

## **Muck and Magic or Change and Progress: Vitalism versus Hamiltonian Matter-of-Fact Knowledge**

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In chapter V, titled “Change and Progress,” in his now classic *Evolutionary Economics: A Study of Change in Economic Thought*, David Hamilton contrasted beliefs in magic and mystic potencies with the matter-of-fact knowledge of technology in the form of tools, machines, and techniques of production (1999, 93, 109, 111, 112). As with most evolutionary economists, his view of technological change and progress is derived from Charles Darwin (Hamilton 1999, 121, 25–28). It is also “relatively optimistic” (116, 115). Though critical of the static Newtonian worldview and its simplistic absorption in the core of economic methods and methodology, Hamilton was not directly critical of scientific inquiry, including physics. Certainly, as Hamilton recognized, the eighteenth century Newtonians shared the optimism of the later Darwinians (20). Nor was Hamilton critical of eighteenth century social perspective based on overturning the reverence for the classical civilization with “enlightened reason” nor with the “revolutionary effects of the displacement of the medieval cosmology by new ways of viewing things” (20). He may have been, but specifically, Hamilton argued that this new way of thought was “not as revolutionary as some of its chief progenitors and many of its later interpreters thought it to be” (20). The intent of the eighteenth century theorists may have been worthy, but the execution was faulty. We could further generalize and argue that almost all of what was known as science or natural philosophy in Western culture at that time, implicitly or explicitly, assumed some non-empirical, non-verifiable vital essence.

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Between eighteenth century Newtonianism and Darwin, there was another revolution in thought that shaped Darwinism and much of the anthropology that Hamilton has effectively utilized. Though a modern engineer may use Newtonian mechanics as matter-of-fact knowledge in a technological endeavor, eighteenth century Newtonian mechanics, when utilized as social philosophy, lacked the truly revolutionary outcome of removing magic or the belief in the “mystic potency” of unseen forces. That was achieved by the revolution in thought in chemistry laying the foundation for modern chemistry, agriculture, nutrition, physiology, and medicine. And chemistry remains at the heart of many contemporary issues, conflicts, and strange dichotomies: synthesis (as opposed to reductionism) is good while synthetic is suspect, organic refers to something other than a carbon-based compound, and chemical has become a code word for manufactured chemical and the source of evil in modern life. All these issues have come to the forefront in an area in which Hamilton gained considerable, well-justified renown—consumer economics. A brief look at some of the history of these issues is in order.

### ***The Rise of Science, the Decline of Vitalism***

Jean Mayer, in his Lowell Lecture (1989), dated the origin of scientific nutrition with the work of Antoine Lavoisier. “First came an understanding of the organism as an *engine*. The understanding of the energetic aspects—the caloric aspect of nutrition, if you want—started in the 1780s, with a very famous set of experiments conducted in 1789 by Lavoisier.” These “experiments established clearly that there was a similarity, indeed, an identity between the phenomenon of combustion and the phenomenon of respiration and that respiration was the oxidation of foods by the individual; that what one observed was in fact a machine, an engine, burning food in order to function, to maintain its body temperature, to move, to grow.” Lavoisier’s work on combustion overturned phlogiston theory and related theories of the alchemists (Asimov 1962, 49).

Lavoisier’s work began the process of freeing science from the vitalist belief in an invisible force, or *vis viva*. There is nothing in Lavoisier or in Mayer, or in this view by others, against seeing humans in a multiplicity of other dimensions. Biologists may be “materialists” in denying “supernatural or immaterial forces” and accepting those that are “physico-chemical,” but neither do they accept “naive mechanistic” explanations or any belief that “animals are ‘nothing but’ machines” (Mayr 1982, 52). “Vitalism is irrefutable” and therefore incapable of being considered as a scientific hypothesis or theory (Beckner 1967, vol. 8, 254). Science cannot operate on the basis of a “factor” which is “unknown and presumably unknowable” (Mayr 1982, 52). Nor can it operate with theories that cannot be refuted and therefore cannot be tested. In other words, Hamilton’s matter-of-fact knowledge is central to scientific inquiry.

The understanding of the machine-like characteristics of the living organism was essential for the scientific advances that have given us the longer life and good health that has been achieved over the last two centuries. These advances have furthered the

other aspects of the human endeavor in keeping us alive so we can cultivate and appreciate the aesthetic dimension of our being.

In 1828, chemistry professor Friedrich Woehler, M.D. (1800–1882), accomplished the first laboratory synthesis of an organic compound (specifically, urea). He thus proved that chemistry could duplicate, even without organic molecules, a product of animal metabolism. The vitalists of Woehler's time maintained that organic molecules could not be derived from inorganic molecules. Another chemistry professor, Justus Baron von Liebig (1803–1873), a co-founder of agricultural chemistry, in his essay "Chemistry in Its Application to Agriculture and Physiology" refuted the theory, then prevalent, that only organic material (specifically, humus) nourished plants. Following Lavoisier, Liebig recognized that "respiration involves oxidation of substances within the body for the production of heat" and concluded that the "carbon dioxide exhaled by the body was an index of its heat production" (McCollum 1957, 93).

