

The current of Neoromanticism in the Weimar Republic: the re-enchantment of Science and Technology

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That the hygienic factory and everything pertaining to it, Volkswagen and the sports palace, are obtusely liquidating metaphysics does not matter in itself, but that these things are themselves becoming metaphysics, an ideological curtain, within the social whole, behind which real doom is gathering, does matter.¹

Abstract

This study investigates the bidirectional relationship between the wider ideological and social context of the Weimar Republic with the particular characteristics that science and technology received during this period. Of catalytic importance in this interactive relationship were a set of ideas, metaphors, terms and emotionally charged references to German tradition, which became widely accepted from both the engineering and scientific communities, as well as the social currents, intellectuals and political carriers of the period. In order to describe this particular ideological tradition, the term *Neoromanticism* will be introduced —the result of a blending of two ideological traditions, that of classical *romanticism* and that of *Modernism*, which were given a unique meaning by the various ideological, philosophical and social currents already established in Germany since the end of the nineteenth-century. Even though the Weimar Republic *Neoromanticism* shares many theoretical origins with classical *Romanticism*, such as *Lebensphilosophie* and a holistic view of nature, it displays substantial differences. It did not reject scientific modernity or technological progress, industrialized production nor the symbolism of the machine. *Neoromanticism* was formed under a national imperative: any anti-technological views would express a national weakness. Thus, *Neoromanticism* was an important catalyst for the social part and the meaning that was given to both science and technology in the Weimar Republic, since, despite the idealism and

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¹ Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment*. (Stanford: Stanford University Press, 2002), p. xviii.

mysticism that dominated the ideological field, what was achieved was the formation of a context of legitimization of Germany's new main goals: rearmament and industrial rationalization. These goals would be accomplished only through the radical development of technology and science. Various facets of the ideological context of the period will be considered: in German intelligentsia, in philosophical and social currents, and in the scientific and engineering communities.

Keywords: *Technology, Science, Neoromanticism, Weimar Republic, Modernity, Enlightenment, Kultur.*

Introduction

The study of science and technology, as well as their relationship to the wider ideological, social and political environment of the Weimar Republic (1919–1933) is of particular importance, since it brings us up against some of the greatest concerns of modernity: How did western societies confront, not always in unison, the challenges of the industrial revolutions and the increasing determination of everyday life by science and technology? What part did the ideas of the Enlightenment, *rationalism*, the symbolism of the machine, and the phenomenon of mass production play in this debate? What is the role of science and technology in periods of crisis and radical change? How are the various political and ideological crises incorporated into scientific theories and technological orientations and how do the new scientific and technological worldviews contribute, in turn, to these crises? How and why did one part of these views on science and technology of the period connect organically with the vision of the Nazis whereas another was against it? Can nuclei of thought be found within modern science and technology that, given the right environment, could lead towards one path or another? If so, how can one champion a 'neutral character' of science and technology? Could all of the above constitute a serious challenge to the cumulative model for the development of knowledge?

By keeping the above in mind, the reader may now realize that the goal of this text is not simply to present the particular conceptualizations that science and technology received during the Weimar Republic, but, starting from there, an attempt will be made to reflect on the deeper nature of the Enlightenment and modernity. This because the systematic study of the historicity of the technoscience phenomenon, both in regards to how it is exercised, as well

as its conceptual core, if not sufficient, is certainly a necessary condition for the understanding of the process of the modernization of the Western World.

In the literature with references to science and technology in the period of interwar Germany (1919–1939), one can discern four predominant currents. The first one, influenced by a positivist conception of science, while representing in depth the conflicts that arose in the fields of politics, art and philosophy, presents the massive changes that science and technology underwent in a rather detached way, untouched by what had been going on in the political and ideological fields.² Obviously this is not the result of either naiveté or an insufficient study of this period, but originates instead from a deep-rooted ideological admission regarding the autonomy of scientific branches and technology from the wider social status quo. It is also the result of a modernist view of science and technology, as closed, delimited social systems, of which the main goals are Truth and Progress.

Paul Forman (1937-), with his classic 1971 article titled “Weimar Culture, Causality and Quantum Theory 1918-1927: Adaptation of the German Physicists and Mathematicians to a Hostile Intellectual Environment”³, attempted to deconstruct the positivist conception of the history of science in the Weimar Republic. In it, Forman turns the spotlight, in a radical and bold way, to the relationship between science and its cultural environment, by arguing that the non-causal nature of quantum mechanics was largely the result of the adaptation of the majority of scientists to the hostile intellectual environment of *Weimar*. The so-called *Forman Thesis*, which delineates the second historiographical current regarding science in the Weimar Republic, was a decisive step towards the promotion of the osmotic relationship between science and the wider historical context. The problem with the *Forman Thesis*, however, is that it presents the scientific communities as having a mostly passive stance and simply trying to adapt to an extremely hostile environment. The one-sided focus of this historiographic narrative on the influence that the communities received from their environment creates, in my opinion, a distorted representation of the period. The scientific communities did not keep a passive stance towards the new ideological currents but, by readjusting their strategy, their ideas, their alliances and their institutions, they managed to make scientific discourse dominant once again. Science never lost its main social role, a fact that becomes apparent through the noteworthy development in fields such as quantum

² See, among others, Laqueur Walter, *Weimar: a cultural history 1918-1933*, (London: Weidenfeld & Nicholson, 2000), Gay Peter, *Weimar Culture: The Outsider as Insider*, (New York: W.W. Norton & Company, 2001).

³ Forman Paul, “Weimar Culture, Causality and Quantum Theory 1918-1927: Adaptation of the German Physicists and Mathematicians to a Hostile Intellectual Environment”, *Historical Studies in the Physical Sciences*, 1971, 3: 1-115

mechanics, aerodynamics and mathematics, through the multitude of Nobel prizes⁴ that were awarded to German scientists of the era, through wealthy sponsorships (from the Weimar Republic state to Rockefeller Foundation) towards scientific institutes, laboratories, universities and academies, through the involvement of a large part of the German intelligentsia with scientific issues as well as through the public discourse that is often given to scientists of the period in magazines, newspapers and public lectures. Science did not lose its main social role even when it was forced to balance between two grounds that appeared to be diverging: on one hand it should remain an organic part of the German *Seele* (Soul) and *Kultur*⁵, with obvious idealistic and holistic aspects, and on the other hand, it should also be an essential cog for a technologically advanced nation that would replace the fractured knowledge of *Zivilisation*⁶. Thus, the new scientific ideas were not only incorporated into the ideological context of the period, but they also reinforced it, making it even more solid.

