the growing power and influence of corporate administration, rising student debt, and internalized norms that reinforce a disregard of work/life balance and expectation that "the life of the mind" rewards and justifies any material hardships, students are becoming increasingly isolated and dependent on unstable sources of employment and support. This now-institutionalized process of personal destabilization relates to our intellectual work and the quality of our scholarship and teaching. If the purpose of education is to be understood as helping to facilitate how students take their own individual paths towards independence through interdependence, and helping them develop the tools required to act critically and creatively within the confines of their own individual contexts, then the modern neoliberal university, with its emphasis on the industrial production of degrees, cannot be considered an educational institution. It is telling that, unlike most nineteenth and twentieth-century European philosophers, Nietzsche worked on the fringes of academia. His beliefs about education were at once older than he gave them credit for, harkening back to Wilhelm von Humboldt's humanist ideals, but they are also still strikingly contemporary, and increasingly necessary. In the process of completing this project his vision of education has become one that I now hold myself, and I too believe that it lifts a corner of the veil of the future; if there is to be a future.

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