Among Liebig's highest achievements was his discovery that minerals alone could fertilize soil. Wide acceptance of this discovery has enabled better nourishment of humankind—despite humans numbering more than six times what they did before the discovery. To Lady Balfour, proponent of "organic agriculture" and a founder of the Soil Association in England, Liebig's "naive theory" did result in increased food production, but it was nutritionally inferior (Balfour 1948, 50–51; 1976, 56). It lacked a "vital quality" as the modern world "largely ruled by chemistry" had neglected the "continuity of the living principle in nature" (25). Like Hamilton's mystic potencies, vital qualities are strictly in the eye of the beholder.

In 1845, one of Woehler's students, Adolph Wilhelm Hermann Kolbe (1818–1884), accomplished the first synthesis of an organic compound (acetic acid) from its elements. To Sidney Toby (2000), "the death-knell of vitalism in chemistry was sounded." In England, scientists like Sir Humphrey Davy were demonstrating the importance of minerals for the human body and the illnesses that result from their deficiency. As with many heuristic advances in science and technology, the recognition of the nutritional importance of minerals along with Pasteur's work on microbial infection led to excess diagnostic reliance on these understandings. Late nineteenth and early twentieth century research by a number of scientists led to the recognition that disease could also be caused by nutritional deficiencies. These efforts culminated in the discovery of vitamins, which were named by Casimir Funk (originally called *vitalamines*) and for which Sir Frederick Gowland Hopkins won the Nobel Prize in 1912 (Hopkins 1929).

The Darwinian revolution that so influenced Hamiltonian and institutional thought was clearly consistent with the earlier trends in chemistry and undoubtedly influenced by them. Darwinian theories had to overcome the essentialist beliefs about the immutability of species (Mayr 2001, 78, 83). This was comparable to the challenge to chemistry concerning organic compounds and their essential vital characteristics. In contrast to earlier saltation or instantaneous mutation theories, Darwin, like Sir Charles Lyell, found continuities in a uniformitarian, transformationalist mode of

variational evolution of populations (Mayr 2001, 78, 80, 85; Gould 1977, 21). In contrast to vitalist doctrines, Darwinian theory is non-teleological (Mayr 2001, 82). Put into the language of social sciences, Darwin's theoretical framework has an almost perfect congruence with that of Hamilton—uniformitarian, transformational, and non-teleological. What is truly astounding about this theoretical framework is that after 100 years of the Darwinian "revolution," molecular biology using DNA for analysis has so solidly confirmed the classifications of life-forms by morphology that evolved over this century. It put the final nail in the coffin of Lamarckianism by showing that "no information can be transmitted from proteins of the body to the nucleic acids of the germ cells, in other words, that an inheritance of acquired characteristics does not take place" in what has come to be called the "central dogma of molecular biology" (Mayr 2001, 85; see also Crick 1958, 1970).

Hans Driesch, in *The History and Theory of Vitalism*, referred to the "dynamic teleology of vitalism" (1914, 6, 46; also 1908, vol. 2, 340). There is a "real concept of harmony in nature, both organic and inorganic" (1908, vol. 2, 348). "*Nature is nature for a certain purpose*" (1908, vol. 2, 348, emphasis in original). Substances have an Aristotelian entelechy or essential nature that works itself out (1908, vol. 2). Unlike the trends in nineteenth and twentieth century chemistry and biology, issues of morality were and remain an integral part of vitalism. In speaking of the "very important relation between morality and vitalism," Driesch argued that the very "*assertion of morality implies the assertion of entelechy, just as entelechy implies causality and substance*" (emphasis in original). He added that vitalism is the high road to morality: "morality would be an absurdity without it" (1908, vol. 2, 348).

An increasing scientific understanding of the world was and remains unacceptable to the true romantics. Organic chemistry may have sounded the death-knell of vitalism, but the romantics refused to hear it. For some the triumph of chemistry made a focus on vitalism even more imperative. Four centuries earlier, overturning the geocentric view of the universe inevitably brought the astronomers who espoused overturning that view into conflict with those whose beliefs and portions of power were predicated upon the earth being the center of the universe. Similarly, the very inquiry and discoveries of quantitative and organic chemistry were demystifying biological and agronomic understandings and, therefore, it was equally inevitable that there would be conflict (fortunately, mostly an intellectual conflict) between the emerging science and the defenders of established thought.

Late nineteenth century and twentieth century ethnology could delineate the garden magic of the peoples that they studied because these practices had been largely demystified in their own cultures. It does not detract one whit from the originality of the work of John Dewey, Thorstein Veblen, Clarence Ayres, and Hamilton to argue that their inquiry arose in the context of the demystification of science and it was their task to carry it forward into economics, other social sciences, and philosophy. In addition to the general climate of thought that influenced Veblen, there was a direct connection to anti-vitalist thought from Jacques Lieb, who "did battle with 'vitalism' and championed

the ideals of reductionist experimental biology based on physical chemistry” (Kohler 1991). Clearly the work is far from over as the purveyors of mystification are continuing their counterattack.