The problematic aspect of the *Forman Thesis*, described above, seems to be covered by a third historiographical current the core of which is the term *Reactionary Modernism*, which was introduced by Jeffrey Herf (1947-) in his book *Reactionary Modernism: Technology, Culture and Politics in Weimar and the Third Reich*⁷. By this, Herf promotes the interactivity of the relationship between the engineering and scientific communities and the wider ideological context. For him, cultural politics, especially those of the engineers in the Weimar Republic and later during the Nazi period, was of catalytic importance for the prevalence of a set of ideas that dominated the political and social field. However, despite the important contribution of Herf's historiographical schema towards the promotion of the special relationship of technology with the wider interwar German culture, he highlights the differences instead of the similarities of this particular context with the respective contexts of other interwar countries. Building on the rapid growth of mythological, romantic and mystical ideas, Herf argues that what takes place in interwar Germany is a withdrawal of western *rationalism*, West-born scientific and technological values, as well as the entire ideological core of the Enlightenment. In his own words: "It was the weakness of the

⁴ 1918: Max Planck (1858–1947), Physics, Fritz Haber (1858–1934), Chemistry. 1919: Johannes Stark (1874–1957), Physics. 1920: Walther Hermann Nernst (1864–1941), Chemistry. 1921: Albert Einstein (1879–1955), Physics. 1922: Otto Fritz Meyerhof (1884–1951), Medicine. 1925: James Franck (1882–1964), Physics, Gustav Ludwig Hertz (1887–1975), Physics, Richard Adolf Zsigmondy (1865–1929), Chemistry. 1927: Heinrich Otto Wieland (1877–1957), Chemistry. 1928: Adolf Windaus (1876–1959), Chemistry.

⁵ A term used in German that refers to intellectual culture.

⁶ A term used in German that refers to technical culture.

⁷ Herf Jeffrey, *Reactionary Modernism: Technology, Culture and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984).

Enlightenment in Germany, not its strength that encouraged the confusions concerning technology I have called reactionary Modernism. And it was also Germany's unique (at that time) path to modernity that made possible the ultimate political impact of reactionary modernist ideology”.⁸

It is clear that, by emphasizing the peculiarity of the German case, i.e., by dissociating it from the modernization processes of the rest of the West and placing it against the ideas of the Enlightenment, Herf conceives of this particular period as an exception, as a parenthesis, in the continuity of Western Civilization. Thus, Herf's historical narrative reinforces the historiographical current of the *Deutscher Sonderweg* (*German Special Path*), which, in my view, obfuscates the organic relationship that interwar Germany had with the ‘dark side’ of the Enlightenment. It is a fact that the modernization of German society presented certain characteristics, such as the intense propensity towards romantic ideas⁹, which are not to be found in an equivalent scale in the modernization process of other countries in the Western World. However, when one looks deeper into the ideological core of interwar Germany, at concepts such as normality, systemicity, rationalization of means, processes and functions, scientification and technologization of everyday life, urbanization and industrialization, one comes to realize that Germany interwar was not an exception in the modernization of the Western World but instead was one of its more dynamic cogs. Science and technology of the period condensed, in a particular way and time, the possibilities of western sovereignty over nature and the individual. Moreover, studies on the interwar historical context of countries such as Greece¹⁰, Sweden¹¹, Romania¹², Spain¹³ and Japan¹⁴, have shown that the coating of science, technology and the modernist vision with a mix of sovereignty, mysticism, romantic ideas, traditions and myths, were not peculiar to Germany at the time.

⁸ Herf, *Reactionary Modernism*, p. 48.

⁹ We should note, however, that during the modernization process, there is a distinct turn towards romantic/bucolic ideas in other countries as well, if not with the same intensity, such as in the USA. See Marx Leo, *The Machine in the Garden: Technology and the Pastoral Ideal in America*, (New York: Oxford University Press, 1964).

¹⁰ See, among others, Zarifi Maria (2010), *Science, Culture and Politics, Germany's cultural policy and scientific relations with Greece 1933-1945*, (Saarbrücken: VDM Verlag Dr. Müller, 2010), Bogiatzis Vassilios, *Μετέωρος Μοντερνισμός*, (Athens: Eurasia, 2012).

¹¹ See, among others, Pietikäinen Petteri, *Neurosis and Modernity: The Age of Nervousness in Sweden*. (Leiden: BRILL, 2007).

¹² See, among others, Cotoi Calin, “Reactionary Modernism in Interwar Romania: Anton Golopentia and the Geopoliticization of Sociology” in Tomasz Kamusella, Krzysztof Jaskułowski, *Nationalisms Today*. (Bern: Peter Lang, 2009).

¹³ See, among others, Geoffrey Jensen, *Irrational Triumph: Cultural Despair, Military Nationalism, and the Ideological Origins of Franco's Spain* (University of Nevada Press, 2001).

¹⁴ See, among others, Tansman Alan, *The Culture of Japanese Fascism*. (Durham: Duke University Press, 2009).

Herf's view conflicts directly with the fourth historiographical current that we will examine in this paper, the roots of which may be found in the seminal work of Theodor Adorno (1903–1969) and Max Horkheimer (1895–1973), *Dialectics of the Enlightenment*.¹⁵ In this work, the two thinkers set out to critique the Enlightenment itself, not only in the sense of a particular historical period, but also as a characteristic of the total rationalistic tradition of the West. The core of their critique is the relationship between Enlightenment and myth, forces that seemingly contrast, but in reality interweave in a mystical complicity: “Myth is already Enlightenment, and Enlightenment reverts to mythology”.¹⁶ For them, interwar and Nazi Germany were not an ‘anti-Enlightenment’ example, but the result of a connection between rationality, myth and sovereignty, which can be found in the works of Kant, Hegel, Nietzsche and the organized torture and orgies of De Sade, all of them rooted in the Enlightenment tradition.¹⁷ Adorno and Horkheimer’s research, as well as the introduction in the philosophical and sociological field of concepts such as *reification* and *aestheticization* were of catalytic importance for understanding the organic relationship between Enlightenment, modernity and the ideas that prevailed in interwar Germany—a relationship which is largely promoted through the ideas that were developed during this particular period regarding science and technology. Furthermore, it remains a fact that the *Dialectics of the Enlightenment*’s critique on the various aspects of modernity, from the culture industry to Nazi ideology, seems to be indifferent in shining a light on the diversity of the individual phenomena but insists on describing their common characteristics.¹⁸ One could, therefore, argue that in this way, the historiographical schema of Adorno and Horkheimer relativizes to a degree the various interwar contexts of the Western World. Even if the ideas of interwar and Nazi Germany were the result of certain characteristics that can be found, in latent form, within enlightened and modern thought, they are still far removed from the ideological contexts developed in the interwar USA and Great Britain. Even if one has to reduce the case of Germany to indigence and dilemmas on the entirety of modernity and the Enlightenment, this does not negate the fact that each nation has modernized in its own way, through a

¹⁵ Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment*. (Stanford: Stanford University Press, 2002).