Medicine in the 1840s in Germany was the focus of a vitalist counterattack under the rubric of homeopathy, since mainstream medicine with the help of chemistry was becoming more scientific. In many respects, homeopathic medicine was the first vitalist response to emerging modern science that has proponents today using much the same terminology and ideas. In medicine, vitalism, holistic healing, and natural cures along with health maintenance using herbs and homeopathic medicine are part and parcel of what is called alternative medicine, which is preferred by its devotees to “reductionist, mechanistic” modern medical practice.

Homeopathic medicine was and remains a prime area of vitalist principles and a reaction to scientific medicine (see, for example, Evans and Rodger 2000). “Samuel Hahnemann (1755–1843), a German physician, began formulating homeopathy’s basic principles in the late 1700s” (Barrett 2001; see also Proctor 1988, 225). The basic principles of homeopathy are “(1) most diseases are caused by an infectious disorder called the psora (itch); (2) life is a spiritual force (vitalism) which directs the body’s healing; (3) remedies can be discerned by noting the symptoms that substances produce in overdose (proving) and applying them to conditions with similar symptoms in highly diluted doses (Law of Similia); (4) remedies become more effective with greater dilution (Law of Infinitesimals) and become more dilute when containers are tapped on the heel of the hand or a leather pad (potentizing)” (Mertens 2001; see also Fienberg 2001 or Evans and Rodger 2000, 141).

Given the extreme dilution required, Hahnemann “realized that there is virtually no chance that even one molecule of original substance would remain after extreme dilutions.” But he believed that the vigorous shaking or pulverizing with each step of dilution leaves behind a “spirit-like” essence—“no longer perceptible to the senses”—which cures by reviving the body’s “vital force.” Modern proponents assert that even when the last molecule is gone, a “memory” of the substance is retained. This notion is unsubstantiated. Moreover, if it were true, “every substance encountered by a molecule of water might imprint an ‘essence’ that could exert powerful (and unpredictable) medicinal effects when ingested by a person” (Barrett 2001). A solution is “succussed” when it is shaken in each step of the dilution (Evans and Rodger 2000, 69–70).

The continued nineteenth century advance of chemistry, in which German scientists played a leading role, laid the foundation for the early twentieth century work of Fritz Haber and Carl Bosch in the industrial synthesis of ammonia from atmospheric nitrogen, allowing for the mass production of synthetic nitrogenous fertilizer. In considering various candidates for the “most important technical invention of the twentieth century,” one author, Vaclav Smil, found none of them to be as “fundamentally important as the industrial synthesis of ammonia from its elements” as the “single most important change affecting the world’s population—its expansion from 1.6 billion people in

1900 to today's 6 billion—would not have been possible without the synthesis of ammonia (2001, ix). The synthesis of ammonia from atmospheric nitrogen was, as some have put it, “making bread out of air” (McGayne 2001, 58). This invention also brought a vitalist reaction in agriculture comparable to the vitalist/homeopathic response in medicine with the same connection to present-day movements.

Before modern chemical pesticides were an issue, the foundation of organic agriculture for Rudolf Steiner was opposition to synthetic fertilizers since they were “man-made” and alien to the environment and most of all because they were “dead” (Bramwell 1989, 20; also, Steiner 1958; Ferguson 1997). As absurd as homeopathic medicine may be, it is topped by what one may call “homeopathic manuring.” Similar to homeopathic medicines, Steiner and his followers wanted manure to be diluted to the minutest level in preparations made from rain water and cow dung that had been buried in a cow horn over the winter (Kolisko and Kolisko 1946, 220–236; Kolisko 1938). Steiner was the founder in 1919 of the mystic cult of Anthroposophy, encompassing anthroposophical medicine, biodynamic farming, and a mode of teaching that stresses art, drama, and “spiritual development,” as it is still embodied in the Anthroposophical Society's Waldorf Schools. For Steiner and other advocates of bio-dynamic organic farming, the crux of organic farming was nonuse of manmade fertilizer. Two assumptions constituted the basis of such nonuse: that artificial fertilizer was alien to the environment and that it was dead. It is noteworthy that a major biography of Steiner is subtitled “The Scientist of the Invisible” (Shepherd 1983).

By the 1920s, the demystification of science and much of the social sciences was extensive as was the counterattack calling for the “re-enchantment” of science. In Germany, Max Weber spoke of the “disenchanting” consequence of modern science that undermined “all transcendent principles, systematically stripping the world of all spiritual mystery, emotional colour, and ethical significance and turning it into a mere causal mechanism” (Burleigh 1996, 1404; Harrington 1996, xv–xvi). Ronald Reichel's PhD dissertation under Hamilton, *Of a Fire on the Earth*, shows the persistence of belief in the need for “re-enchantment” of science and all of modern life.

### ***Vitalism and the Nazis***

Romantic and Marxist critics of modern science and technology frequently compare aspects of modern science such as genetic engineering of crops to what the Nazis did in the 1930s and 1940s (see DeGregori 2001 for more details). Undoubtedly, this is the most serious as well as the most erroneous charge against modernism and all that it embodies—science, technology, the Enlightenment: that it was responsible for the rise of the Nazi ideology and the Holocaust. The irony of this is that the vitalist/romantic reaction to science and technology had a very powerful presence in Nazi Germany. As one author stated it, “the Holocaust was driven by a millenarian, apocalyptic ideology of annihilation that overthrew all the enlightened and pragmatic assumptions of liberal

modernity” (Wistrich 2001, 239). The forces that shaped the Nazis were complex, but the romantic/reactionary/vitalist element was an important part of the mix of forces shaping Nazi ideology, and they share a common romantic/vitalist heritage with contemporary Green movements.

The connecting of modern science, the Nazis, and the Holocaust emerged at the end of World War II, in the Frankfurt School, in such works as *Dialectic of Enlightenment* (2000), by two Marxist exiles from Nazi Germany, Max Horkheimer and Theodor Adorno. In addition, “devotees of holism, notably Viktor von Weizsacker, were keen to promote the common view that a “mechanistic” objectifying perspective had resulted in the medical abuses committed under the Nazi dictatorship” (Burleigh 1996, 1494). Unfortunately, Weizsacker, in spite of his presumed purity, was less than guiltless as his holistic “Neurological Research Institute in Breslau regularly collected the murdered children’s brains from Loben hospital” (Harrington 1996, 205). The attempt to causally link modern science to the Holocaust is by no means rare or fading.

In the United States in the 1960s, there was a rediscovery of “reenchantment,” “wholeness,” and “consciousness expansion” (Harrington 1996, 209):

Holistically oriented German immigrants in the United States, like Kurt Goldstein, Herbert Marcuse, and Fritz Perls, helped teach a new generation of American youthful discontents to speak an individualistic language of wholeness, human potential, and inner transformation, and that this tutelage would bear new fruit in the 1960s and beyond. (Harrington 1996, 210)

Harrington added:

[S]ome advocates of holistic and vitalistic biology . . . are finding a new sort of political and scientific life . . . in the agendas of the ecologically oriented groups like the Green Party. (Harrington 1996, 210)

From the work of the French scholar Jean-Pierre Faye, Harrington noted (as did Loren Goldner) that the “key words of the vocabulary of postmodernism (deconstructionism, logocentrism) actually had their origins in antisience tracts written by Nazi and protofascist writers like Ernst Krieck and Ludwig Klages” (Harrington 1996, 211–212; Goldner 2001). “Dekonstruktion was first used in a Nazi psychiatry journal edited by the cousin of Hermann Goering” (Goldner 2001).

In a discussion of agricultural gene splicing and the Human Genome Project published in the June/July 2000 issue of *Ethical Consumer Magazine*, clinical geneticist Michael Antoniou (2000) raised the specter of Nazi programs in eugenics. In *Technoscientific Angst: Ethics + Responsibility*, Raphael Sassower stated:

Modernity, with its instrumental rationality, its bureaucratic aura, and its cult of efficiency . . . simply extended its tenets and commitments during the Holocaust. . . . Concentration camps are not to be seen as an aberration in any sense

of the term: They are extremely disturbing but absolutely rational manifestations of the concern with the Jewish problem. (Sassower 1997, 5)

Sassower cited Robert N. Proctor to the effect that the Nazis did not “abuse” science but rather “contextualized” it in a “vacuum” to fulfill a “specific political agenda” (Sassower 1997, 12). In *Racial Hygiene: Medicine under the Nazis*, Proctor stated, “The Nazis ‘depoliticized’ problems of vital human interest by reducing these to scientific or medical problems, conceived in the narrow, reductionist sense of these terms” (1988, 293). In *Modernity and the Holocaust* (1989), Zygmunt Bauman stated that the Final Solution had arisen from “a genuinely rational concern,” that it had been “generated by bureaucracy true to its form and purpose,” and that “rules of instrumental rationality” were “singularly incapable of preventing such a phenomenon” (17–18). To Bauman, “modern rational society” paved the way for the Holocaust, and anti-Semitism was not responsible for it (89–90). This was also a thesis of the late German historian Detlev J. K. Peukert (d. 1990) in a 1988 University of Pennsylvania conference address aptly titled “The Genesis of the ‘Final Solution’ from the Spirit of Science.” Peukert was the author of *The Weimar Republic: The Crisis of Classical Modernity* (1992) and, until his death, the director of the Hamburg Research Institute for the History of National Socialism. In *Inside Nazi Germany: Conformity, Opposition, and Racism in Everyday Life* (1987), Peukert discussed “pathologies of modernity” and argued that “in the epoch of ‘classical modernity,’ instrumental reason and the spirit of science assumed hegemonic roles in the ordering of German society” as the Nazis elevated “into mass destruction” the “destructive tendencies of Industrial class society” as part of the “pathologies and seismic fractures within modernity itself” (Peukert 1987, 15–16, quoted in Crew 1998, 4).