¹⁶ Adorno & Horkheimer, *Dialectic of Enlightenment*, p. xviii.

¹⁷ See Adorno Theodor & Horkheimer Max, *Dialectic of Enlightenment - Excursus II: Juliette or Enlightenment and Morality*, pp. 63-93.

¹⁸ Behind this lack of differentiation on the part of Adorno and Horkheimer, there could lie a warning for the ever-present danger of the possible slide of modern civilization towards Nazi and fascist violence. The words of Holocaust survivor Primo Levi come to mind: “It happened, therefore it can happen again: this is the core of what we have to say. It can happen, and it can happen everywhere” (Levi Primo, *The Drowned and the Saved*, London: Abacus, 1989).

complex process of reconciliation with the wider ideological and social context of each place and each period.

By attempting, therefore, to balance ourselves between relativism and the uniqueness of the case of Germany, and having as a basis the historiographical schemas of Forman, Herf, Adorno and Horkheimer, it is proposed within the context of this particular paper to consider the analytical tool of *Neoromanticism*. This tool attempts to conjoin the complementary elements of the above historiographical currents while simultaneously overcoming their weaknesses. *Neoromanticism* will attempt to bring to the foreground the organic relationship of ideas regarding science and technology in Weimar Republic, both with the deeply romantic ideological roots of German culture, as well as the industrialized modern context in which they develop. In this way, the historiographical prism of *Neoromanticism* will allow us to conceive the history of the period in all its complexity, by avoiding Manichean ways of thinking. Because, even if we don't accept that "the wholly Enlightened earth is radiant with triumphant calamity",¹⁹ we should at least admit that the Enlightenment was not wholly liberating, since certain of its aspects were connected with totalitarian sovereignty. Respectively, modernity is not characterized solely by rationality but also by myth. The *disenchantment* and *re-enchantment* of the world, faith and scientific explanation, the romantic ideas and modern technology coexist and are organically connected. This particular paper attempts, through the case of the Weimar Republic, to shed light on the connections between these conflicting but often complementary aspects of the Enlightenment, Romanticism and modernity.

The Birth of Neoromanticism

The Weimar Republic was a period abundant in references to science and technology, a fact which becomes apparent in almost every expression of social life: in cinema, in theatre, in literature, in visual arts. The ideas regarding technology and science that took shape in interwar Germany were, in essence, a part of the multifaceted ideological conflict on the role that science and technology would play in modern societies. It is important to note that this conflict did not only include scientists and engineers but also the majority of the German intelligentsia (E. Jünger, O. Spengler, W. Benjamin etc.), politicians (K. Haenisch, K. Riezler, O. Spann, J. Goebbels, etc.), art movements (*die Neue Sachlichkeit*, *das Bauhaus*, *der*

¹⁹ Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 1.

Deutsche Werkbund, etc.) and philosophical currents (*Circle of Vienna*, *Phenomenology*, etc.). This historical debate lasted for the entire duration of the Weimar Republic, occupying the time of a large part of German public opinion through books, popularized articles in magazines and newspapers, conferences and seminars.

The discussion on the social role of science and technology resulted in the development of a coherent and meaningful set of ideas, metaphors, terms and emotionally charged words and expressions with reference to German tradition. This particular mindset arose through the demand for a complete restructuring of the *Zivilisation*, perceived as degenerate, so that it could align itself with the characteristics of the German *Kultur*. In order to describe the ideological currents that developed within the scientific and engineering communities, as well as within the intellectual, philosophical, political and artistic circles, the term *Neoromanticism* will be used.²⁰ It is worth noting that this term was never used during the Weimar Republic in order to describe the ideological currents that are presented in this article. Yet it constitutes an ideal typical construct, which will assist us in connecting a series of characteristics of the ideological context of the era, all of which played a catalytic role in the particular meanings that science and technology received in that period.

The social basis of neoromantic ideas was the middle class, broadly defined. The diverse groups of the German *Mittelstand* were bound together by common reactions to the rapid industrialization of Germany and the violent shift that took place in everyday life as it underwent modernization. Anxious and afraid of large capital, on the one hand, and the organized working class on the other, they viewed the nation and the idealistic traditions of German culture as a redemptive unity. Additionally, the German middle class imaginary was built on the shuffle of modern, capitalist and industrial experiences with traditional, pre-capitalist and pre-industrial life. The *Mittelstand* lived in the cities and worked in modern industry, but the memories of small-town life and less rationalized forms of production were still vivid in the Germany of the 1920s.²¹ So, we can argue that the German *Mittelstand* was an intermediate class in a temporal as well as social sense.

WWI was of paramount importance in constituting the *neoromantic* ideas predominant in the ideological field of the Weimar Republic. The war instilled in the generation that played an active part in it, contempt toward the democratic institutions, a

²⁰One should not confuse this term with other intellectual movements that happen to use the same term, such as *Neoromanticism* of the late nineteenth century, revolving around the compositions of Richard Wagner, or of the musical current at the start of the 1980s, which became known as *Neue Einfachheit*.

²¹See, among others, Lebovics Herman, *Social conservatism and the middle classes in Germany, 1914-1933*, (Princeton: Princeton University Press, 1969).

familiarization with violence, and finally, it also gave them a sense of community, which they would later long for. It was after the war that a large part of the German intelligentsia connected the romantic ideas regarding tradition, idealism and feeling, with an adoration for technology and scientific applications. When the generation of the interwar period idealized the lost communities of the past, they looked back to the modern battlefield and the trenches, not to the preindustrial landscape. The *Kriegserlebnis* (*war experience*), through the *neoromantic* viewpoint, presented postwar reaction with a fully up-to-date masculine alternative to bourgeois society, one preferable to “the effeminate and escapist fantasies” of previous generations.²² Based on these facts, it was Ernst Bloch (1885–1977) who was the first to argue that the appeal of Nazism lay less in traditional anti-modernism than in the promise of cultural and emotional redemption through embracing aspects of the modern world in accordance with German national traditions.²³

The *neoromantic* current was mostly the result of the blending of two ideological traditions, of *Romanticism* and of *Modernism*, which were given meaning, however, by the cultural and historical context of the particular period. *Modernism* in interwar Germany was on one hand connected to radical movements such as the *Werkbund* and the *Bauhaus*. At the same time, however, the other side of interwar *Modernism* displayed an excellent dynamic; a side that flirted with far-right ideas, substantially influenced by Filippo Marinetti (1876–1944) and the *Futurists* in Italy, by Wyndham Lewis (1882–1957) in England, Ezra Pound (1885–1972) in the USA, Drieu La Rochelle (1893–1945) and Charles Maurras (1868–1952) in France. In other words, modernism influenced by an important part of Western intellect that connected technology to a new anti-bourgeois vitalism, with masculine violence, with the *will* for power, with a new aesthetic, with *productivity* instead of *trade parasitism*. Finally, it also connected it with a life that was full, lived to the limits of emotions, a life that was in total contrast with bourgeois decadence and boredom. German *Modernism*, however, preserved inside itself its own unique legends. From Ernst Jünger (1895–1998) to Joseph Goebbels (1897–1945), the modernist credo was a triumph of spirit and *will* and the subsequent fusion of this *will* to an aesthetic mode: if aesthetic experience alone justifies life, morality is suspended and desire has no limits.