To those who accept Horkheimer and Adorno’s line of thought, German anti-Semitism could not have been responsible for the Holocaust, because such causation would have made the Holocaust a unique event instead of an outgrowth of a crisis in capitalism (or modernity)—a “singularity”—that necessitates scapegoating certain segments of the population. Proctor has compared the Final Solution to the practice of medicine. And Bauman provided a gardening analogy in which the victims of the Holocaust were weeds. The Holocaust, according to the sociologist, was a “by-product of the modern drive to a fully designed, fully controlled world” (Bauman 1989, 93). Neither author, however, has offered in his writings any evidence of a causal relationship between science and the Final Solution. However exaggerated and distorted the rhetoric may be, clearly the blame for the Nazis and the Holocaust was placed on the demystified world that Dewey and Veblen and later Ayres and Hamilton have sought to create.

### ***Ending the Nazi Blame Game!***

Blaming the Holocaust on any system of beliefs other than that of those who perpetuated it is a very serious charge, and we will not seek to counter it by putting the blame on the critics of modernity. Unlike the critics of modern science, we do not wish



to imply a causal connection between various anti-science ideas and any of the Nazi horrors. However, it needs to be noted that the critics of modernity themselves had and continue to have much in common with the Nazis apart from their vicious, murderous anti-Semitism.

Robert Pois showed that “the myth of the large morally pristine, pre-industrial family” in Germany in the 1930s was both believed and acted upon. “A fetishistic cultural pessimism necessitated the creation of a history-defying totemistic past” (1986, 142). Those who did not fit into the myth were a threat to it in what Jonathan Olsen called “the darker side of romanticism” (1999, 57). The Nazis “exalted synthesis against analysis, unity and wholeness against disintegration and atomism, and Volk legend against scientific truth. . . . Life . . . had an organic unity. . . . the invisible force that makes the whole more than the sum of its parts” (Arluke and Sax 1992, 12).

The Nazis also favored holistic medicine and healing and condemned rational scientific medicine as being Jewish and therefore decadent (Aly, Chroust, and Pross 1994, 9; see also Proctor 1988). “The thrust of the Nazi revolution must be to replace the mechanistic thinking of recent medicine by a new and more organic (*biologische*), holistic view of the world.” The “natural methods of healing” of homeopathy were a key element in this revolution (Proctor 1988, 223). “The Nazis provided support for areas that today would be considered alternative, organic, holistic, or otherwise heterodox—areas such as ecology, toxicology, and environmental science . . . linked with broader social movements that were trying to reorient German science and medicine towards more natural or ‘volkish’ ways of thought and living” (224). The medicine that this revolution opposed was viewed as “reductionist” and labeled “Jewish-mechanist thought” (244). Gerhard Wagner, who was chief physician of the Reich, said of Jewish doctors: “[T]hey are sterilizing the medical art and impregnating generations of young doctors with a mechanistic way of thinking” (Aziz 1976, I, 43). “Natural medicine was not . . . something invented by the Nazis. New was the government’s apparent willingness to revive and regulate some of these traditions . . . the attempt to link natural medicine with the ideals of social Darwinism, racial hygiene, and Nordic supremacy” (Proctor 1988, 226). Heinrich Himmler, Rudolf Hess, and others were active proponents of homeopathic medicine.

German defenders of this alternative medicine poured scorn on scientific medicine and thought in language, much of which has a very contemporary post-modernist ring to it. Karl Kotschau, in a series of articles from 1933 to 1935, wrote as follows: “In the last hundred years . . . science has turned from ‘systems’ to ‘analysis,’ from the recognition of human subjectivity to a belief in ‘objectivity’ and in a ‘science free of suppositions’” (Proctor 1988, 164). To Wagner, a resolution of the International Medical Congress in Montreux, Switzerland, in 1935 was deemed to be “purely Jewish.” A scientist today would find little to quarrel with in the resolution that Wagner condemned except possibly in terms of what was meant by *apolitical*. It read as follows: “Science is simply a matter of truth, and this can never be national. It can only be international, bound to common humanity; science can therefore only be apolitical” (quoted in Proc-

tor 1988, 165). Alfred Rosenberg railed against “hollow internationalism” (Proctor 1988, 224).

Vegetarianism and organic agriculture were an integral part of the Nazi ideology for many of its leading advocates. Adolf Hitler was a vegetarian as were other elite Nazis who believed in “organic health” (Proctor 1988, 228). Rudolf Hess demanded that his food had to have “biologically dynamic ingredients” (Bramwell 1989, 20; 1984, 10). One pair of writers on the Nazis argued that “vegetarianism became the symbol of the new, pure civilization that was to be Germany’s future” (Arluke and Sax 1992, 17).