²²Herf, *Reactionary Modernism*, p. 29.

²³Bloch Ernst, *Erbschaft dieser Zeit*, (Frankfurt am Main: Suhrkamp, 1992/1935).

On the other hand, *Romanticism* was, for the Western World, a reaction to the radical life changes that took place through the Industrial Revolutions, which led, as the exponents of the movement underlined, to the estrangement of nature, to the industrialization of society and the mechanization of life. In order to explain the historical line, however, that connects *Romanticism* with the Weimar Republic's *Neoromanticism*, it should be noted that the German-speaking area was one the foremost cores of development of *Romanticism* and that romantic ideas were perfectly aligned with the idealistic German tradition, which was widely accepted in interwar Germany. *Romanticism* also shaped the nature of German science, as was the case with *Cartesianism* in France and *Baconism* in England, having its own unique symbols such as Johann Wolfgang von Goethe (1749–1832), whose scientific aspect was often praised during the Weimar Republic. References to him during the interwar period were a symbol of unity for *Kultur* and Science, through the prism of a particular cultural nationalism.

Despite the fact that the Weimar Republic's *Neoromanticism* shares many theoretical origins with *Romanticism*, such as the ideological tradition of the *Lebensphilosophie*²⁴ (Philosophy of Life) and a holistic view of nature, it presents, at the same time, substantial differences. *Neoromanticism* did not reject scientific modernity, much less technological progress and industrialized production. It elaborately integrated modern technology into the cultural system of modern German nationalism. Thomas Mann had perhaps conceived of the essence of *neoromantic* ideas when he wrote that “the really characteristic and dangerous aspect of National Socialism was its mixture of robust modernity and an affirmative stance toward progress combined with dreams of the past: a highly technological Romanticism.”²⁵

Thus, the ideological current of *Neoromanticism* expressed an increasing hostility towards many aspects that were up to that point defined as typically *romantic*, such as the critique of the estrangement of human nature by the machine. The new conception of *Romanticism* that dominated also implied some subtle but important shifts in the meanings given to romantic concepts and symbols. For example, when German interwar intellectuals such as Carl Schmitt (1888–1985), Oswald Spengler (1880–1936), Ernst Jünger, Werner Sombart (1863–1941) referred to *Romanticism*, they mostly referred to the idea of *will* and not the anti-industrial vision. Its proponents believed that the new *Romanticism* was the product of the war, rather than of pastoral poetry. Although the German Intelligentsia used terms such

²⁴ *Lebensphilosophie* is a philosophical school of thought, which emphasizes the meaning, value and purpose of life as the foremost focus of philosophy. Inspired by the critique of rationalism in the works of Arthur Schopenhauer, Søren Kierkegaard, and Friedrich Nietzsche, it emerged in nineteenth-century Germany as a reaction to the rise of positivism and the theoretical focus prominent in much of post-Kantian philosophy.

²⁵ Mann Thomas, *Deutschland und die Deutschen, Essays* 2^oPart, (Frankfurt: Fischer Taschenbuch, 1977), p. 294.

as *Gemeinschaft* (community) or *Innerlichkeit* (inwardness), they redefined these legacies of Romanticism in ways that elude the dichotomies of tradition *or* modernity, and progress *or* reaction²⁶. Their enthusiasm regarding *Fronterlebnis* (experience of the trenches), as well as their belief that the war brought to the foreground a *New Man*, was an old romantic vision placed within a modern context.

In order, however, to paint a more complete picture of *neoromantic* rhetoric, we need only look at an excerpt from the speech that Joseph Goebbels²⁷ read at the Heidelberg City Hall in 1943:²⁸

Every time has its Romanticism, its poetic presentation of life [...] Ours does as well. It is harder and cruder than a previous Romanticism, but it remains romantic. The steely Romanticism of our time manifests itself in actions and deeds in service of a great national goal, in a feeling of duty raised to the level of an unbreachable principle. We are all more or less romantics of a new German mood. The Reich of droning motors, grandiose industrial creations, an almost unlimited and unenclosed space which we must populate to preserve the best qualities of our Volk —is the Reich of our romantics.

Neoromanticism was thus formed under a national imperative: anti-technological views would be expressions of national weakness. The distinction of technology *or* *Kultur* was largely replaced by the indivisible unity of technology *and* *Kultur*. The German nation could not be simultaneously powerful and technologically backwards. Germany not only could but should be simultaneously technologically advanced and true to its *Seele*. As Goebbels noted repeatedly, this century would be the century of *Steel Romanticism*. Therefore, it should come as no surprise that despite the intense idealism and mysticism that dominated the ideological field, the main goals were rearmament and industrial rationalization, both of which could be achieved through the radical development of technology and science.

The contribution of German intellectuals

By exalting, therefore, the concept of the beauty over regulatory standards and interpreting technology as an embodiment of *will*, Weimar's right-wing intellectuals contributed towards a mythological embrace of technology. When, for example, they discussed trains as

²⁶ Herf, *Reactionary Modernism*, p. 30.

²⁷ It is worth noting that Joseph Goebbels' studies and doctoral thesis were both on nineteenth century Romanticism.

²⁸ Goebbels Joseph, *Reden* (Heidelber Stadthalle, July 7, 1943).

embodiments of the *will* to power or saw the German *Seele*, expressed in the Autobahnen (motorways), they were popularizing what had been the preserve of a cultural vanguard.²⁹

Ernst Jünger, one of the most recognized intellectuals of the era, was one of the leaders of the *neoromantic* current of ideas. He attempted to connect technology with the primal forces of *will* and thus saved the machine from the attacks on the part of the anti-technological currents of German idealism. Jünger began developing this symbiosis of animism and machine, a process of *re-enchantment* of technology, in long essays written during the 1920s. The generation of the trenches was one that “builds machines and for whom machines are not dead iron but rather an organ of power, which it dominates with cold reason and blood. It gives the world a new face.”³⁰ War was for him the defining event that allowed his generation to perceive the dynamic and importance of technology through a mystical prism:³¹

Today we are writing poetry out of steel and struggle for power in battles in which events mesh together with the precision of machines. In these battles on land, on water, and in the air, there lay a beauty that we are able to anticipate. There the hot will of the blood restrains and then expresses itself through the dominance of technical wonder works of power.

Jünger's *magical realism* thus found its purest expression in the descriptions of war. Here appeared to be an endless composition of fire and blood, of precision and passion, of *rationalism* and magic, of external form and hidden *will*.³² The following description of a sinking battleship, for example, aptly shows Jünger's mystical passion for technology:³³

But haven't we, who of course are not materialists, but instead label ourselves realists, already felt the experience of mathematical precision and magical background during the war. Didn't phenomena such as the modern battleship arouse the same impression in us? This embodiment of an icy will, all coal and steel, oil, explosives and electricity, manned by specialized positions from admiral to boiler heater, the image of the latest precision mechanics, served by workers and directors, functional in the highest degree, composed of millions of objects—this whole apparatus is sacrificed in

²⁹Herf, *Reactionary Modernism*, pp. 12-13.

³⁰Jünger Ernst, *Das Wäldchen 125: Eine Chronik aus den Grabenkämpfen 1918*, (Berlin, 1925) p. 19.

³¹Jünger Ernst, “Der Kampfsinneres Erlebnis”, in *Sämtliche Werke, Band 7, Essays I*, pp. 9-103, (Stuttgart: Klett-Cotta, 1980).

³²Herf, *Reactionary Modernism*, p. 83.

³³Jünger Ernst, “Nationalismus und modernes Leben”, *Die Kommenden* 5, 18, 1930, pp. 205-206.

seconds for the sake of things which one does not know but rather in which one can only take on faith.

Human beings are presented in Jünger's work mostly as a part of an operating mechanism. The organic relationship between the machine and the human body is discussed often, through the illustrative relationship between the soldier and the military technology:³⁴

We have to transfer what lies inside us on to the machine. That includes the distance and ice-cold mind that transforms the moving lightning stroke of blood into a conscious and logical performance. What would these iron weapons that were directed against the universe be if our nerves had not been intertwined with them and if our blood didn't flow around every axle.

However, the metaphor "what lies inside us," does not simply formulate a symbiosis of man and machine. Rather, it's a complete reconsideration of the concept of man and his thought, since a machine, contrary to the body, may achieve, according to Jünger, the ideal condition of flawless operation. We come therefore to what Adorno and Horkheimer argued, a few years later, to be a fundamental aspect of their critique, "thought is reified as an autonomous, automatic process, aping the machine it has itself produced, so that it can finally be replaced by the machine."³⁵

If therefore, as Jünger insists, our nerves are indeed intertwined with technology, then the conservative suspiciousness and hostility towards this view of modernity should be left aside:³⁶

Yes, the machine is beautiful. It must be beautiful for him who loves life in all life's fullness and power. Nietzsche insisted that life is not only a merciless struggle for survival but also possesses a will to higher and deeper goals. The machine cannot only be a means of production, serving to satisfy our paltry material necessities. Rather, it ought to bestow on us higher and deeper satisfactions [...] The artistic individual, who suddenly sees in technology the totality instead of a functional assembly of iron parts.

Another intellectual, whose role was of catalytic importance in the formation of the *neoromantic* current of thought, was Oswald Spengler. Even though he is usually considered as the principal representative of *Weimar's political pessimism*, multiple aspects of his work

³⁴Jünger Ernst, *Feuer und Blut*, (Berlin, 1929), p. 84. as cited in Herf, *Reactionary Modernism*, p. 79.

³⁵Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 19.

³⁶Jünger Ernst, *Feuer und Blut*, (Berlin, 1929), p. 81, as cited in Herf, *Reactionary Modernism*, p. 79.

attempt to connect technology and science with the beauty, the *will* and the productivity, thus placing them within the sphere of German *Kultur* and not of Western-born *Zivilisation*. In his monumental work, *The Decline of the West*, Spengler not only refrains from attacking science and technology, but also shows his admiration for them in multiple points of his work, attempting to re-define them through the values and visions of the *neoromantic* movement:³⁷

The depths and refinement of mathematical and physical theories are a joy, who would sooner have the splendidly clear, highly intellectual forms of a fast steamer, of a steel structure, of a precision lathe, the subtlety and elegance of certain chemical and optical processes, than all the pickings and stealing of present day applied art, architecture and painting included.

While for modern physics, he adds that it is: “our ripest and strictest science.”

However, physics in his generation is not merely plodding forward in a beaten track, tying up loose ends. It is also, according to Spengler, disintegrating and metamorphosing, undergoing a transformation of the goals and principles of scientific explanation parallel to the *Zeitgeist* (spirit of the age), the “second religiousness”. This implies that scientific theory that grasps the invisible processes of the natural world possesses the same ritualistic and mythic aspects as religion³⁸. Hence, the fate and the salvation of physics will be a reunification of thought and feeling, a self-discovery of physics as a fundamentally religious-anthropomorphic expression³⁹. Deeply inspired by the *neoromantic* ideological context and the faith in the German nation’s special mission of becoming the ark of science in the twentieth-century, he writes:⁴⁰

The goal reached the vast and ever more meaningless and threadbare fabric woven by natural science falls apart. It was, after all, nothing but the inner structure of the mind. [...] But what appears under the fabric is once again the earliest and deepest, the myth, immediate becoming, life itself. [...] Out of the religious soulfulness of the gothic there grew up the urban intellect, the alter ego of irreligious natural science, overshadowing the original world feeling. But today, in the sunset of the scientific epoch, in the stage of victorious skepsis, the clouds dissolve and the quiet landscape of the

³⁷Spengler Ostwald, *The Decline of the West*, trans. C. F. Atkinson, (New York: Knops, 1926), pp. 43-44.

³⁸Spengler, *The Decline of the West*, p. 507.

³⁹ Forman, “Weimar Culture, Causality and Quantum Theory 1918-1927”, pp. 36-37.

⁴⁰Spengler, *The Decline of the West*, pp. 427-8.

morning reappears in all distinctness [...] weary after its striving, the Western science returns to its spiritual home.

Beyond science, Spengler dedicates a large portion of his work on technology and the role it should play in the rebirth of the German nation. Thus, both in *The Decline of the West* as well as in other works of his, such as *Der Mensch und die Technik* (Man and Technology), Spengler creates a fragile truce between right-wing conservatism and modern technology. Behind the lean, glossy surface of modern technological constructs, Spengler could discern the work of those mythological, mysterious forces at the epicenter of the former *Romanticism* in Germany. The keywords are *creating, myth, form, soul* and *formative power*. They offer a way of talking about the rationalization of German industry, of retrofitting and technological applications, as if they were the processes of renewal of myth and *re-enchantment* of the modern world. In Spengler's view, modern science expressed a “Faustian world feeling”, a drive to expand into the natural spaces of the earth, to overcome resistance and formlessness. But, once science and technology appear as outcomes of a primal *Faustian* drive, it is merely “scientific prejudice” that asserts that only primitive people create myth and images of God and that in modern culture the power to form myths is lost. On the contrary, the soul fills the world with forms in modern no less than in primitive times.⁴¹