Richard Walther Darre, Nazi minister of agriculture from 1933 to 1943, promoted chemical-free “agriculture according to the laws of nature” and “farming methods according to the laws of life” (Hermand 1997, 53, first quote; Olsen 1999, 76, second quote). The fetishes for “organic agriculture” were part of larger health preferences for the natural and concerns about environmental carcinogens, environmental toxins, artificial colorings, and preservatives and “stressed a return to organic or ‘natural’ ingredients in pharmaceuticals, cosmetics, fertilizers, and foods” (Proctor 1988, 241, 237). At Dachau, the SS cultivated farms for herbal medicines; “the project was organized on such a scale that contemporary accounts dubbed it ‘the largest research institute for natural medicines in Europe’” (250). Himmler’s letter of instruction for Dachau and Esterwegen said, “I wish the SS and the police also will be exemplary in the love of nature. Within the course of a few years the property of the SS and the police must become paradises for animals and Nature” (quoted in Wolschke-Bulmahn 1994, 145). True to Himmler’s instructions, “storks were hosted in concentration camps of Dachau and Esterwegen” (Wolschke-Bulmahn 1994, 145).

The Nazi ideology had a sense of being in tune with nature, not in domination over it, as is the post-modernist charge against modern science. Hitler clearly stated that “man should never fall into the misconception that he has risen to be lord and master of Nature. . . . rather he must understand the fundamental necessity of the rule of nature and comprehend how even his own existence is subordinated to these laws of eternal struggle” (Dominick 1992, 90). Hitler believed that laws of nature should “guide us on the path of progress” (Gasman 1971, 162). For him, “the great defect of modern Western society was that man was in constant violation of nature” (Gasman 1971, 162). These views were earlier summed up in Hitler’s *Mein Kampf*: “When a man attempts to rebel against the iron logic of nature, he comes into struggle with the principles to which he himself owes his existence as a man. And this attack against nature must lead to his own doom” (quoted in Olsen 1999, 72–73).

In addition to blaming science and technology for our modern environmental ills, anti-modernists attribute the alleged implicit domination view of science to the Judeo-Christian belief that they were ordained by God to go forth and dominate the world and all who lived in it. This belief almost perfectly echoes a thesis of Hans Schwenkel in criticizing the Jews: “According to the first book of Moses, the Jew does not know nature preservation, because God gave all plants and animals, all that creep and fly, as food to the children of Israel. Only the civilized man, and almost exclusively

the Nordic man, gains a totally new relationship towards nature, namely one of reverence, on which nature preservation is also based" (Wolschke-Bulmahn 1994, 143). "According to National Socialist ideology, an anthropocentric view of nature—that man stands above nature, rather than being simply one, non-privileged part of nature—was to be decisively rejected." Himmler argued that "man is nothing special, only a piece of nature." The predominant idea of "rootedness expressed this idea perfectly, for what was rooted could not be separated from nature" (Olsen 1999, 73).

The Nazi sympathies of the German philosopher Martin Heidegger involved his actual membership in the Nazi Party from 1933 to the bitter end in 1945, continued after the end of World War II, and remained a part of his beliefs until his death in 1976. To an unrepentant Heidegger, the "founding principles of National Socialism" had contained an "inner truth and greatness" that provided an answer to the "dreary technological frenzy" that left the world and modern man "destitute" (quoted in Windschuttle 1997, 178, 181; see also Ferry and Renaut 1990, 66, and Lilla 2001, 30). Heidegger was very much a critic of the globalization of technology to which only National Socialism provided a satisfactory response (Ferry and Renaut 1990, 66–80). Even where Heidegger was critical of the Nazis after the war, he did it by making a comparison that in reality trivializes the Holocaust: "Agriculture today is a motorized food industry, in essence the same as the manufacture of corpses in gas chambers and extermination camps" (Wolin 1993, 290–291; Wolin 1990, 168; Wolin 2001, 3; Ferry and Renaut 1990, 88).

Heidegger was the major influence upon the trilogy of French intellectuals who were the leading lights of poststructuralism/postmodernism, Michel Foucault, Jacques Derrida, and Jacques Lacan. It takes French postmodernist intellectuals to rationalize the philosophy of someone who ended his lectures with *Heil Hitler*, wore a Nazi lapel pin, and kept his party membership until the very end of the war (Lilla 2001, 22–23). "No less despicable" was Heidegger's cutting "off relations with all his Jewish colleagues, including his mentor, Edmund Husserl" and his denouncing, in "secret letters to Nazi officials, a colleague, the future Nobel chemist Hermann Staudinger and a former student, Eduard Baumgarten" (22). There were other connections as Paul de Man, who became one of the leading proponents of poststructuralism/postmodernism in the United States, as a young man in Nazi-occupied Belgium during World War II had, as it is now well known, written pro-Nazi articles in Belgian newspapers.

What is ironic is that authors offer precious little evidence for their thesis of science causing the Final Solution. Rather, to attack instrumental rationality, they use a process of reasoning to attack reason, arguing that the Holocaust was the logical outcome of the logic of modern science. Proctor and others dismiss the argument that what the Nazis did was simply "bad science." I would go farther and say the experiments for which they were notorious were not "bad science," they were not science at all. It would be more accurate to say that those who see the Nazis as an outcome of modern science simply do not have an understanding of modern science and technology. If, like Proctor, they believe that "chemicals" (code for industrial-produced chemicals), modern medicine,

and agronomy are killing us and that this is the hallmark of modern science, then the Nazi do in fact qualify (Proctor 1988, 1999). But if the Nazis were really ahead of their time on vital issues as Proctor alleges, how do they differ from those like Proctor who seem to hold similar views? In other words, it seems disingenuous to blame the Nazis on modern science and then use as proof of their being engaged in “good science” the fact that they shared beliefs with contemporary critics of mainstream science. However we may disagree with Proctor, the very magnificence of his scholarship has provided us with substantial evidence for a thesis that would appear to be contrary to what he is often cited for. Nevertheless, I find it absurd bordering on obscene to equate somehow the healing powers of modern medicine with the murderous “racial hygiene” of the Nazis.

An important question is why is Proctor troubled to find that the Nazis had beliefs about organic agriculture and pesticides which he presumably shares. If we were to learn that the Nazis were decades ahead of others in, say, highway construction, would we expect civil engineers or anyone else to be troubled by it? Hitler and leading Nazis were opposed to smoking and so am I, but I do not find the shared belief system to be troubling since my sense of who and what I am is much larger than my beliefs about tobacco. Equally important is the fact that my beliefs about the health dangers of tobacco are founded on scientific evidence, which is supposed to be the case for those promoting the “organic.”

What is unstated but very clear is that believers in various contemporary forms of “vitalism” also believe that there is a certain higher virtue and morality to these beliefs and practices and a corruption and even evil to those that differ. I have encountered many who simply accept a causal relationship between the enlightenment, science, modernity, and so on and the Holocaust but who become quite indignant at even the suggestion or slightest hint that the Nazis may have shared their organic, holistic beliefs.

What Peukert, Proctor, and others do is confuse the use of the instrumental language of science with the actual practice of science. As Hamilton has often argued, myth, ritual, and superstition have a long history of claiming instrumental efficacy for their beliefs and practices. The garden magic of the Pacific Islander is or was carried out because it was believed that it was as necessary to the production of the crop as were the intertwined practices of cultivation and planting. And the many rituals preceding the hunt throughout the world have been performed because they were believed to be as necessary to bringing down the game as was the hunters’ skill. No one could reasonably confuse these ritual practices with modern science in spite of their claims to an instrumental or causal relation with a desired outcome.

Nowhere is the confusion and intertwining between science and myth more apparent than on an issue of relevance both to Nazi Germany and to the present. In fact, in most societies, beliefs about pollution, purity, and hygiene have both ritual and operational uses. One can have ritually pure water and food that is in fact contaminated with harmful micro-organisms. For many organic food enthusiasts today, toxins in foods or radiation that is deemed to be “natural” are more acceptable than those that are the product of modern industry. The fact that such distinctions may be proffered using the

language of science does not make them good science or even a product of science if they have no basis in fact. And some ideas, such as those of eugenics, may have had advocates who qualified as scientists, but clearly by the time the Nazis were putting them into practice they were recognized by the larger scientific community as being bad science.

### ***Vitalism and Consumer Economics***

One could go on ad infinitum and argue about the connections between the Nazis and the modern Greens or the Nazis, Heidegger, and post-modernism or the reverse argument about modern science and the Nazis. The literature on these issues is large and growing, and next year I will be adding a book including material from this paper. Many of these issues of vitalism have become consumer issues in recent years, an area in which Hamilton is a master. Whatever position one takes on these issues, Hamilton's analysis of change and progress offers a clarifying vision. Does "organic food" have a "mystic potency" making it superior, or is it a matter of science? Genetically modified foods are said to lack "vital properties," or *prana*. Is this a lacking in ceremonial adequacy, or is it science? This is theology and not science.