Also noteworthy is that, in the widespread attempt at infusing science and technology with the magical-mythological element, contributions were also made by the esoteric-apocryphal currents of the era, such as *Theosophy*, which viewed science and technology as an intense *religiousness*. One of the protagonists of the *theosophical* current, the paleontologist Edgard Dacque (1878-1945), writes in his book, bearing the characteristic title *Natur und Erlösung* (Nature and Redemption):⁴²

Our knowledge, whether it be mechanistic or magical, perceives and yearns for the eternal idea in things. Even pure technology, such as the construction of a machine, signifies a glimpse into and a realization of the idea of eternity, when we see this technical activity as the physical realization of a primal image through the medium of our own spirit. When we stand in awe and perhaps also in terror of a functioning machine what is it we are seeing other than a true homage to the ideational meaning of iron that, so to speak, receives life from our spirit and shows us its inner countenance in symbols. It is art in the highest and noblest sense that we see before us. We admire the

⁴¹Herf, *Reactionary Modernism*, p. 54.

⁴²Dacque Edgar, *Natur und Erlösung*, (Munich: R. Oldenbourg Verlag, 1933), p. 53.

spirit and powerful manliness that inventors and builders have here represented from within their beings.

By keeping the above in mind, the, at first cryptic phrase from the *Dialectic of Enlightenment* becomes somewhat clearer: “Any intellectual resistance it encounters merely increases its [Enlightenment] strength. The reason is that Enlightenment also recognizes itself in the old myths.”⁴³

Science in the neoromantic ideological context

What was, however, the role of the scientific communities within this particular *neoromantic* context of ideas that was taking shape at the time? The necessity of harmonizing the scientific communities in a period of crisis and rapid change, their attempt at assuming more central social roles in an era of intense rearrangements, their relationship with other social groups and the newly delineated borders between them and their environment, all play a catalytic role in the formation of a new ideological core. We should not, however, conceive the science of the era as a passive carrier that simply capitulates and adapts to a hostile environment. Scientists and engineers alike, being two of the most important components of the social configuration of the period, not only managed to adapt science and technology to the *neoromantic* ideological context, but also actively contributed towards its formulation.

The *crisis in science*,⁴⁴ during the time of Weimar Republic, developed concurrently with the unfolding of several political and ideological crises, which both gave rise to it and were facilitated by it. Therefore, this ‘crisis in science’ was not only the result of an external imperative of the particular historical context, but that of an interactive scheme where the ‘internal core’ of science was influenced by its environment while at the same time it influenced said environment to a great degree. Thus, we should always keep in mind the duality of this relationship, by wondering not only if the crises in science were affected by wider social crises but also to what degree did the scientific crises affect the political and ideological crises that took place during the Weimar Republic.

⁴³Adorno & Horkheimer, *Dialectic of Enlightenment*, p. 3.

⁴⁴ *Crisis in science* is a term that is used mostly during the *Weimar Republic* by scientists and their wider environment. As P. Forman (1971) notes, from the first years of the *Weimar Republic*, we have a wealth of examples regarding an attitude towards considering the state of physics as critical. Taking only those cases in which the crisis is proclaimed in the title itself, there is Richard von Mises's lecture *On the Present Crisis in Mechanics* of September 1921, Johannes Stark's pamphlet on *The Present Crisis in German Physics* of June 1922, Joseph Petzoldt's remarks *Concerning the Crisis of the Causality Concept* of July 1922, and Albert Einstein's popular article *On the Present Crisis in Theoretical Physics*, dated August 1922.

Looking at the books, articles and public addresses by some of the foremost representatives of the scientific community of the period, we could conclude that their rhetoric can be crystallized in the phenomenally contradictive scheme of the dominant *neoromantic* context: on one hand, science was called on to perform its functional role through its applications in a society that is both undergoing industrialization and preparing for war. Thus, mathematics and physics research are presented as the foundations of the necessary modernization of German society, which protect and expand the German nation. At the same time, however, science swears allegiance to German *Seele*, to *Kultur*, to *Lebensphilosophie* and to myth, attempting through its discourse to reinvent a particular *re-enchantment* of the world.

If there is someone who encapsulates, through his discourse and his work, the integration of modern technology within the *neoromantic* cultural system, then that individual is no other than Pascual Jordan (1902–1980), one of the foremost physicists of the period, who co-wrote with Heisenberg and Born the *Drei-manner Arbeit* (Work of Three), which standardized Heisenberg's quantum mechanics in 1925–6.

Throughout the 1930s, Jordan sought in popular articles and books to show that this transformation of the western tradition to German *Kultur* should be understood as the necessary result of 20th century physics and philosophy, especially quantum mechanics. Quantum mechanics would point the way toward an “organic conception,” a rigorous conceptual foundation for previously fuzzy ideas like “finality” and “wholeness”. It would ground in physics itself, in its strictest mathematical form, a holistic, ideological viewpoint on all aspects of nature.⁴⁵

Physicists, according to Jordan, exhibit two prominent characteristics: love of *beauty* and *will* to power. For them, the *beauty* of things is captured in their theoretical representations, which resemble the artistic expressions of architecture and music; while their *will* to power is “one of the most sublime, most refined forms of the will to power, and yet filled with an almost brutal vitality.” This juxtaposition of beauty with brutality was of course common in romantic ideology. In such characteristics of physicists Jordan saw “a deep affinity with the spirit and desire of our epoch,” which ever more clearly took the imprint of “the resolute will to power”.⁴⁶

Jordan's glorification of science and technology is related to the prominent role that they played during wartime. Besides, war was a main foundation of the *neoromantic* construct,

⁴⁵ Wise Norton M., “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism”. In M. Renneberg & M. Walker (Eds), *Science, Technology and National Socialism*, (Cambridge: Cambridge University Press, 1994), pp. 227, 229.

⁴⁶ Wise Norton, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism”, p. 234.

since through war a new world, cleansed from the sins of the Western Civilization, could one day arise. Thus, the triptych of science/technology, war and domination, which we encounter often in the *neoromantic* ideological context, is present in Jordan's work as well:⁴⁷

Democratic liberalism was dead, along with its deceptive insistence that the true value of science lay in the world of ideas, not material technology. We are not willing to see any abuse in the coupling of science to military might, after military might has proven its compelling *aufbauende* (constructive) force in the creation of a new Europe.

Despite the fact that Jordan in his work insists often on the necessity and functionality of scientific applications and technological development, his view on science never distances itself from the mythological dimension of the period. Jordan describes science as a crucial factor that will contribute towards the revealing of Nature and Life's mystical character. The titles of his books *Die Physik und das Geheimnis desorganischen Lebens* (Physics and the Mystery of Organic Life) and *Schöpfung und Geheimnis* (Creation and Mystery) are indicative.

A common component of the public addresses of scientists of the era was a ruthless critique of the nature of *Western Science*, which was usually accompanied by an exhortation for the rise of a *New Science*, through a revolutionary process, which will be able to embrace the new idealistic directional lines, construct a holistic view of Nature and contribute to the *re-enchantment* of the world. Let us observe this tension, however, through the words of the protagonists of the period themselves. It is important to note that even their writing style has more in common with poetry and literature than with the nature of scientific discourse we are familiar with today.

In his inaugural speech, the mathematician Gustav Doetsch (1892–1977), a professor at the department of applied mathematics at the University of Halle, mentions:⁴⁸

Such rationalistic dogmatism is the characteristic expression of that intellectual epoch which is at this moment perishing. It is the spirit, one could say, of the age of natural science, which, essentially, coincided with the 19th century, and which in our days is sinking with violent convulsions into its grave in order to make room for a new spirit, a new life-feeling [...] this epoch, at whose beginning we unquestionably find ourselves today, is fed up with this rationalistic attitude.

⁴⁷Jordan Pascual, *Die Physik und das Geheimnis des organischen Lebens*, p. 8-9, as cited in Wise "Pascual Jordan", p. 250.

⁴⁸Doetsch Gustav, "Der Sinn der angewandten Mathematik", *Jahresbericht der Deutschen Mathematiker-Vereinigung*, 1922, 31, pp. 231-232.

In turn, Georg Hamel (1877–1954), president of the Reich's Mathematical Union, in his address as Dean on the 30th of June 1928 at the Technische Hochschule in Berlin, claims:⁴⁹

Mathematics customarily appears as the rational science per se; to the layman the mathematician is a calculator. In opposition thereto I maintain the thesis that mathematics is an art, and that, in the last analysis, it is conditioned not logically but transcendently [...] The mathematician is a poet. Like the dramatist he creates a form [...] The problem of irrational numbers leads mathematics into metaphysics.

The fact that the *New Science* was connected organically with myth and mysticism becomes apparent in the speech given by Richard von Mises (1883–1953), Professor of Mechanics at the Dresden Polytechnic on February 1920:⁵⁰

It is not a question of new facts of any sort, nor of new theoretical propositions, nor even of new methods of research, but, if I may say it—taking this word in its philosophical sense—of new intuitions of the world. Atomic physics has taken up again the question of the old alchemists; numerical harmonies, even numerical mysteries play a role, reminding one no less of the ideas of the Pythagoreans than of some of the cabbalists.

This short reference to the public addresses of scientists of the era may come to an end with the mathematician Emanuel Lasker (1868–1941), who will attempt to bring once more to the historical foreground the concept of the physicist–philosopher in contrast to the scientist–craftsman who lacks philosophical depth, in his book titled characteristically, *Die Kultur in Gefahr* (*Kultur in Danger*):⁵¹

The physicist who is content to measure remains an artisan. He becomes an artist only when he is also a philosopher. The philosopher in turn is negligible unless he is stamped as an experimental physicist. The physicist–philosopher alone is permitted to interpret and evaluate experiments [...] The true instrument of the physicist–philosopher is illumination [...] We are prepared to debate with anyone who is both physicist and philosopher and accepts our methods. To debate with other people would be a waste of time, and we have quite enough work to do turning science into new pathways.

⁴⁹ Hamel Georg, "Ueber die philosophische Stellung der Mathematik," *Forschungen und Fortschritte*, 1928, 4, p. 267.

⁵⁰ As cited in Forman, "Weimar Culture, Causality and Quantum Theory 1918-1927", p. 49.

⁵¹ Lasker Emanuel, *Die Kultur in Gefahr*, (Berlin: Siedentop, 1928), pp. 20-21.

The cultural policy of German engineers and the subjugation of technology to the neoromantic context

One could easily wonder how it became possible, despite the absolute disaster of WWI, in which both science and technology played a vital part, that the engineering community does not appear weakened, but also uses the War as an important example of its dynamic. In order to answer this question, we should consider the discussion that ensued regarding the consequences of the War. On the one hand the greater part of the Left, trapped in the myth of neutrality of technology and fascinated with industrial progress, systematically avoids critiquing technology. On the other hand, a large part of the conservative Right has transformed the War into an object of worship, into an eternal force that formulates the *Seele* of the nation. For *Weimar*'s right-wing nationalists, the violence of the battlefields, the efficiency and power of tanks and ships, and the explosions of grenades were the external expression of inner impulses toward life. For them, technology was untouchable. Goebbels' words are characteristic of this: "The Germans must learn the primary lesson of WWI: Germany was defeated by deficiencies of the spirit rather than by material deficiencies. We did not lose the war because our cannons failed, but rather because our spiritual weapons didn't fire."⁵² In this way, technology after WWI was surrounded by an exceptionally powerful myth that connects the roots of Prussian culture with the future of the German nation. The community of engineers took full advantage of this particular myth. Thus, if Jünger saw the male community of the trenches as a taste of the future, many engineers saw the war draft as a preconception of their corporatist visions.

To the above we should add the increased demand for industrial production, the vision of a car that is accessible to the common people, the *Volkswagen*, the ever-increasing use of radio, the emerging dynamic of the cinema, the appearance of television, the impressive Autobahnen and the modern, superfast trains. Thus, Interwar Germany, in a very short time span, undergoes a massive industrialization and attempts to find a balance between electrical systems, massive factories and orchestrated production lines. Mass production, new materials and machines were adopted as the authentic symbols of the new machine-dominated period, while their propagation and application was deemed as a constitutive part of progress and social change. The new principles of order, normality, sameness and of the system, lead to a vision of coordinated modernity.

⁵²as cited in Herf, *Reactionary Modernism*, p. 195.

The dominant ideological elements that constituted the identity of the German engineer were connected in a multitude of ways with the political situation of the period. In Germany, the legitimization of the technocratic spirit passed through its subjugation to the *Geist* (Spirit) of German culture: land, blood, race and the nation.⁵³ For this particular legitimization, however, required a number of symbols, keywords and emotionally charged metaphors to bridge the professional conscience of the engineers and the wider current of *Neoromanticism*. An important role in this particular process was played by the curriculums of the famous technical institutes and polytechnic schools of Germany that were highly attuned to the necessity of harmonizing technology with the mythological element, which bridged industrialized reality with the idealistic roots of German civilization.⁵⁴

The main goal of the engineers and their communities was to present technological progress as compatible with the uprising of German nationalism against *Positivism*. The subjugation of technology into the German *Kultur* would fulfill the engineers' expectations for greater political recognition, for prestige and social status equal to those of other professions, for greater assistance from the state, as well as, during the latter years of *Weimar*, for employment positions and the termination of restrictions that had been imposed on technical progress and rearmament. The German historian Karl-Heinz Ludwig, in attempting to summarize the main characteristics of the rhetoric used by the engineers during the Weimar Republic in order to achieve the legitimization of technology in the German consciousness, divided them into four categories:⁵⁵

- technology emanating from the deepest impulses of German *Kultur* and not from the *dis-enchanted materialism* of Western *Zivilisation*
- the cultural, political, and economic crises of modern German society were not due to the machine but to its misuse by private capitalist interests
- the welfare of the national community could be protected only by a strong state, which ought to predominate over private economic interests
- engineers had a central role to play in providing the expertise necessary for Germany in an age of technological warfare.