To argue that the gaps in knowledge which still confront the seeker must be filled, not by patient inquiry but by intuition or revelation, is simply to give ignorance a gratuitous and preposterous dignity. (Mencken 1930, 307)

We now have the "precautionary principle" with dozens if not hundreds of definitions for it. One clever expression of it is "absence of evidence of harm is not evidence of absence of harm." Absence of evidence means that we need a Green priesthood, the contemporary entrepreneurs of salvation who have the mystic powers to divine what absence of evidence is really evidence and which is not. And entrepreneurs they are. We must never forget that the pecuniary motive is as operative for a chain of "natural food" stores or for an environmental organization with annual income and expenditures in the hundreds of millions of dollars as it is for any other organization. Here again we turn to poignant Mencken comment in another but similar context:

Their effort to occupy all areas not yet conquered by science—in other words, their bold claim that what no one knows is their special province, that ignorance itself is a superior kind of knowledge, that their most preposterous guess must hold good until it is disproved. (Mencken 1930, 311)

Consumers pay a premium for that which is "natural," but who has clearly defined what is natural and what is not? Consumers will go to their "health food" store and pay a premium price for produce because it is "natural" and "organic" and grown without "chemicals" even though they may have been grown using toxic compounds of copper, sulfur, or arsenic. "Organic" pesticides include pyrethrum, a carcinogen, and rotenone, which has been shown to be a precursor of Parkinson's disease. Our consumers will

then wheel their carts over and pay a premium price for “all natural” amino acids. These are made in huge vats in major Japanese chemical factories using genetically engineered bacteria with feedstock that is so contaminated that it has to be filtered by multiple charcoal processes and reverse osmosis to create what largely does not exist in nature, a free-standing amino acid. We normally get our amino acids from complex proteins. Purchased “all natural” amino acids are very active compounds that have largely not been tested for either their efficacy or harm in the doses in which they are taken.

We could go on with beliefs in alternative medicine including homeopathy or even aromatherapy. Contemporary proponents of homeopathy still follow the spiritualism of Steiner and believe in such things as the “etheric” and “astral” body (Evans and Rodger 2000). To some these beliefs may seem strange but harmless, but we had a recent case in Germany in which two homeopathic doctors who opposed the measles-mumps-rubella (MMR) vaccine are being blamed for a measles epidemic involving more than 700 children. “Thirty children have been taken into hospital and the authorities fear there could be deaths if the infection rate continues to rise” (Hall 2002).

### **Conclusion**

The beliefs in the dangers of modern science and technology are legion and have given rise to a variety of patterns of behavior and high-priced consumption. We need a new edition of Hamilton’s *Consumer Economics* to explore the fetishes of modern consumption and beliefs that support them. I look back upon his course in consumer economics as one of the most valuable that I took during the entirety of my college career. Twenty-two years ago this month, I spoke to many in this audience here in Albuquerque and asked the question that if technology is killing us, why are we living so long? Today, we are living longer and healthier (as measured by disability-adjusted life-years), and I ask the same question again and expect the same deafening silence in response.

Let me close with thoughts of Luc Ferry, which bring to mind those of John Dewey’s *Quest for Certainty*, from which I have often quoted and which I was led to read by Hamilton.

To Ferry, the Nazi concern about “rootedness” could be construed as a “love of nature” that poorly conceals a “hatred of man” (1995, xxi-xxii, xxviii). “The hatred of the *artifice* connected with our civilization of rootlessness is also a *hatred of humans as such*. For man is the anti-natural being par excellence. This is even what distinguishes him from other beings, including those who seem the closest to him, animals” (1995, xxvii, emphasis in original). Ferry continued:

This is how he escapes natural cycles, how he attains the realm of culture, and the sphere of mortality, which presupposes living in accordance with laws and not just with nature. (1995, xxviii)

Humans possess a history because we are not “bound” to instinct or “to biological processes alone” (Ferry 1995, xxviii). “*All valorization, including that of nature, is the deed of man and that, consequently, all normative ethic is in some sense humanist and anthropocentrist*” (131, emphasis in original).

### Note

Let me add a personal note of thanks to Dave Hamilton for having changed my life. I grew up in the Heights of Albuquerque in freedom and affluence and could not imagine the possibility of any better way of life. At no time did Dave criticize either the freedom or the affluence, but he showed that both were denied to many in our own country as well as abroad. Affluence need not be condemned, but, given its benefits, it should be shared and made available to all. A story, possibly apocryphal, was told at the University of Texas about the appearance of an economics professor, Dr. Bob Montgomery, before a legislative investigating committee. When asked whether he believed in private property, he answered affirmatively that he believed in it so much that he wanted everyone to have some. Like Dr. Bob, Dave believed so much in the good life of modernity and affluence that he wanted everyone to have the right to realize the benefits of it. Personally, I do not think that I could have had the hypocrisy of enjoying the secure, prosperous life of a tenured university professor while making a career out of condemning the technology that made it possible.

Equally important, Dave had a theory of technology, change, and progress which offered the possibility that these blessings (in the non-religious use of that term) could be had by all. However important Clarence Ayres was to my life, he mainly reinforced what I already learned from Dave. Because of Dave, I switched to economics and then chose development in order to work with people to help them out of poverty. I could not have chosen a more rewarding career, and I owe it all to David. Radical as radical does, and I can think of no more radical a theory and practice than the one taught and practiced by Dave to help those in need. Many then and now talk the radical talk, but Dave has always walked the walk and provided guidance to others who wanted to follow his path.

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