⁵³ See Hard Michael, "German Regulation: The Integration of Modern Technology into National Culture" in *Intellectual Appropriation of Technology, Discourses on Modernity, 1900-1939*, M. Hard & A. Jamison (Eds) (Cambridge Massachusetts: MIT Press, 1998), pp. 36-46.

⁵⁴ See Ringer Fritz, *The Decline of the German Mandarins. The German Academic Community, 1890-1933* (Cambridge Massachusetts: Harvard University Press, 1969), pp. 128-130, 213-227.

⁵⁵ Ludwig Karl-Heinz, *Technik und Ingenieure in Dritten Reich*, (Königstein: Athenäum/Droste Taschenbücher Geschichte, 1979), pp. 15-102.

Also interesting, however, is the reinterpretation of technology through myth and the magical element. The *re-enchantment* of technology was a constant characteristic of the engineering community's rhetoric. One of the foremost examples is the essay by engineer Heinrich Hardensett (1853–1943), *Magische Technik* (Magical Technology), which was published in 1926 in the popular magazine *Technik und Kultur* (Technology and Culture). In this essay, Hardensett argues that technological advance did not lead to a *disenchantment* of the world but to a revived understanding of the relationship between reason and magic. Technology, according to him, had a deep religious impulse that persisted despite numerous efforts, beginning with Galileo, to eliminate animism and magic from mechanics. An irreducible *unmagical magic* remained, evidence of the inseparability of religion and technology.⁵⁶

Another prominent engineer of the period, Carl Weihe, aligning himself with the ideological climate of the period, argued that “Classical Romanticism” should be replaced by a “New Romanticism” that would also encompass the life-giving power of technology. Weihe thus suggests an *enchanted technocracy* as the basis of the *New Society*, which would rise over the ruins of the old one. In a characteristic excerpt from his emblematic, for the period, work *Kultur und Technik*, we read that:⁵⁷

Man is on the path of total self-transformation. The deed will once again be placed ahead of the work, the fist before the tongue, the vision before the concept [...] The era of negotiations and compromise, of parliamentary activity and bargaining, is past. [...] Engineers and their modern technical products have a duty to become active in enlightening, lending assistance and serving as examples.

Conclusions

By studying science and technology in relation to their wider ideological environment during the Weimar Republic, we should focus on the following pivotal points. Firstly, the historical findings, urge us to question the tenet that the development of science and technology are solely defined by what happens within their boundaries. The intense interactive relationship of science and technology with the ideological and political currents that develop during this

⁵⁶ Herf, *Reactionary Modernism*, p. 182.

⁵⁷ Carl Weihe, *Kultur und Technik*, (Frankfurt am Main: Selbstverlag des Verfassers, 1935), p. 65-66.

period,⁵⁸ motivates us towards researching the cultural roots of science and technology, behind the veil of objectivity and neutrality that so often obscures them. Secondly, the views of the protagonists of the period on science and technology lead us to avoid interpreting the dominant ideological context as a return to nineteenth-century Romanticism. *Neoromanticism*, as a tool for analyzing this particular era, attempts to delineate a new path of study, which focuses more on interpreting the ideas developed during the Weimar Republic as a part or as a particular expression of interwar modernist visions and less as a disorderly retreat into the past, as an exception or a parenthesis to the modernization of western societies. The third point of critique that this paper has attempted to highlight could be seen as the logical extension of the second. The study of science and technology in interwar Germany seems to contest the confidence with which Max Weber argued that modernity is characterized by the progressive *disenchantment* of the world. Instead, a rapprochement of this particular period through the prism of *Neoromanticism* urges us to view modernity not as a gradual cleansing from the magical and mythological element but as an extremely complex process where the *disenchantment* is connected dialectically with the *re-enchantment*, the myth with the reason, the faith with the scientific discourse, the technology with the religiousness. The endeavor of the *Dialectic of the Enlightenment* to evince the consequences of Enlightenment's disputing of the myth and metaphysics, allowed it to discern the latent metaphysical structure of the Enlightenment thought itself.

The last point that I believe should be focused upon is that of scientific discourse. By studying the public discourse of the scientists regarding their positions on science, we observe a series of intense idealistic, mystical and apocryphal elements that today would be considered even as 'pseudoscience'. Yet during the interwar period such views formed the basis of the scientific endeavor and were in no way characterized as marginal. This fact leads us to question the existence of a scientific discourse, both with regards to form as well as substance, remaining intact throughout history and unaffected by the wider context. We should, therefore, probably accept that the scientific worldviews, what is included and excluded by the scientific endeavour, the very horizon of science itself, all cannot escape the ideological premises of the wider social context, which seal historically the thought of a period and

⁵⁸ The interaction between science and the wider ideological context during the *Weimar Republic* is made apparent in the clearest way in the discourse of several of the protagonists of the period. For example in the speech that Physics Professor Gustav Mie (1869-1957) gave at the University of Freiburg in 1925, he mentions: "That is why we are ready to turn to another worldview. I believe that this new worldview will bear certain characteristics, which also shape the image of modern spiritual life [...] It is interesting to observe that even physics, despite dealing with strict experimental results, will be lead down paths, which are parallel to those of spiritual movements in other sectors."

constitute its boundaries. Therefore, a genealogy of scientific discourse and a study of the shift of the boundary line, between scientific and non-scientific, would be particularly interesting, not only because it would remind us of the interaction between science and the social status quo but also because they would, in their own way, bring to light historical periods of great importance for human history such as that of the interwar period and the Weimar Republic.

In closing, I would like to point out that the critical tendency of this particular study with regards to scientific and technological discourse as well as their enlightenment and modernist roots, does not aim to demonize or reject the Enlightenment or modernity but lead to a deeper understanding of their complexity and multifactorial nature. As Adorno and Horkheimer aptly argued in one of the few optimistic parts of the *Dialectic of Enlightenment*: “The critique of Enlightenment is intended to prepare a positive concept of Enlightenment which liberates it from its entanglement in blind domination [...] The necessity for Enlightenment is to reflect on itself, if humanity is not to be totally betrayed. What is at stake is not conservation of the past but the fulfillment of past hopes.”⁵⁹

⁵⁹Adorno & Horkheimer, *Dialectic of Enlightenment*, pp. xvii, xviii.